

**Course Name** : Diploma Technical Chemistry

**Course Code** : DTC

**Semester** : Fifth

**Subject Title** : Technology of Dyeing

**Subject Code** : 135CH51

**Teaching and Examination Scheme:-**

Teaching Scheme			Paper Hours	Examination Scheme										Total Marks	
L	T	P		Theory		Test	Total		P		OR		TW		
				Max	Min		Max	Min	Max	Min	Max	Min	Max		Min
3	-	-	3	80	32	20	100	40	-	-	-	-	-	-	100

**RATIONALE:**

1. The chemical processing of textiles is a value addition process by way of enhancing their aesthetic properties through dyeing and printing. In the second year of this course the students are taught about the preparatory processes before dyeing and printing on most common machines used in Indian Textile Industry.
2. In past few years many developments has been taken place in this area and new techniques with ultra modern machines have been introduced. Use of such machines becomes advisable for better quality and high production accompanied by other benefits like lower consumption of auxiliaries, water and power etc. some of the machines impart special effects to the textiles. Moreover, due to advent of synthetic fibres, many techniques have been developed to treat the textiles made from synthetic fibres. The knowledge of this and the modern machines is very essential for the chemical processing technologist.
3. This subject intends to impart the knowledge and skills in above-mentioned areas of the chemical processing of textiles.

**OBJECTIVES:**

The students will be able to:

1. Get the basic concepts of dyeing of synthetic fibres.
2. Know application methods of dyeing of synthetic fibres by various dyes.
3. Study process control and Quality control parameters.
4. Study dyeing methods of blended fabrics, denim, and various special fabrics.

**SYLLABUS**

S.N.	Contents	Hours Reqd.	Marks Alloted
<b>Section - I</b>			
1	Dyeing of polyester and acetate rayons In general Problems faced in dyeing of synthetic fibers and various approaches to overcome problems	14	20

	<p>Study of disperse dyes their diffusion characteristics or migration number, sublimation fastness.</p> <p>Scoring and bleaching of polyester</p> <p>Various mechanisms of dyeing of polyester With disperse dye.</p> <p>Mass coloration technique</p> <p>Carrier dyeing of polyester.</p> <p>HHP dyeing machinery. Concept of rapid dyeing and low liquor dyeing techniques.</p> <p>Thermosol dyeing</p> <p>Dyeing of texturised &amp; micro denier fibers</p> <p>Dyeing of CDPET</p>		
<b>2</b>	<p>Dyeing of acrylic</p> <p>Concept of copolymerization to modify dyeing properties of acrylic fibers.</p> <p>Pretreatments of acrylic textiles</p> <p>Dyeing of acrylic with basic, cationic, disperse dyes.</p> <p>Concept of defitherm dyeing technique of acrylic.</p> <p>Shop floor practices of acrylic dyeing.</p>	<b>05</b>	<b>10</b>
<b>3</b>	<p>Dyeing of nylon</p> <p>Pretreatments of nylon textiles</p> <p>Dyeing of nylon with various classes of dyes.</p> <p>Study of leveling agents</p> <p>Shop floor practices of nylon dyeing.</p> <p>Deep dyeing nylon</p>	<b>05</b>	<b>10</b>
<b>Section-II</b>			
<b>4</b>	<p>Machinery for dyeing of</p> <p>Study of loose stock dyeing machines, advantages and dis-advantages of dyeing in loose state.</p> <p>Study of yarn dyeing machines, concept of bulk density</p> <p>Study of fabric dyeing machines 1) Winch 2) Jigger</p>	<b>06</b>	<b>10</b>
<b>5</b>	<p>Continuous Dyeing Methods</p> <p>Comparison with batch-wise dyeing techniques</p> <p>On points like suitability in dyeing of longer meterage, Uniformity of shade, economy,</p> <p>Study of machinery set up required for continuous dyeing technique like padding mangle, drying range</p> <p>Continuous dyeing techniques for dyeing with</p> <p>1) Reactive dyes 2) Vat dyes 3) Azoics</p>	<b>10</b>	<b>15</b>
<b>6</b>	<p>Concept of blending of fibers</p> <p>Classification of blends based on no of components and dyeing characteristics</p> <p>Pretreatments &amp; dyeing of various blends like polyester /cotton, polyester/viscose, polyester/wool, polyester/acrylic, polyester /viscose/acrylic, nylon/wool, wool/ acrylic, acrylic/viscose &amp; polyester/silk</p>	<b>08</b>	<b>15</b>
		<b>48</b>	<b>80</b>

## **Learning Resources:**

### **Text Books:-**

1. Technology of dyeing Vol-VI - V.A.Shenai Sevak Publications Fifth Edition 1999.
2. Textile Preparation and Dyeing Asim kumar Roy Chaudhary Oxford & IBH Publishing Co Pvt Ltd.2006 New Delhi

### **Reference Books**

1. Chemical processing of synthetics fibres and blends - K.V.Datey and A.A.Vaidya
2. Blends dyeing - Edited by John Shore ( Published by SDC1999)
3. Handbook of processing machinery - R.S.Bhagwat edition1989
4. Bleaching ,Dyeing and Chemical technology of textile fibres - E.R.Trotman  
B I Publications 1979

**Course Name** : Diploma Technical Chemistry  
**Course Code** : DTC  
**Semester** : Fifth  
**Subject Title** : Technology of Finishing -I  
**Subject Code** : 135CH53

**Teaching and Examination Scheme:-**

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
L	T	P		Theory		Test	Total		P		OR		TW		
				Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	-	-	3	80	32	20	100	40	-	-	-	-	-	-	100

**RATIONALE:**

1. Fabrics are finished to give them final face uplift so as to increase attractiveness & serviceability along with certain desirable properties.
2. With the rise in demand by the consumers, speciality finishes are applied to improve their marketability.
3. The subject also deals with various finishing chemicals, methods of applications and machineries involved

**OBJECTIVES:**

The students will be able to:

1. Know the basic concepts and types of finishing.
2. Have the knowledge of various formulations in the finishing.
3. Study the functional finishes.
4. Study the effect of heat setting on physico-chemical changes in synthetic fibres.

No	Contents	Lectures	Marks
<b>Section-I</b>			
1	Introduction to textile finishing. Its importance. Study of various finishing ingredients used in textile finishing process, their chemistry. Classification of finishing process.	06	10
2	Anticrease finishes: Crease resisting agents such as urea formaldehyde(UF), melamine formaldehyde(MF), dimethylol ethylene urea( DMEU), dimethylol dihydroxy ethylene urea(DMDHEU). Their application to cellulosic materials. Drawbacks of resin finishing. Wash-n-wear finish.	06	10
3	Anti-microbial, rot-proofing, and mildew-proofing.	05	08

4	Water repellent and soil release finish: Purpose, methods, chemicals used, advantages and disadvantages for water repellent and soil release finish. Factors governing soiling, few process for anti-soiling treatments.	07	12
<b>Section-II</b>			
5	Flame retardancy finish: Purpose, chemicals used, process, flame retardant finish for cotton, wool, polyester, P/C blends, nylon, acrylic.	07	12
6	Calendering and shrink proofing : Objects, 7 bow calendar, swizzing, chasing, friction, Schreiner, felt calenders, damping process. Shrinkage mechanism, method of producing shrinkage in Sanforising, Sanforising machine.	07	12
7	Drying : Importance of drying in textile, mechanism of drying, various drying methods and their concepts.	06	09
8	Study of softners: Introduction, cationic softner, amphoteric soft finishes, non ionic soft finishes, anionic soft finishes, reactive soft finishes.	04	07
<b>TOTAL</b>		<b>48</b>	<b>80</b>

### Learning Resources:

#### Text Books:-

1. Technology of Textile Finishing – V.A.Shenai & N.M.Saraf Sevak Publications Fifth Edition 2002

#### Reference Books:

- 1 Textile Finishing – J.T. Marsh. B I Publications 1979
- 2 Textile Preparation and Dyeing Asim kumar Roy Chaudhary Oxford & IBH Publishing Co Pvt Ltd.2006 New Delhi.
- 3 Dr. K.V. Datye & A.A. Vaidya, Chemical Processing Of Synthetic and Its Blends, 2<sup>nd</sup> Edition,1984, A Wiley Interscience Publication.

**Course Name** : Diploma Technical Chemistry

**Course Code** : DTC

**Semester** : Fifth

**Subject Title** : Chemical Engineering

**Subject Code** : 135CH54

**Teaching and Examination Scheme:-**

Teaching Scheme			Paper Hours	Examination Scheme										Total Marks	
L	T	P		Theory		Test	Total		P		OR		TW		
				Max	Min		Max	Min	Max	Min	Max	Min	Max		Min
4	1	-	3	80	32	20	100	40	-	-	-	-	25	10	125

### RATIONALE:

1. This subject intends to provide a self-contained introduction and back ground of cognate topics of fluid or momentum transfer, heat transfer, and mass transfer.
2. The chemical processing of textile is very diverse in nature and involves the transfer of the fluid material from one place to other for its use in the machines.
3. The technologists in this industry should have the basic understanding of the principles of fluid flow, heat transfer and mass transfer in order to control the process by operating it to an optimum level.

### OBJECTIVES:

The student will be able to:

1. Learn basics of the unit operation s of Chemical Engineering.
2. Understand the importance of the subject to textile industry.
3. Apply the knowledge of the subject to textile industry practices.

S.N.	Contents	Hours Reqd.	Marks Alloted
<b>SECTION - I</b>			
1.	<b>Unit Systems And Introduction To Fluid Flow</b> Review of various unit systems. Study of units and conversions of some of the important physical quantities. Introduction & importance of fluid flow studies to textiles. Definition of fluid, study of fluid properties like density, viscosity, surface tension. Study of compressible, incompressible, real & ideal fluids. Study of rheology of fluids, statement of Newton's Law of Viscosity. Brief study of fluid statics.	<b>07</b>	<b>08</b>

2.	<p><b>Study of Fluids In Motion</b> Reynolds Experiment for fluid flow through pipes. Concepts of velocity distribution, resistance to flow, and friction factor for the flow of fluid. Equation of continuity and Bernoulli's Equation (only expressions no derivation) with the significance of the equations. Simple numericals based on above topics.</p>	06	08
3.	<p><b>Transportation of Fluids And Measurements of Fluid Flow:</b> Need for pumping of liquids, brief study of basic types of pumps (centrifugal &amp; reciprocating). Brief study of fans, blowers &amp; compressors. Study of flow measuring devices: Construction, working and principle of venturimeter, orificemeter, pitot tube, rotameter, weirs (notches). Study of pipe fittings &amp; valves.</p>	09	12
4.	<p><b>Introduction to Heat Transfer</b> Definition of heat transfer operation. Study of modes of heat transfer. Study of terminologies like specific heat, heat capacity, latent heat, sensible heat, thermal conductivity, and thermal diffusivity, heat as a form energy, heat transfer rate and heat transfer co-efficient. Conduction heat transfer: Fourier's law of heat conduction, study of heat flow through a thick slab, thick cylindrical pipe and a spherical wall. Study of heat flow through composites. Study of thermal insulations. Applications of conduction heat transfer to textile industry.</p>	10	12
<b>SECTION-II</b>			
5.	<p><b>Convection &amp; Radiation heat transfer</b> Statement of Newton's Law of cooling, concept of heat transfer coefficient, study of free &amp; forced convection. Brief study of dimensionless groups in heat transfer. Applications of convection heat transfer to textile industry. Concept of heat transfer by radiation, concept of black body radiation, statement of basic laws of radiation heat transfer to textile industry.</p>	09	11
6.	<p><b>Introduction to Mass Transfer Operation</b> Concept of mass transfer operation &amp; diffusion. Definition of diffusion co-efficient, mass transfer rate. Study of modes of mass transfer viz. molecular diffusion and eddy diffusion. Classification of mass transfer operations. Only definition and applications of distillation, extraction, absorption, adsorption, crystallization, evaporation.</p>	06	08

7.	<p><b>Filtration and Membrane Separation Techniques</b> Introduction to filtration operation, filter aids, filter media, applications of filtration to textile industry. Introduction to membrane separation operations. Brief study of micro, ultra filtration, reverse osmosis, dialysis &amp; electrodialysis. Advantages &amp; applications of these techniques in general &amp; in particular to textile industry.</p>	07	09
8.	<p><b>Simultaneous heat &amp; Mass transfer operations</b> Introduction to drying as an unit operation. Concept of rate of drying, brief study of theory of drying. Applications of drying techniques in general &amp; particularly to textile industry. Brief study of textile dryers. Introduction to humidification operation. Importance of humidification in textile mills. Only definitions of the terms like dry bulb, wet bulb, dew point &amp; adiabatic saturation temperatures, definitions of humidity, percent humidity, relative humidity, humid heat, humid volume. Brief study of humidity chart and its use.</p>	10	12
	TOTAL	64	80

### Learning Resources:

#### Text Book:-

1. Unit Operation Of Chemical Engineering McCabe/Smith/Harriot 4<sup>th</sup> 1985 Mc-Graw Hill Book Co., Singapore, Br.-New Delhi.
2. W.L. Mc cobe and J.C Smith, Unit operations In **Chemical Engineering**, McGraw-. Hill Book Co., 1976.

#### Reference Books:

1. Introduction to Chemical Engineering Badger & Banchero 2<sup>nd</sup> 1991 Mc-Graw Hill Publication
2. Process Heat Coloration Kern 4<sup>th</sup> 1950 Mc-Graw Hill Publication
3. Bird And Boston Theory Of 3<sup>rd</sup> 1975 Dyers Co. Pub. Trust



**Course Name** : Diploma Technical Chemistry

**Course Code** : DTC

**Semester** : Fifth

**Subject Title** : Technical Textiles

**Subject Code** : 135TM55

**Teaching and Examination Scheme:-**

Teaching Scheme			Paper Hours	Examination Scheme										Total Marks	
L	T	P		Theory		Test	Total		P		OR		TW		
				Max	Min		Max	Min	Max	Min	Max	Min	Max		Min
3	1	-	3	80	32	20	100	40	-	-	-	-	25	10	125

**RATIONALE:**

1. A **Technical textile** is a textile product manufactured for non-aesthetic purposes, where function is the primary criterion.
2. It is a large and growing sector and supports a vast array of other industries.
3. Technical textiles include textiles for automotive applications, medical textiles (e.g., implants), geotextiles (reinforcement of embankments), sport textiles and protective clothing (e.g., heat and radiation protection for fire fighter clothing, molten metal protection for welders, stab protection and bulletproof vests, and spacesuits).
4. In present market opportunities and in free quota system the importance of technical textile materials is increasing to accommodate the needs of requirement. Nowadays the most widely technical textile materials are used in filter clothing, furniture, hygiene medicals and construction material.

Sr. No	Contents	Hours	Marks
<b>Section I</b>			
1	Definition and scope of technical textiles, brief idea about technical fibres, difference between technical textiles and other textiles, types of technical textiles, their attributes and functional values.	6	10
2	Filtration textiles: Filtration parameters, filtration requirements, filtration equipments, concept of pore size and particle size, role of fiber, fabric construction and finishing treatments.	6	10
3	Geotextiles: Brief idea about geotextiles, types of geotextiles, geotextile properties, applications of geotextiles.	6	10
4	Protective clothing: Brief idea about different types of protective clothing, functional requirement of textile in defence including ballistic protection materials and parachute cloth, temperature and flame retardant clothing,	6	10

	chemical protective clothing, waterproof breathable fabrics.		
<b>Section-II</b>			
5	HiTech fibers: Speciality / High performance fibers- ultra fine, microfibers, nano fibers, hollow fibers, aramid fibers, carbon fibers etc.	6	10
6	Coating and Laminated Textiles Coating: Coating techniques such as knife coating, Calendar coating, roller, nip, dip and cast coating, Extrusion coating, spray coating, Foam coating, Powder coating Laminates: Classification – Rigid, Flexible Fabric & Waterproof breathable laminates Types of laminates – Sheet stock, Post formed, Tubes and Rods, Molded laminated Plastics, Honeycomb laminates.	6	10
7	Automotive textiles: Application of textiles in automobiles, requirement and design for different tyres, airbags and belts, methods of production and properties of textiles used in these applications	6	10
8	Sewing threads, cords and ropes: Types, methods of production and applications, functional requirements, structure and properties	6	10
	Total	48	80

**Reference Books:**

- 1) “Wellington Sears Handbook of Industrial Textiles”, Ed. Sabit Adanaur, Technimic Publishing Co. Inc., Pennsylvania, USA, 1995.
- 2) “Industrial Textiles”, Ed. J. Svedova, Elsevier, New York, 1990.
- 3) “Geotextiles”, N. W. M. John, Taylor & Francis, 1987
- 4) “Nonwoven Bonded Fabrics”, J. Lunenschloss and W. Albrecht, Ellis Horwood Ltd., 1985
- 5) “Handbook of Technical Textiles”, Ed. A. R. Horrocks and S. C. Anand, Woodhead Publication Ltd., Cambridge, 2000

**Course Name** : Diploma in Technical Chemistry

**Course Code** : DTC

**Semester** : Fifth

**Subject Title** : Technology of Printing

**Subject Code** : 135CH52

**Teaching and Examination Scheme:-**

Teaching Scheme			Paper Hours	Examination Scheme												Total Marks
L	T	P		Theory		Test	Total		P		OR		TW			
				Max	Min		Max	Min	Max	Min	Max	Min	Max	Min		
3	-	-	3	80	32	20	100	40	--	--	--	--	--	--	100	

**RATIONALE:**

The chemical processing of textiles is a value addition process by way of enhancing the aesthetic properties through dyeing and printing. In the second year of this course, the students are taught about the dyeing and printing of textiles with various types of dyes and pigments along with different methods, and styles. The students are also made acquainted with the operations of the machines involved in these processes. In general this subject is devised to impart the knowledge and skills in the areas of dyeing and printing of the textiles.

**OBJECTIVES:**

The students will be able to:

1. Get the basic concepts in dyeing of cellulosic material.
2. Know the technology of dyeing of cellulosic material with various classes of dyes.
3. Differentiate the various dyeing techniques and their advantages and disadvantages.

CHAPTER	CONTENTS	HOURS	MARKS
	<b>SECTION – I</b>		
<b>01</b>	<b>Printing of 100% Polyester</b> Various considerations involved in printing of synthetics with polyester in particular. Preparation of 100 % polyester fabric for printing. Selection criteria of dyes for Direct, Discharge, Resist style of printing using disperse dyes. Fixation and after treatment processes, reduction-clearing, etc.	<b>09</b>	<b>15</b>
<b>02</b>	<b>Printing of Blended Fabrics</b> Direct style of printing of polycellulosic blends, Polyester/wool blends involving different dye class systems and ready mixtures of dye classes. Brasso style of printing,	<b>03</b>	<b>05</b>

<b>03</b>	<b>Printing of Nylon and Acrylic Fibre Fabrics</b> Direct, discharge and resist style of printing on nylon and acrylic fabric with different dye classes. Study of cationic dyes and retarding agents in the context of acrylic fabric printing.	<b>12</b>	<b>20</b>
<b>Section-II</b>			
<b>04</b>	<b>Printing of Wool and Silk Fabrics</b> Preparation of cloth for printing, selection of dyes with their performance, Direct, Discharge, Resist style in printing of wool and silk. Melange printing of wool	<b>12</b>	<b>20</b>
<b>05</b>	Transfer printing process, Principles, Machinery used, Merits and demerits.	<b>06</b>	<b>10</b>
<b>06</b>	Study of different steamers/agers for batch and continuous fixation such as star agers, loop ager, rapid ager. Concept of ink jet (digital printing), foam-based printing. Eco-friendly concepts of textile printing, preparation of screen for flat bed and rotary screen printing, Traditional Indian practices in printing of natural dyes.	<b>06</b>	<b>10</b>
<b>Total</b>		<b>48</b>	<b>80</b>

### Learning Resources:

#### Text Books:

1. Technology of Printing-Vol IV- V.A.Shenai Sevak Publications Edition 2000
2. Textile Preparation and Dyeing Asim kumar Roy Chaudhary Oxford & IBH Publishing Co Pvt Ltd.2006 New Delhi

#### Reference Books:

1. Introduction to Textile Printing-.Published by Butter Works In Association with I C I dyestuff Division.

**Course Name** : Diploma Technical Chemistry

**Course Code** : DTC

**Semester** : Fifth

**Subject Title** : Dye House practical

**Subject Code** : 135CH56

**Teaching and Examination Scheme:-**

Teaching Scheme			Paper Hours	Examination Scheme										Total Marks	
L	T	P		Theory		Test	Total		P		OR		TW		
				Max	Min		Max	Min	Max	Min	Max	Min	Max		Min
-	-	8	-	-	-	-	-	150	60	--	--	25	10	175	

## RATIONALE

Experiments based on

1. Technology of dyeing of manmade fibers & blends,
2. Technology of Printing – I,
3. Technology of Finishing.

## OBJECTIVE

To make students skill-oriented by performing hands-on practical experiments

## COURSE CONTENTS

### [A]

1. Shade matching with vat dyes.
2. Dyeing of cotton fabrics with aniline black, M. khaki colors.
3. Dyeing. of cotton on jigger dyeing machine with various dyes.
4. Dyeing. of cotton on padding mangle with various dyes.
5. Dyeing. of polyester and other synthetic fiber fabrics on HTHP dyeing machine.
6. Identification of dyes on fibers.
7. Stripping of various colors from dyed goods.
8. Dyeing. of compound shades.

**[B]**

1. Analysis of specialized textile printing auxiliaries.
2. Preparation of various thickeners and emulsions used in printing and measurement of viscosity of printing paste.
3. Printing of cotton with various dyes such as direct, vat, reactive, solublised vats, azoic and pigments with different styles – direct, discharge and resist.

**[C]**

1. Analysis of various finishing ingredients used in textile finishing.
2. Finishing of textiles to obtain different effects such as softness, stiffness, smoothness, fullness, luster, etc.
3. Study and applications of special finishes for crease resistance.
4. Study of specialized finishes such as water proofs. FR, soil resistance, anti-pilling, antistatic, etc.
5. Finishing of blends and knitted fabrics.
6. Finishing using synthetic polymer & cellulose derivatives.
7. Preparation of mercerizing agent and mercerization of grey and bleached cotton hank.
8. Determination of efficiency of mercerization process by BAN determination.

**Learning resources****Text Books:-**

1. Laboratory Course in Dyeing GILES' S Society of Dyers & Colourists Fourth Edition 2000  
- G.H.Gisles
2. Principle and Practices of Dyeing- V.A.Shenai Sevak Publications Edition1991

**Course Name** : Diploma Technical Chemistry

**Course Code** : DTC

**Semester** : Fifth

**Subject Title** : Entrepreneurship Development

**Subject Code** : 135HM57

**Teaching and Examination Scheme:-**

Teaching Scheme			Paper Hours	Examination Scheme										Total Marks	
L	T	P		Theory		Test	Total		P		OR		TW		
				Max	Min		Max	Min	Max	Min	Max	Min	Max		Min
-	2	-	-	-	-	-	-	-	-	-	-	-	25	10	25

**RATIONALE:**

Engineers can play very important role in economic development of the nation and wealth creation by innovation and entrepreneurship. This course aims to develop among the engineering students awareness and abilities to be entrepreneurs.

**COURSE CONTENTS:**

S. No	Topic	Contents	Hrs.
1	Entrepreneur	Need for entrepreneurial growth, Concept, characteristics, functions, entrepreneurial competencies.	2
2	Entrepreneurial challenges	Live examples of challenges faced by entrepreneurs	2
3	Business idea/opportunity recognition and selection.	Idea generation, Project identification, selection, formulation and appraisal	4
4	Quick start methods	Franchise, packaged business, buying a existing business.	2
5	Evaluating markets and customers.	Market evaluation and marketing strategies	4
6	Business plan:	Writing a business plan	8
7	Financing the business:	Sources of finance, venture capitalist, Institutional finance.	4
8	Incorporating a company.	Private limited and public limited company	4
9	Evaluating the value of enterprise	Valuation of the business	2

**Assignments:** Individual and group assignments on

- 1 Idea generation
- 2 Business plan
- 3 Project appraisal
- 4 Marketing
- 5 Venture capitalist
- 6 Visit to an enterprise
- 7 Case studies

**Reference books:**

The successful Entrepreneur's Guidebook: Colin Barrow, Robert Brown and Liz Clarke (Kogan Page India)

Entrepreneurship Development : Vasant Desai

Entrepreneurial Development: S.S.Khanka (S.Chand)



**Course Name** : Diploma in Technical Chemistry  
**Course Code** : DTC  
**Semester** : Fifth  
**Subject Title** : Student Centered Activity/Test

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
L	T	P		Theory		Test	Total		PR		OR		TW		
				Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-

**Rationale:–**

Most of the diploma holders join industries. Due to globalization and competition in the industrial and service sectors the selection for the job is based on campus interviews or competitive tests.

While selecting candidates a normal practice adopted is to see general confidence, ability to communicate and attitude, in addition to basic technological concepts.

The purpose of introducing professional practices is to provide opportunity to students to undergo activities which will enable them to develop confidence. Expert lectures, E-learning sources, E-library, Internet, seminars on technical topics and group discussion are planned in a semester so that there will be increased participation of students in learning process.

**Objectives:**

The Student will be able to:

1. Acquire information from different sources
2. Prepare notes for given topic
3. Present given topic in a seminar
4. Interact with peers to share thoughts
5. Take the advantages of E-learning sources

## V sem Dyeing / printing practicals

Intellectual skills:

- 1) Understanding dyeing process for synthetic fabric.
- 2) Learn dyeing machine.
- 3) Learn blend dyeing.

Motor skill:

- 1) H.T. H.P., carrier & thermosol methods of dyeing.
- 2) To operate dyeing machine.
- 3) Dyeing of polyester blends with different method.

List of Practical:

- 1) Carrier dyeing of polyester.
- 2) H.T.H.P. dyeing of polyester.
- 3) Thermosol dyeing of polyester. Dyeing of texturised polyester.
- 4) Production of compound shades using disperse dye.
- 5) Dyeing of acrylic with Basic, Cationic and disperse dyes.
- 6) Computer colour matching. Preparation of at least 3 formulations for p, p/c, and p/v.
- 7) Dyeing of Nylon with acid, metal complex & disperse dyes.
- 8) Dyeing of polyester/ cellulosic blends with various classes of dyes
- 9) Dyeing of polyester/ wool blends with various classes of dyes
- 10) Dyeing of polyester/ acrylic blends with various classes of dyes
- 11) Cross dyeing of polyester / cellulosic blends with various classes of dyes.
- 12) Production of compound shades using azoic colours
- 13) Production of compound shade on polyester / cellulosic blends

Practical: printing

Skills to be developed:

Intellectual skills:

- 1) Understand screen preparation.
- 2) Understand printing process.
- 3) Learn different styles of printing.

Motor skill:

- 1) Drawing a design & prepare screen of same.
- 2) Direct, discharge & resist style of printing.

List of Practicals:

- 1) Preparation of screen for printing
- 2) Batick style of printing
- 3) Tie & dye style of printing
- 4) Direct style of printing on cotton using direct dye
- 5) Direct style of printing on cotton using Reactive dye
- 6) Direct style of printing on cotton using Azoic colours
- 7) Magic style of printing, crimp style of printing
- 8) White & colour discharge on cotton using direct and reactive dyes
- 9) White & colour discharge on cotton using vat dyes
- 10) Azoic colour discharge printing on direct dyed ground
- 11) White & colour resist style of printing on cotton
- 12) Silk printing with acid dyes

LIST OF EXPERIMENTS finishing

1. Preparation and application of Blue Tone and Red Tone on cellulosic.
2. Preparation and application of Blue Tone and Red Tone on synthetic and its blends.

Skills to be developed:

Intellectual skills:

- 1) Analysis of fastness properties.
- 2) Identify dyes on fibre.
- 3) Analyses pure chemicals.

Motor skill:

- 1) Washing, light, sublimation, rubbing & perspiration fastness.
- 2) Chemical analysis to identify dyes on fibre.
- 3) Titration method to analyze pure chemicals.

Practical: printing

Skills to be developed;

Intellectual skills:

- 1) Understand different thickening paste.
- 2) Understand printing process.
- 3) Learn different styles of printing on synthetic fabric.

Motor skill:

- 1) Direct, discharge & resist style of printing on synthetic fabric.
- 2) Printing of polyester / cotton blend.

List of Experiments:

1. Stock & reduction thickening in printing.
2. Direct style of printing on 100 % polyester using disperse dye.
3. Direct style of printing on 100 % polyester using Pigments.
4. Direct style of printing by using carrier.
5. Discharge style of printing of polyester by using various reducing agents.
6. Resist style of printing on polyester.
7. Printing of acrylic fabric by using cationic dyes.
8. Printing of acrylic fabric by using disperse dyes.
9. Printing of nylon with acid dyes.
10. Printing of nylon with disperse dyes.
11. Printing of PET/CO blended fabrics by disperse/reactive dyes.
12. Brasso style of printing.

List of Practicals: testing of chemicals and auxiliaries

- 1) Determination of washing fastness.
- 2) Determination of Light fastness.
- 3) Determination of Perspiration fastness & Rubbing fastness.
- 4) Determination of Sublimation fastness.
- 5) Identification of Dyes (Direct, Reactive, Sulphur)
- 6) Identification of Dyes (Vat, Azoic, Basic)
- 7) Identification of Dyes on fibres.
- 8) Determination of relative strength of dye using computer colour matching.
- 9) Determination of percent purity of H<sub>2</sub>O<sub>2</sub>.
- 10) Determination of percent purity of Resist Salt.
- 11) Determination of percent purity of Rongalite.
- 12) Determination of percent purity of Stannous Chloride.

List of Practicals: finishing

- 1) Finishing of silk fabric.
- 2) Finishing of wool fabric.
- 3) Finishing of 100% polyester fabric
- 4) Finishing of carbonized goods