


**MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAI**
**TEACHING AND EXAMINATION SCHEME**
**COURSE NAME : DIP IN FASHIONION & CLOTHING TECHNOLOGY**
**COURSE CODE : DC**
**DURATION OF COURSE : SIX SEMESTERS**
**WITH EFFECT FROM**
**SEMESTER : FOURTH**
**DURATION : 16 WEEKS**
**PATTERN : FULL TIME - SEMESTER**
**SCHEME : G**

SR. NO.	SUBJECT TITLE	Abbreviation	SUB CODE	TEACHING SCHEME			EXAMINATION SCHEME									SW (17400)
				TH	TU	PR	PAPER HRS.	TH (1)		PR (4)		OR (8)		TW (9)		
								Max	Min	Max	Min	Max	Min	Max	Min	
1	Environmental Studies \$	EST	17401	01	--	02	01	50#*	20	--	--	--	--	25@	10	<b>50</b>
2	Colouration of Textiles	COT	17458	03	--	04	03	100	40	50#	20	--	--	25@	10	
3	Knitted Fabric Design & Technology	KFD	17459	03	--	02	03	100	40	--	--	25#	10	25@	10	
4	Clothing Production Machinery & Equipment	CPM	17460	04	--	04	03	100	40	50#	20	--	--	25@	10	
5	Indian Western Costume	IWC	17461	04	--	--	03	100	40	--	--	--	--	--	--	
6	CAD in Textile Design	CTD	17049	--	--	02	--	--	--	--	--	--	--	25@	10	
7	Professional Practices-II	PPS	17050	--	--	03	--	--	--	--	--	--	--	50@	20	
8	Industrial Training	ITR	17051	--	--	**	--	--	--	--	--	--	--	--	--	
<b>TOTAL</b>				<b>15</b>	<b>--</b>	<b>17</b>	<b>--</b>	<b>450</b>	<b>--</b>	<b>100</b>	<b>--</b>	<b>25</b>	<b>--</b>	<b>175</b>	<b>--</b>	<b>50</b>

 Student Contact Hours Per Week: **32 Hrs.**
**THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH.**

 Total Marks: **800**

 @ Internal Assessment, # External Assessment, #\* Online Examination,   No Theory Examination, \$ Common to All Conventional Diploma,

\*\* Industrial training for six weeks to be completed during summer break after Fourth semester. Assessment to be done in Fifth Semester

Abbreviations: TH-Theory, TU- Tutorial, PR-Practical, OR-Oral, TW- Termwork, SW- Sessional Work.

- Conduct two class tests each of 25 marks for each theory subject. Sum of the total test marks of all subject are to be converted out of 100 marks as sessional work (SW).
- Progressive evaluation is to be done by subject teacher as per the prevailing curriculum implementation and assessment norms.
- Code number for TH, PR, OR and TW are to be given as suffix 1, 4, 8, 9 respectively to the subject code.

**Course Name : All Branches of Diploma in Engineering & Technology**

**Course Code : AE/CE/CM/CO/CR/CS/CW/DE/EE/EP/IF/EJ/EN/ET/EV/EX/IC/IE/IS/  
ME/MU/PG/PT/PS/CD/CV/ED/EI/FE/IU/MH/MI/DC/TC/TX/AU/FG**

**Semester : Fourth**

**Subject Title : Environmental Studies**

**Subject Code : 17401**

**Teaching and Examination Scheme:**

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
01	--	02	01	50#*	--	--	25@	75

**#\* Online Theory Examination**

**NOTE:**

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work (SW).**

**Rationale:**

Environment essentially comprises of our living ambience, which gives us the zest and verve in all our activities. The turn of the twentieth century saw the gradual onset of its degradation by our callous deeds without any concern for the well being of our surrounding we are today facing a grave environmental crisis. The unceasing industrial growth and economic development of the last 300 years or so have resulted in huge ecological problems such as overexploitation of natural resources, degraded land, disappearing forests, endangered species, dangerous toxins, global warming etc.

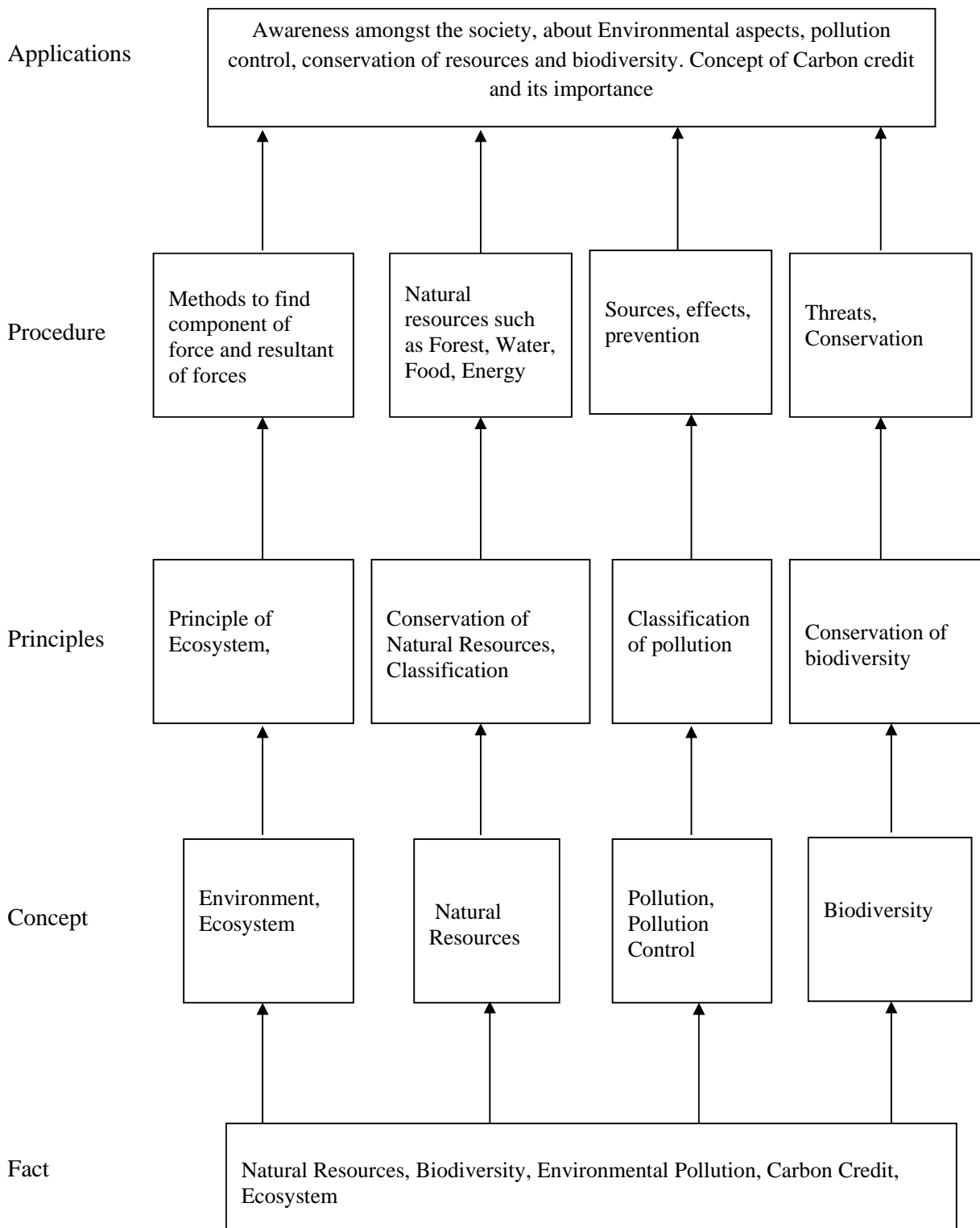
It is therefore necessary to study environmental issues to realize how human activities affect the environment and what could be possible remedies or precautions which need to be taken to protect the environment.

The curriculum covers the aspects about environment such as Environment and Ecology, Environmental impacts on human activities, Water resources and water quality, Mineral resources and mining, Forests, etc.

**General Objectives:** The student will be able to,

1. Understand importance of environment
2. Know key issues about environment
3. Understands the reasons for environment degradation
4. Know aspects about improvement methods
5. Know initiatives taken by the world bodies to restrict and reduce degradation

**Learning Structure:**



**Theory:**

<b>Topic and Contents</b>	<b>Hours</b>	<b>Marks</b>
<p><b>Topic 1: Nature of Environmental Studies</b></p> <p>Specific Objectives:</p> <ul style="list-style-type: none"> <li>➤ Define the terms related to Environmental Studies</li> <li>➤ State importance of awareness about environment in general public</li> </ul> <p><b>Contents:</b></p> <ul style="list-style-type: none"> <li>• Definition, Scope and Importance of the environmental studies</li> <li>• Importance of the studies irrespective of course</li> <li>• Need for creating public awareness about environmental issues</li> </ul>	01	04
<p><b>Topic 2: Natural Resources and Associated Problems</b></p> <p>Specific Objectives:</p> <ul style="list-style-type: none"> <li>➤ Define natural resources and identify problems associated with them</li> <li>➤ Identify uses and their overexploitation</li> <li>➤ Identify alternate resources and their importance for environment</li> </ul> <p><b>Contents:</b></p> <p>2.1 Renewable and Non renewable resources</p> <ul style="list-style-type: none"> <li>• Definition</li> <li>• Associated problems</li> </ul> <p>2.2 Forest Resources</p> <ul style="list-style-type: none"> <li>• General description of forest resources</li> <li>• Functions and benefits of forest resources</li> <li>• Effects on environment due to deforestation, Timber extraction, Building of dams, waterways etc.</li> </ul> <p>2.3 Water Resources</p> <ul style="list-style-type: none"> <li>• Hydrosphere: Different sources of water</li> <li>• Use and overexploitation of surface and ground water</li> <li>• Effect of floods, draught, dams etc. on water resources and community</li> </ul> <p>2.4 Mineral Resources:</p> <ul style="list-style-type: none"> <li>• Categories of mineral resources</li> <li>• Basics of mining activities</li> <li>• Mine safety</li> <li>• Effect of mining on environment</li> </ul> <p>2.5 Food Resources:</p> <ul style="list-style-type: none"> <li>• Food for all</li> <li>• Effects of modern agriculture</li> <li>• World food problem</li> </ul>	04	10
<p><b>Topic 3. Ecosystems</b></p> <ul style="list-style-type: none"> <li>• Concept of Ecosystem</li> <li>• Structure and functions of ecosystem</li> <li>• Energy flow in ecosystem</li> <li>• Major ecosystems in the world</li> </ul>	01	04
<p><b>Topic 4. Biodiversity and Its Conservation</b></p> <ul style="list-style-type: none"> <li>• Definition of Biodiversity</li> <li>• Levels of biodiversity</li> <li>• Value of biodiversity</li> </ul>	02	06

<ul style="list-style-type: none"> <li>• Threats to biodiversity</li> <li>• Conservation of biodiversity</li> </ul>		
<b>Topic 5. Environmental Pollution</b> <ul style="list-style-type: none"> <li>• Definition</li> <li>• Air pollution: Definition, Classification, sources, effects, prevention</li> <li>• Water Pollution: Definition, Classification, sources, effects, prevention</li> <li>• Soil Pollution: Definition, sources, effects, prevention</li> <li>• Noise Pollution: Definition, sources, effects, prevention</li> </ul>	03	08
<b>Topic 6. Social Issues and Environment</b> <ul style="list-style-type: none"> <li>• Concept of development, sustainable development</li> <li>• Water conservation, Watershed management, Rain water harvesting: Definition, Methods and Benefits</li> <li>• Climate Change, Global warming, Acid rain, Ozone Layer Depletion, Nuclear Accidents and Holocaust: Basic concepts and their effect on climate</li> <li>• Concept of Carbon Credits and its advantages</li> </ul>	03	10
<b>Topic 7. Environmental Protection</b> Brief description of the following acts and their provisions: <ul style="list-style-type: none"> <li>• Environmental Protection Act</li> <li>• Air (Prevention and Control of Pollution) Act</li> <li>• Water (Prevention and Control of Pollution) Act</li> <li>• Wildlife Protection Act</li> <li>• Forest Conservation Act</li> </ul> Population Growth: Aspects, importance and effect on environment <ul style="list-style-type: none"> <li>• Human Health and Human Rights</li> </ul>	02	08
<b>Total</b>	<b>16</b>	<b>50</b>

**Practical:****Skills to be developed:****Intellectual Skills:**

1. Collection of information, data
2. Analysis of data
3. Report writing

**Motor Skills:**

1. Presentation Skills
2. Use of multi media

**List of Projects:**

**Note:** Any one project of the following:

1. Visit to a local area to document environmental assets such as river / forest / grassland / hill / mountain
2. Visit to a local polluted site: Urban/Rural/Industrial/Agricultural
3. Study of common plants, insects, birds

4. Study of simple ecosystems of ponds, river, hill slopes etc.

**Prepare a project report on the findings of the visit illustrating environment related facts, analysis and conclusion. Also suggest remedies to improve environment.**

**Learning Resources:**

**Books:**

<b>Sr. No.</b>	<b>Author</b>	<b>Title</b>	<b>Publisher</b>
01	Anindita Basak	Environmental Studies	Pearson Education
02	R. Rajgopalan	Environmental Studies from Crises to Cure	Oxford University Press
03	Dr. R. J. Ranjit Daniels, Dr. Jagdish Krishnaswamy	Environmental Studies	Wiley India

**Course Name : Diploma in Fashion & Clothing Technology**

**Course Code : DC**

**Semester : Fourth**

**Subject Title : Colouration of Textiles**

**Subject Code : 17458**

**Teaching & Examination Scheme:**

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	04	03	100	50#	--	25@	175

**NOTE:**

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work (SW).**

**Rationale:**

To introduce students to the basic information on commercial dyes and dyeing techniques and Machinery used in industry for dyeing fibres yarn and fabrics. Students will develop an understanding for various traditional modern method of printing and finishing

**Objective:**

To make the students well versed with theoretical aspects as well as industrial procedures at various stages of wet processing such as Dyeing, Printing & Finishing.

**CONTENTS: Theory**

<b>Chapter</b>	<b>Contents</b>	<b>Hours</b>	<b>Marks</b>
1	<p><b>Preparation of fabrics:</b>  <b>Specific objectives:</b>            Students will be able to understand</p> <ul style="list-style-type: none"> <li>➤ Importance and Objects of preparatory processes before textile colouration.</li> <li>➤ Method of evaluation for preparatory processes.</li> </ul> <p>1.1 Introduction to wet processing of textiles,            1.2 Impurities in grey fabric,            1.3 Importance of preparation of fabrics,            1.4 Mechanical cleaning of fabrics,            - Objects of shearing &amp; cropping and singeing.            - Introduction to shearing, cropping &amp; singeing machines used in industry.            1.5 Object of Grey Inspection, Inspection machines, Criteria for rejection,            1.6 Objects of wet preparatory processes viz. desizing, scouring, bleaching and mercerization.            1.7 Enzymatic method of desizing &amp; scouring of cotton.            1.8 Evaluation of efficiency of desizing &amp; scouring.            1.9 Bleaching of cotton with Hydrogen peroxide.            - Measurement of whiteness index using CCM.</p>	12	24
2	<p><b>Dyeing process &amp; machinery:</b>  <b>Specific objectives:</b>            Students will be able to understand</p> <ul style="list-style-type: none"> <li>➤ Procedure for dyeing different textile substrates.</li> <li>➤ Working of important dyeing machinery.</li> </ul> <p>2.1 Definition of dye, pigment, percentage shade, exhaustion, expression.            2.2 Dye selection for various textile substrates,            2.3 Important steps involved in dyeing of cellulose with direct, sulphur, vat and reactive dyes and azoic colours.            2.4 Dyeing of polyester with disperse dye by HTHP &amp; Thermosol method,            2.5 Dyeing of P/C blend,            2.6 Concept of dyeing cotton with natural dyes,            2.7 Working of Jigger, Winch and Padding Mangle.</p>	12	24
3	<p><b>Printing Methods:</b>  <b>Specific objectives:</b>            Students will be able to understand</p> <ul style="list-style-type: none"> <li>➤ Difference between dyeing and printing.</li> <li>➤ Various styles and methods of printing.</li> <li>➤ Procedure for printing different textile substrates</li> </ul> <p>3.1 Objects,            3.2 Difference between dyeing &amp; printing,            3.3 Important print paste ingredients &amp; their functions,            3.4 Introduction to Direct, discharge and resist style of printing on cotton with reactive &amp; on polyester with disperse dyes.            3.5 Methods of printing            - Tie &amp; dye,</p>	10	20



	- Batik, - Block printing, - Screen printing.		
4	<b>Printing Machines</b> <b>Specific objectives:</b> Students will be able to understand <ul style="list-style-type: none"> <li>➤ Working of printing machinery.</li> <li>➤ Modern print effects used in garment industry.</li> </ul> 4.1 Working of table printing, <ul style="list-style-type: none"> <li>- Flat bed printing,</li> <li>- Rotary printing,</li> </ul> 4.2 Advantages & limitations. 4.3 Specialty prints: <ul style="list-style-type: none"> <li>- Flock printing,</li> <li>- Pearl printing,</li> <li>- Foam prints,</li> <li>- Foil printing.</li> </ul> 4.4 Concept of Ink jet printing technique.	10	20
5	<b>Evaluation of fastness properties</b> <b>Specific objectives:</b> Students will be able to understand <ul style="list-style-type: none"> <li>➤ Method for evaluation of fastness properties.</li> <li>➤ Norms for fastness properties.</li> </ul> 5.1 Importance of evaluating fastness properties of dyed and printed textiles, 5.2 General method for evaluating <ul style="list-style-type: none"> <li>- Wash fastness</li> <li>- Rubbing fastness,</li> <li>- Perspiration fastness,</li> <li>- Light fastness and</li> <li>- Sublimation fastness.</li> </ul>	04	12
<b>TOTAL</b>		<b>48</b>	<b>100</b>

**NOTE** - Complete syllabus is restructured and sub topics are detailed. O additions & deletions are made

**Practical:**

Sr. No.	Practicals
1	Identification of textile fibres by burning and solubility test.
2	Desizing of cotton fabric using enzymatic method.
3	Scouring of cotton fabric using alkali and enzymes.
4	Bleaching of cotton fabric using Hydrogen peroxide and measurement of whiteness index on CCM.
5	Dyeing of cotton with direct dye.
6	Dyeing of Cotton with reactive dye.
7	Dyeing of cotton with Vat dye.
8	Dyeing of cotton with Sulphur dye.
9	Dyeing of cotton with Natural dye.
10	Determination of colour fastness to washing and rubbing.
11	Traditional printing using azoic colours – Batick and tie and dye.

12	Direct style of printing on cotton using reactive dyes.
13	Discharge style of printing on reactive dyed cotton fabric.
14	Direct style of printing on polyester using disperse dye.
15	Foam printing & pearl printing on garments.
16	Visit to process house

**Note: Each above practical for 3 hrs.**

**References:**

Author	Title	Year of Publication	Place of Publication & Publisher
V. A. Shenai	Textile Fibres	1996	Sevak Publications , 306, Shree Hanuman Industrial Estate, G. D. Ambedkar Road, Wadala, Mumba-31
V. A. Shenai	Technology of Dyeing	1996	---Do----
V. A. Shenai	Technology of Printing	1996	---Do----
V. A. Shenai	Technology of Finishing	1996	---Do----
J. T. Marsh	Textile Finishing	1986	B.I. Publication, New Delhi.
Nalankilli	Textile Finishing	1998	Digital Impressions, 288-N, Salem, Main Road, Komarpalayam 638 183

**Course Name : Diploma in Fashion & Clothing Technology**

**Course Code : DC**

**Semester : Fourth**

**Subject Title : Knitted Fabric Design & Technology**

**Subject Code : 17459**

**Teaching and Examination Scheme:**

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
03	--	02	03	100	--	25#	25@	150

**NOTE:**

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 100 and to be entered in mark sheet under the head Sessional Work (SW).**

**Rationale:**

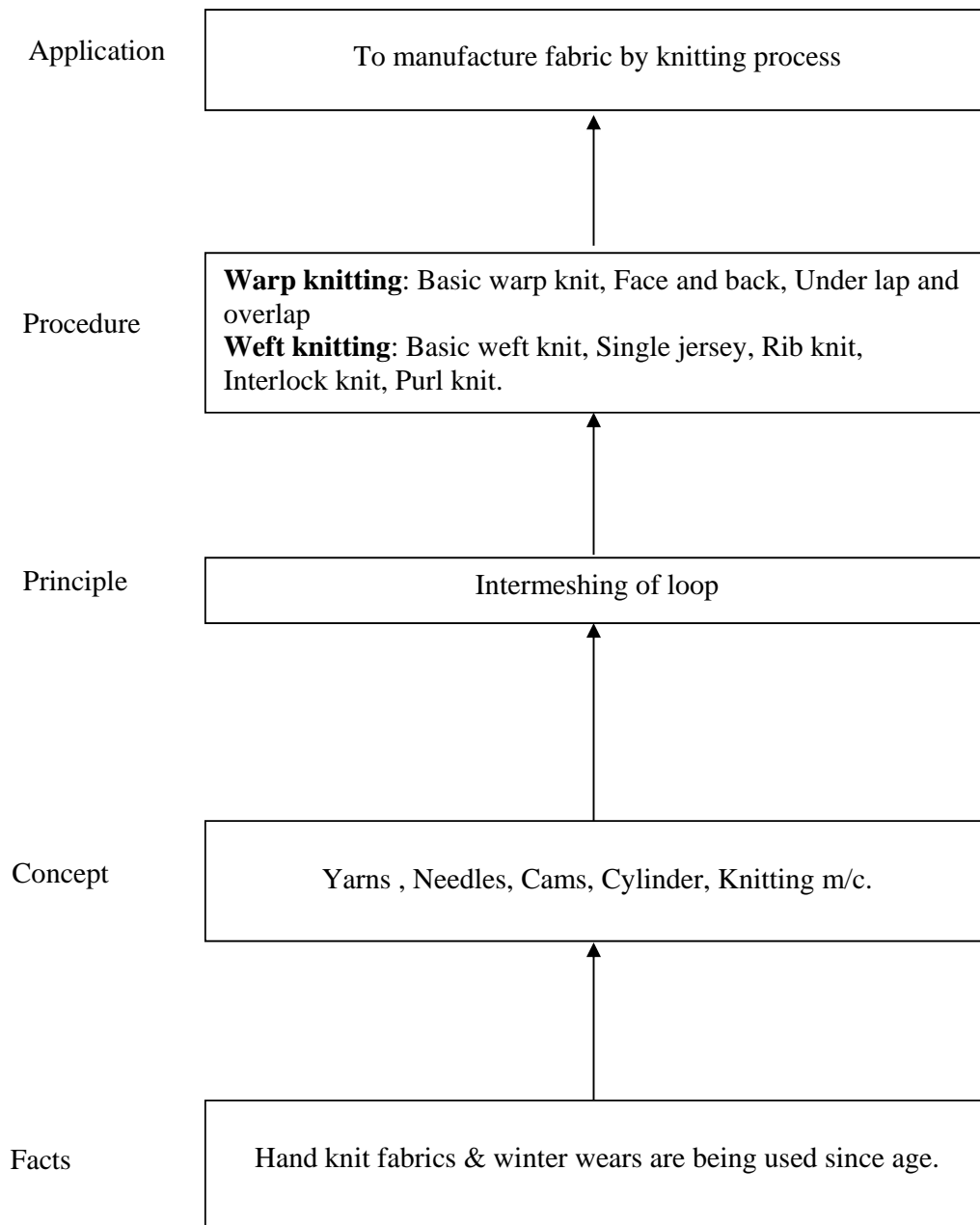
Knitted fabrics due to its stretchable and favorable properties are in good demand and it is expected to rise day by day. Knitted fabrics find uses for under garments, sports wear, summer and winter dresses, etc. to large extent. This sector is now diversifying into synthetics, domestic fabric, carpets, technical and geotextiles.

**General Objectives:**

The student will be able to,

- a. Understand Warp & Weft Knitting machine.
- b. Identify different knitted structures.
- c. Understand pattern cutting & sewing of knitted garments.

**Learning Structure:**



**Detailed Contents:**

Chapter No.	Contents	Hours	Marks
1	<p><b>Topic 1.</b> Introduction of Knitting Process  <b>Specific objective:</b> The student will able to</p> <ul style="list-style-type: none"> <li>• To define knitting process</li> <li>• To interpret the difference between woven &amp; knitted fabric.</li> <li>• Classify different knitting machine.</li> </ul> <p><b>Content:-</b>            1.1) Definition of warp &amp; weft knitting.            1.2) Various ways of fabric manufacture            1.3) Reasons for the growth of knitting            1.4) Properties of knits as compared to woven            1.5) Definition of basic terms in knitting (Course, Wales, Stitch Length, Needle Loop, Face Loop, Back loop, Course Length)            1.6) Classification of weft knitting machines</p>	04	10
2	<p><b>Topic 2.</b> Weft knitting – Single jersey m/c.  <b>Specific objective:</b> The student will able to</p> <ul style="list-style-type: none"> <li>• Identify different parts of knitting and their function</li> <li>• Describe intermeshing process for knitting</li> <li>• Identify type of knitted fabric</li> </ul> <p><b>Content:</b>            2.1) Different zones in circular weft knitting (creel, knitting, take up zone)            2.2) Details of creel zone                - Types of creel, their advantage &amp; disadvantage,                - Details of positive feeder – function &amp; its types                - Concept of multifeeder machines            2.3) Details of knitting zone                - Functional elements of knitting machine                - Types of needle &amp; its comparison                - Knitting action of different needles                - Sinker &amp; its function                - Cylinder :Gauge, pitch, Diameter                - Cams                - Feeder, feeder density            2.4) Details of take-up zone                - Fabric spreader            2.5) Single jersey fabric                - Structure, Loop Diagram                - Knitting cycle for single jersey machine                - Characteristic features of single jersey fabric</p>	05	12
3	<p><b>Weft knitting Machines-double jersey</b>  <b>Specific objectives:</b> The student will able to</p> <ul style="list-style-type: none"> <li>• Classify different type of knitted fabrics.</li> <li>• Operate knitting machine.</li> <li>• Interpret different knitted fabric structure for appropriate use</li> <li>• Select the procedure of knitted fabric production.</li> </ul>	05	12

	<p><b>Content:</b></p> <p>3.1) Types of double jersey fabric (Rib, Interlock, Purl )</p> <p>3.2) Rib knitting machine-Structure, loop diagram, machine features, Needle arrangement, trick arrangement, knitting cycle.</p> <p>3.3) Interlock machine- Structure, loop diagram, machine features, needle &amp; trick arrangement, Cam arrangement.</p> <p>3.4) Purl knitting machine- loop diagram, needle arrangement, principle of needle transfer.</p> <p>3.5) Characteristic of Rib, interlock &amp; purl fabrics</p>		
4	<p><b>Weft knitted fabrics-design aspects</b></p> <p><b>Specific objective:-</b>The student will able to</p> <ul style="list-style-type: none"> <li>• Represent the knitted fabric on paper.</li> <li>• Draw different knitted fabric structure.</li> <li>• Differentiate the knitted fabrics.</li> <li>• Estimate yarn required for knitted fabric.</li> </ul> <p><b>Content:</b></p> <p>4.1) Basic structure of weft knitted fabrics.</p> <p>4.2) Different types of stitches like knit, tuck, miss, purl, Loop diagram of tuck &amp; float stitch, Effect of tuck &amp; float stitch on fabric.</p> <p>4.3) Representation of stitches on point paper (verbal, line diagram, symbolic, diagrammatic notation)</p> <p>4.4) Concept of design, needle order and cam order with example</p> <p>4.5) Derivates of single jersey fabric- La-coste, cross tuck, satin, jersey blister, thick fleece</p> <p>4.6) Derivatives of Rib structure-milano rib, double pique, pique poplin, evermonte</p> <p>4.7) Derivatives of Interlock structures- punto- di -roma, ottoman rib, texi pique.</p>	04	12
5	<p><b>Weft knitting – Jacquard &amp; advanced knitting</b></p> <p><b>Specific objective:-</b>The student will able to</p> <ul style="list-style-type: none"> <li>• Identify different knitted structure.</li> <li>• Select appropriate technique for knitted fabric.</li> </ul> <p><b>Content:</b></p> <p>5.1) Need of jacquard with example</p> <p>5.2) Concept of Relanit technique</p> <p>5.3) Concept of stripper with example</p> <p>5.4) Concept of plush (pile) fabric.</p> <p>5.5) Concept of fleecy fabric</p> <p>5.6) Stitch length and its importance</p>	05	10
6	<p><b>Weft knitting – Quality and calculations.</b></p> <p><b>Specific objective:</b> The student will able to</p> <ul style="list-style-type: none"> <li>• Calculate knitting production in Kg/Day or Meters/day</li> <li>• Estimate yarn requirement for a particular production</li> <li>• Calculate no. of machine required for designed output</li> </ul> <p><b>Content :</b></p> <p>6.1) Weft knit fabric Defects(Causes &amp; Remedies)</p> <p>6.2) Tests for weft knit Quality</p> <p>6.3) Concept of Spriality &amp; Barre</p>	04	12

	6.4) Production calculations GSM Calculation Tightness factor		
7	<p><b>Warp Knitting..... 14 marks</b></p> <p><b>Specific objective :</b> The student will able to</p> <ul style="list-style-type: none"> <li>• Describe the process of warp knitting</li> <li>• Compare different knitting technologies.</li> <li>• To differentiates flat knitting and circular knitting.</li> <li>• To understand mechanism of flat knitting.</li> </ul> <p><b>Content:-</b></p> <p>7.1) Warp knitting – General, Loop structure of warp knit fabric, compersion between warp &amp; weft knitting.</p> <p>7.2) Elements of warp knitting - Raschel machine Passage of yarn through knitting machine - Raschel machine Knitting cycle for warp knit fabric.- Raschel machine</p> <p>7.3) Warp knitting - Fabric structure, chain notation, Single bar fabric structures, Applications of warp knit fabrics</p> <p><b>Sub topic:-7.1 Flat Bed knitting.....8 marks</b></p> <p>7.1.1) Introduction of flat knitting 7.1.2) Types and classification 7.1.3) Knitting elements 7.1.4) Yarn path in flat knitting machine Knitting cycle</p>	13	22
8	<p><b>Knit Wear Tech. - Only related to knitted Garment Construction</b></p> <p><b>Specific objective:</b> The student will able to</p> <ul style="list-style-type: none"> <li>• To understand pattern making for knitted fabric.</li> <li>• To understand procedure of garmenting.</li> </ul> <p><b>Content:</b></p> <p>8.1) Pattern making, block pattern 8.2) Fabric spreading 8.3) Cutting of fabric – objects &amp; methods 8.4) Production of sample garment 8.5) Fitting problems &amp; correction for patterns with and without darts 8.6) Study of Planning, drawing and reproduction of the knit garment.</p>	08	10
<b>Total</b>		<b>48</b>	<b>100</b>

**Practical:****Skills to be developed:****Intellectual Skills:**

- 1) The functions of knitting mechanisms.
- 2) Different knitted fabric structures.
- 3) The designs of needles and cams.

**Motor Skills:**

- 1) Identify different knitted fabric structures.
- 2) Draw diagrams of needles and cams.

**List of Practical's:**

- 1) Study of passage of yarn through Single jersey circular knitting m/c.
- 2) Study of passage of yarn through flat knitting m/c.
- 3) Study of passage of yarn through double jersey machine..
- 4) Introduction of fabric analysis single jersey fabric
- 5) Fabric analysis of single jersey knitted fabric
- 6) Fabric analysis of double jersey knitted fabric - Rib.
- 7) Fabric analysis of double jersey knitted fabric - Interlock
- 8) Fabric analysis of single jersey knitted fabric-derivative
- 9) Study of effect of stitch length on knitted fabric.
- 10) Visit to a modern knitting unit
- 11) Visit is a garment manufacturing unit.

**List of Assignments:**

1. Find the needle order & cam order for different knitted structure.

**Learning Resources:****1. Books:**

Sr. No	Title	Author	Place of Publication & Publisher
1	Knitting Technology	David Spencer	Woodhead Publishing - UK
2	Introduction to clothing manufacture	Terry Cooklin	Om book Services New-Delhi
3	The Tech. of clothing manufacture	Havold carr & Barbara Lathan	Blackwell Science Ltd . UK
4	Warp knit engineering.	A Reinfeld	Blackwell Science Ltd . UK
5	Warp knitting production	S. Raj	Varlag mellinadtext Heidelberg GMBH
6	Warp knitting Technology	D. F. Paling	Columbine Press Ltd, Manchester
7	Knitting Technology	D. B. Ajgaonkar	Universal Publishir Mumbai
8	Knitting Technology	Iyer & Mervinger	Om book Services New-Delhi

**2. CDs, PPTs, Models, Charts etc. :****3. IS, BIS and International Codes:**

1. Reference: ASTM D 3882-85 for fabric skewness.
2. Reference: AATCC 178-1994 for barre.

**4. Websites:**

1. <http://www.shimaseiki.com/>
2. <http://www.kern-liebers.com/>
3. <http://www.groz-beckert.com/>
4. <http://www.knittingindustry.com>



**Course Name : Diploma in Fashion & Clothing Technology**

**Course Code : DC**

**Semester : Fourth**

**Subject Title : Clothing Production Machinery & Equipment**

**Subject Code : 17460**

**Teaching and Examination Scheme:**

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
04	--	04	03	100	50#	--	25@	175

**NOTE:**

**Two tests each of 25 marks are to be conducted as per the schedule given by MSBTE.**

**Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional work (SW).**

**Rational:**

The Garments manufacturing process require numerous machineries for their manufacture. Also certain super-specialized machineries are used in this filed. This subject introduces these machineries and uses, their assemblies & parts in detail.

**General Objectives:**

To impart knowledge in students about garment production Machinery & its detail, including parts & accessories.

**Contents: Theory**

<b>Chapter</b>	<b>Contents</b>	<b>Marks</b>	<b>Hours</b>
1	<p><b>Marker Making &amp; Spreading</b> Specific Objectives: to know marker planning &amp; spreading process in mass production</p> <p><b>Fabric Packages</b></p> <ul style="list-style-type: none"> <li>• Types of fabric packages,</li> <li>• Effect of type on spreading method.</li> </ul> <p><b>Marker Making</b></p> <ul style="list-style-type: none"> <li>• Definition,</li> <li>• Types of marker( block, continuous, half garment, whole garment, single size, multiple size(sectional, interlocked, mixed size)</li> <li>• Factors affecting marker efficiency and quality,</li> <li>• Equipments used for making a marker.(Manual, pantograph, Computerized)</li> </ul> <p><b>Spreading</b></p> <ul style="list-style-type: none"> <li>• Definition</li> <li>• Types of spread(Single, multiple, stepped ply) and forms of spreading,(One way, face to face and two way)</li> <li>• Requirements for fabric spreading- methods (Manual, Spreading carriage, automatic spreading).</li> <li>• Equipments.</li> </ul>	14	08
2	<p><b>Cutting Machines</b> Specific Objectives: to understand construction &amp; working of various cutting m/cs</p> <ul style="list-style-type: none"> <li>• Introduction, Types &amp; requirements of quality cutting</li> <li>• Portable knives (straight knife, round knife)</li> <li>• Stationary knives (band knife, die cutting machine)</li> <li>• Specialised Knives – Notchers , drills ,</li> <li>• Defects in cutting &amp; their remedies.</li> </ul>	16	10
3	<p><b>Needles</b> Specific Objectives: to know various parts &amp; types of sewing m/c needles</p> <ul style="list-style-type: none"> <li>• Types</li> <li>• Parts</li> <li>• Functions</li> <li>• Needle size.</li> <li>• Defects due to faulty needles</li> </ul>	10	05
4	<p><b>Sewing Machine</b> Specific Objectives: to understand the basic parts &amp; their function in sewing m/cs</p> <ul style="list-style-type: none"> <li>• Basic parts</li> <li>• Needle</li> <li>• Bobbin shuttle</li> <li>• Loopers</li> <li>• Loop spreader</li> <li>• Threading figure</li> <li>• Throat plate</li> </ul>	16	12

	<ul style="list-style-type: none"> <li>• Tongue chaining plate</li> <li>• Takeoffs device</li> <li>• Tension setter</li> <li>• Feed systems</li> <li>• pressure foot,</li> <li>• feed dog</li> <li>• Reverse feed</li> <li>• Stitch length selection</li> <li>• SNLS machine-Study of work aids for sewing</li> </ul>		
5	<p><b>Over Lock Machines</b> Specific Objectives: to know the construction &amp; working of over lock m/c</p> <ul style="list-style-type: none"> <li>• Types of Machine</li> <li>• Threading Diagram</li> <li>• Needle Height</li> <li>• Feed dog Height Angles</li> <li>• Position of upper &amp; Lower Knife, Loopers</li> </ul>	10	08
6	<p><b>Flat Lock Machine</b> Specific Objectives: to know the construction &amp; working of flat lock m/c</p> <ul style="list-style-type: none"> <li>• Types</li> <li>• Threading steps with diagram</li> <li>• Stitch sequence</li> <li>• Needle height</li> <li>• Differential feed ratio</li> <li>• Loopers</li> </ul>	06	05
7	<p><b>Work Aid &amp; Fusing, Pressing m/cs</b> Specific Objectives: to understand concept of work aids &amp; attachments. Also to the fusing &amp; pressing for the apparels.</p> <ul style="list-style-type: none"> <li>• Attachments of sewing machine</li> <li>• Rollers</li> <li>• Guides</li> <li>• Folders,</li> <li>• Compacting pressure foot</li> <li>• Hemmer</li> <li>• Placket making</li> <li>• Pocket making attachments</li> <li>• Collar turning machine</li> <li>• Garment folding machine</li> </ul> <p><b>Fusing</b></p> <ul style="list-style-type: none"> <li>• Objectives &amp; Requirements</li> <li>• Types (Fabrics used and Resins)</li> <li>• Requirements(Time, Temperature, Pressure)</li> <li>• Equipment(electric iron, movable flat beds, conveyor, carasol)</li> <li>• Methods of application of resin</li> </ul> <p><b>Pressing Machines</b></p> <ul style="list-style-type: none"> <li>• Terms(Under, Mouldings, Top Pressing)</li> <li>• Types (Dry, Steam, High Pressure Steam)</li> <li>• Accessories (Ironing Board, Sleeve Board, Bucks)</li> </ul>	16	10

	<ul style="list-style-type: none"> <li>Equipments (Mechanical, Steam, Tunnel)</li> </ul>		
8	<b>Modern Sewing Machines</b> Specific Objectives: to understand modernization in sewing m/cs & to learn some modern m/cs. <ul style="list-style-type: none"> <li>Computer aid</li> <li>Button hole, button sewing,</li> <li>Bar tack,</li> <li>Blind stitch machine.</li> <li>Sewing problems e.g. Seam puckering</li> </ul>	12	06
<b>TOTAL</b>		<b>100</b>	<b>64</b>

Sr. No.	Practical
1	Study the various types & sizes of needles used for different machines & different fabric. 4 Hrs
2	Study the major parts of sewing machines 8 Hrs.
3	Study of sewing threads. 4 Hrs.
4	Study the 3-thread, 4-thread & 5-thread over lock sewing machine 8 Hrs.
5	Study feed of the arm machine 8 Hrs.
6	Study the attachments for sewing machine 8 Hrs.
7	Study the various types of cutting machines 4 Hrs.
8	Study the buttonhole & button stitch m/c 8 Hrs.
9	Study the marker planning, fabric spreading, drawing marker & cutting for any one type of basic garment. 8 Hrs.
10	Study of vacuum pressing table 4 Hrs.

**Learning Resources:****Books:**

Author	Title	Year of Publication	Place of Publication & Publisher
Harold Carr & Barbara Latham	The Technology of clothing Manufacture	1994	Om book Service. England
R.M. & Webster J.	Stitches & Seams	1998	Manchester, England
Shaeffer Claire	Sewing for Apparel Industry	2001	Prentice Hall, New Jarsey, USA
Singer cy De cross	Sewing Lingerie	1991	Incorporated USA

**Course Name : Diploma in Fashion & Clothing Technology**

**Course Code : DC**

**Semester : Fourth**

**Subject Title : Indian Western Costume**

**Subject Code : 17461**

**Teaching and Examination Scheme:**

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
04	--	--	03	100	--	--	--	100

**NOTE:**

- **Two tests each of 25 marks to be conducted as per the schedule given by MSBTE.**
- **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work (SW).**

**Rational:**

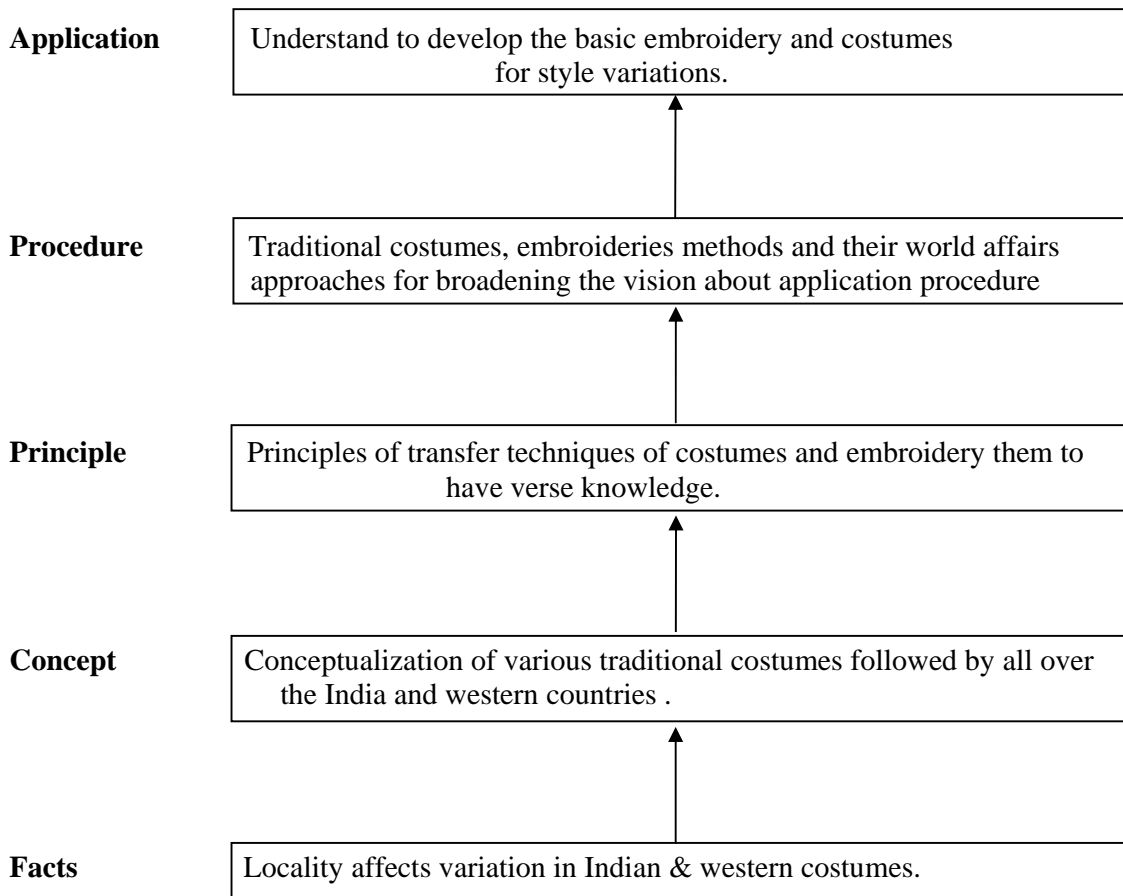
In India as well as in the western countries, there is vast enhancement and diversities in the dimension of costumes which depend on religion, climate, attitude, ethical values, social lifestyle and prosperity.

**General Objectives:**

The student will be able to,

Learning the costume fundamentals their transition relating to major civilizations of the world.

**Learning Structure:**



**CONTENTS: Theory**

<b>Chapter</b>	<b>Name of the Topic</b>	<b>Hour</b>	<b>Marks</b>
1	<p><b>History of western costume</b> Specific Objectives:</p> <ul style="list-style-type: none"> <li>➤ Students will be able to history of western costume</li> <li>➤ Students will be able to men's of western costume</li> <li>➤ Students will be able to women's of western costume</li> <li>➤ Students will be able to accessories of western costume</li> </ul> <p>Contents:</p> <p>1.1 Europe costume in 20<sup>th</sup> century</p> <ul style="list-style-type: none"> <li>• Men's wear</li> <li>• Women's wear</li> <li>• Accessories</li> </ul> <p>1.2 Baltic costume</p> <ul style="list-style-type: none"> <li>• Men's wear</li> <li>• Women's wear</li> <li>• Accessories</li> </ul> <p>1.3 Asia costume</p> <ul style="list-style-type: none"> <li>• Men's wear</li> <li>• Women's wear</li> <li>• Accessories</li> </ul> <p>1.4 Byzantine costume</p> <ul style="list-style-type: none"> <li>• Men's wear</li> <li>• Women's wear</li> <li>• Accessories</li> </ul>	10	20
2	<p><b>History of Western Costume</b> Specific Objectives:</p> <ul style="list-style-type: none"> <li>➤ Students will be able to history of western costume</li> <li>➤ Students will be able to men's of western costume</li> <li>➤ Students will be able to women's of western costume</li> <li>➤ Students will be able to accessories of western costume</li> </ul> <p>Contents:</p> <p>2.1 French costume in 20<sup>th</sup> century</p> <ul style="list-style-type: none"> <li>• Men's wear</li> <li>• Women's wear</li> <li>• Accessories</li> </ul> <p>2.2 American costume in 20<sup>th</sup> century</p> <ul style="list-style-type: none"> <li>• Men's wear</li> <li>• Women's wear</li> <li>• Accessories</li> </ul> <p>2.3 Japanese costume</p> <ul style="list-style-type: none"> <li>• Men's wear</li> <li>• Women's wear</li> <li>• Accessories</li> </ul> <p>2.4 China costume</p> <ul style="list-style-type: none"> <li>• Men's wear</li> <li>• Women's wear</li> <li>• Accessories</li> </ul>	12	20

3	<p><b>History of Indian costume</b></p> <p>Specific Objectives:</p> <ul style="list-style-type: none"> <li>➤ Students will be able to history of Indian costume</li> <li>➤ Students will be able to men's of Indian costume</li> <li>➤ Students will be able to women's of Indian costume</li> <li>➤ Students will be able to accessories of Indian costume</li> </ul> <p>Contents:</p> <p>3.1 Introduction to historic costumes</p> <ul style="list-style-type: none"> <li>• Male costumes during 200 B.C.</li> <li>• Female costumes during 200 B.C.</li> <li>• Male costumes during 100 A.D.to 1100 A.D.</li> <li>• Female costumes during 100 A.D. to 1100 A.D</li> </ul> <p>3.2 Indus valley civilization costumes</p> <ul style="list-style-type: none"> <li>• Male attire</li> <li>• Female attire</li> </ul> <p>3.3 Mauryan and Sunga period costumes</p> <ul style="list-style-type: none"> <li>• Male attire</li> <li>• Female attire</li> </ul> <p>3.4 Gupta period costume</p> <ul style="list-style-type: none"> <li>• Male attire</li> <li>• Female attire</li> </ul> <p>3.5 Mughal period costume</p> <ul style="list-style-type: none"> <li>• Male attire</li> <li>• Female attire</li> </ul>	10	20
4	<p><b>Regional Costumes and Jewelry in India</b></p> <p>Specific Objectives:</p> <ul style="list-style-type: none"> <li>➤ Students will be able to men's of Indian costume</li> <li>➤ Students will be able to women's of Indian costume</li> <li>➤ Students will be able to accessories of Indian costume</li> </ul> <p>Contents:</p> <p>4.1 Kashmir costume</p> <ul style="list-style-type: none"> <li>• Male costumes</li> <li>• Female costumes</li> <li>• Jewelry</li> </ul> <p>4.2 Punjab costume</p> <ul style="list-style-type: none"> <li>• Male costumes</li> <li>• Female costumes</li> <li>• Jewelry</li> </ul> <p>4.3 Rajasthan costume</p> <ul style="list-style-type: none"> <li>• Male costumes</li> <li>• Female costumes</li> <li>• Jewelry</li> </ul> <p>4.4 Gujarat costume</p> <ul style="list-style-type: none"> <li>• Male costumes</li> <li>• Female costumes</li> <li>• Jewelry</li> </ul> <p>4.5 Bengal costume</p> <ul style="list-style-type: none"> <li>• Male costumes</li> </ul>	12	15



	<ul style="list-style-type: none"> <li>• Female costumes</li> <li>• Jewelry</li> </ul> <p>4.6 Karnataka costume</p> <ul style="list-style-type: none"> <li>• Male costumes</li> <li>• Female costumes</li> <li>• Jewelry</li> </ul>		
5	<p><b>Indian Traditional Regional Embroidery</b></p> <p>Specific Objectives:</p> <ul style="list-style-type: none"> <li>➤ Students will be able to Indian traditional embroidery</li> <li>➤ Students will be able to Indian fabrics, stitches</li> <li>➤ Students will be able to Indian motifs, colors</li> </ul> <p>Contents:</p> <p>5.1 Kashmiri of Kashmir</p> <ul style="list-style-type: none"> <li>• Motifs</li> <li>• Colors</li> <li>• Fabric</li> <li>• Stitches</li> </ul> <p>5.2 Kantha of Bengal</p> <ul style="list-style-type: none"> <li>• Motifs</li> <li>• Colors</li> <li>• Fabric</li> <li>• Stitches</li> </ul> <p>5.3 Kasuti of Karnataka</p> <ul style="list-style-type: none"> <li>• Motifs</li> <li>• Colors</li> <li>• Fabric</li> <li>• Stitches</li> </ul> <p>5.4 Phulakari of Punjab</p> <ul style="list-style-type: none"> <li>• Motifs</li> <li>• Colors</li> <li>• Fabric</li> <li>• Stitches</li> </ul> <p>5.5 Kathiawar and Kutch of Gujarat</p> <ul style="list-style-type: none"> <li>• Motifs</li> <li>• Colors</li> <li>• Fabric</li> <li>• Stitches</li> </ul>	10	12
6	<p><b>Costumes for Special Purpose</b></p> <p>Specific Objectives:</p> <ul style="list-style-type: none"> <li>➤ Students will be able to theatre costumes</li> <li>➤ Students will be able to sports costumes</li> <li>➤ Students will be able to factors influencing costume changes</li> <li>➤ Students will be able to world affairs</li> </ul> <p>Contents:</p> <p>6.1 Theatre costume</p> <ul style="list-style-type: none"> <li>• Fabric</li> <li>• Accessories</li> </ul> <p>6.2 Sports costume</p>	10	13

	<ul style="list-style-type: none"> <li>• Fabric</li> <li>• Accessories</li> </ul> 6.3 Factors influencing costume changes <ul style="list-style-type: none"> <li>• Style</li> <li>• Religion</li> <li>• Climate</li> <li>• Attitude</li> <li>• Lifestyle</li> </ul> 6.4 World Affairs <ul style="list-style-type: none"> <li>• Economical</li> <li>• Geographical</li> <li>• Socio-political</li> </ul>		
<b>Total</b>		<b>64</b>	<b>100</b>

**Practical:****Skills to be developed:****Intellectual Skills:****Motor Skills:****Learning Resources:****1. Books:**

<b>Sr. No.</b>	<b>Author</b>	<b>Title</b>	<b>Publisher</b>
1	G.S. Ghurge	Indian Costumes	Mahajan Publishers, Ahmedabad
2	Savithri Pandit	Indian Embroidery	Mahajan Publishers, Ahmedabad
3	Contini Mila	Fashion from Ancient Egypt to the present day	West Duxbury Manchester
4	Shailaja D. Naik	Traditional Embroideries Of India	A.P.H.Publishing Corporation, New Delhi
5	Barfoot Audrey	Everyday costumes in Britain	Woodhead Publishing Cambridge,U.K.
6	Pistolese, Rojara	History & Fashion	Woodhead Publishing Cambridge,U.K.

**2. CDs, PPTs, Models, Charts etc. :****3. IS, BIS and International Codes:****4. Websites:**

**Course Name : Diploma in Fashion & Clothing Technology**

**Course Code : DC**

**Semester : Fourth**

**Subject Title : CAD in Textile Designing**

**Subject Code : 17049**

**Teaching and Examination Scheme:**

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
--	--	02	--	--	--	--	25@	25

**Rational:**

This subject will give specific application of the developed concept in developing textile design. Innovation, creation with the help of high performance tool of CAD will help the user to transfer his creativity within no time.

**General Objectives:**

Students will learn different concepts and application of those concepts in developing textile designs. How ideas are formed and implemented in the process of design development, Human skills and computer skills will be utilized for the formation of innovative designs as per the requirement of current market trends are concerned. History to modern design trends will be exposed to the students. Students will have hands on experience of developing designs for men, women and kids as well as home textiles.

**Detailed contents of Theory topics to be taught during practical hours:**

**Topic No.1** \* Selection of thread spacing & thread diameter in the warp and weft directions for shirting, sarees and home textiles.

- Selection of colours of warp and weft as per the end use
- Select the weaves as per the requirements
- Observe simulation & modify it if necessary

**Topic No.2** \* Use of different tools for design development in printing

- Image development and colour processing for printed design
- Development of half-tone design
- Development of different designs for various end uses in printing.

**Topic No.3** \* Use of software for creating various woven & printed designs and storing the same for development of design library for further reference.

**Practice:**

Sr. No.	Practical
1	A) Development of textile design with weaving software (12 hrs) 1) Development of stripes shirting design 2) Development of checks shirting design 3) Development of extra warp design 4) Development of extra weft design 5) Development of saree design with body border and pallo 6) Development of home textiles
2	B) Development of textile design with print software (12 hrs.) 1) Development of ladies dress material design 2) Development of all over scarce design 3) Development of kinds wear design 4) Development of shirting design – stripes 5) Development of shirting design checks 6) Development of home textiles
3	C) Preparation and development of design library for woven & printed design. (8 hrs.)

**References:****Books:**

<b>Author</b>	<b>Title</b>	<b>Year of Publication</b>	<b>Place of Publication &amp; Publisher</b>
V.A. Shenal	Wonder weaves System	1989	Universal Publishers, Mumbai
Grovisicki	Ned graphics	1988	Manchester, UK
Nisbet	Colorado International rued	1996	Thianville Paris
Cooklin Gerry	The Design Scope company	1992	Kempen
V.A. Shenal	Design deskpru	1990	Universal Publishers, Mumbai

**Course Name : Diploma in Fashion & Clothing Technology**

**Course Code : DC**

**Semester : Fourth**

**Subject Title : Professional Practices-II**

**Subject Code : 17050**

**Teaching and Examination Scheme:**

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
--	--	03	--	--	--	--	50@	50

**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 their attitude, in addition to basic technological concepts.

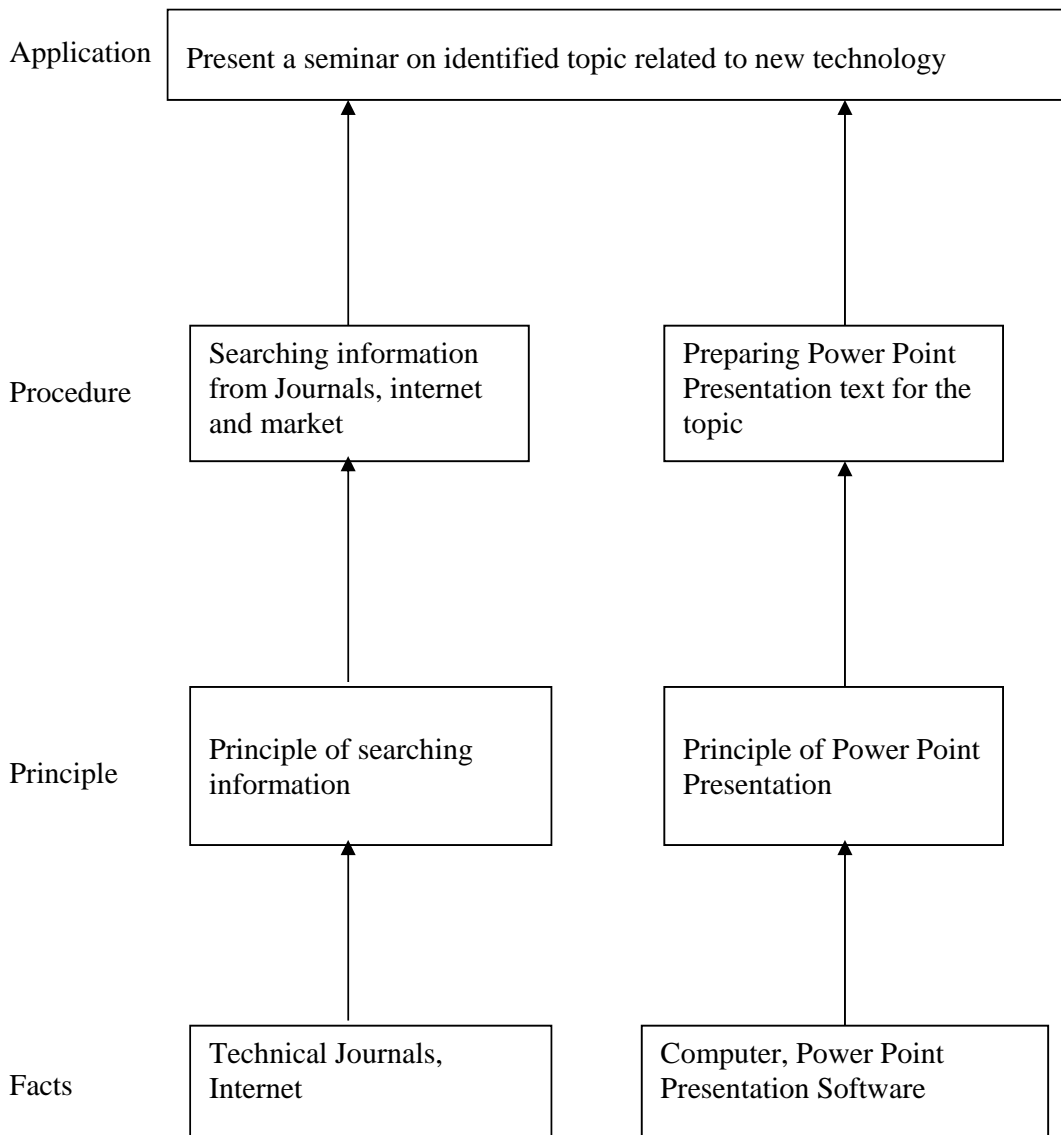
The purpose of introducing professional practices is to provide opportunity to students to undergo activities which will enable them to develop confidence. Industrial visits, expert lectures, seminars on technical topics and group discussion are planned in a semester so that there will be increased participation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

**Objectives:**

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. Prepare a report on industrial visit, expert lecture.

**Learning Structure:**



Sr. No.	Activities	Hours
1	<p><b>Industrial Visits</b>            Structured industrial visits be arranged and report of the same shall be submitted by the individual student, to form a part of the term work.            The industrial visits may be arranged in the following areas / industries :</p> <ol style="list-style-type: none"> <li>1) Garment industry</li> <li>2) Apparel marketing</li> <li>3) Apparel merchandising</li> <li>4) Garment chemical processing industry</li> <li>5) Quality Testing laboratories of Garments in industries or reputed organizations</li> <li>6) Fashion Merchandising</li> <li>7) Fashion Marketing</li> <li>8) Manufacturing organizations for observing various manufacturing processes of Yarn &amp; Fabric Production.</li> <li>9) Knitting Industry.</li> </ol>	14
2	<p><b>Lectures by Professional / Industrial Expert lectures to be organized from any two of the following areas:</b></p> <ol style="list-style-type: none"> <li>1) Interview Techniques.</li> <li>2) Modern machines in garmenting</li> <li>3) Applications of CAD/CAM in fashion &amp; apparel manufacturing.</li> <li>4) Testing of fabrics for apparel manufacturing.</li> </ol>	06
3	<p><b>Information Search:</b>  <b>Information search can be done through manufacturer's catalogue, websites, magazines, books etc. and submit a report any one topic.</b>  <b>Following topics are suggested:</b></p> <ol style="list-style-type: none"> <li>1) Different types of needles.</li> <li>2) CAD/CAM Software.</li> <li>3) Accessories for Garments.</li> <li>4) Apparel production process.</li> <li>5) Fashion Designing.</li> <li>6) Fashion Merchandising.</li> </ol>	08
4	<p><b>Seminar:</b>            Seminar topic shall be related to the subjects of fourth semester. Each student shall submit a report of at least 10 pages and deliver a seminar (Presentation time – 10 minutes)</p>	08
5	<p><b>Mini Project / Activities: (any one)</b></p> <ol style="list-style-type: none"> <li>1) Stitching a trouser /woman's wear/kid's wear with own pattern cutting.</li> <li>2) Development of different design on a CAD Software.</li> <li>3) Collection of different accessories used for garments</li> </ol>	12
<b>Total</b>		<b>48</b>



**Course Name : Diploma in Fashion & Clothing Technology**

**Course Code : DC**

**Semester : Fourth**

**Subject Title : Industrial Training**

**Subject Code : 17051**

**Teaching and Examination Scheme:**

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
--	--	**	--	--	--	--	--	--

**\*\* Industrial training for six weeks to be completed during summer break after Fourth semester.** Assessment to be done in Fifth Semester

**Objectives:**

- Experience the industrial environment for textile industrial processes, equipment & practices.
- Collect data about Plant lay out, equipment and machines-specifications and working available in different sections and collect data.
- Experience operation of machines and process parameters of spinning and weaving departments for the target production and collect data.
- Appreciate factory utilities – power water illumination men and material movement, pollution control, industrial safety etc.
- Carryout the material testing at different stages of yarn and fabric production for quality.
- Experience maintenance schedules of all the equipment and collect information on the effects of negligence of maintenance.
- Diagnose problems and find solutions to problems related with operation, and maintenance of equipment.
- Study the organization structure, job description, job specifications, promotional schemes, motivational strategies, etc.
- Collect data on production incentives, methods study and time & motion studies.
- Critical study of all activities with a view to find the areas for improvement.
- Devise solution to problem areas.
- Collect information / data for project work and seminars.

However, the detailed list of areas of study, working and data collection has been prepared and is enclosed in **3.5 – Specific area of study and working**. The student should regularly refer to this list and accordingly choose the areas and acquire the knowledge information and skills.

## **GUIDE LINES FOR INPLANT TRAINING**

### **GENERAL INFORMATION OF THE ORGANISATION:**

1. History and Organization.
2. Types of Garment produced.
3. Quantity of Garments produced Per Day
4. Buyer's Information
5. Market: Local / Export.
6. Lay out of all departments with dimensions.
7. Process Flow Chart.

### **GENERAL OBSERVATION OF THE FOLLOWING DEPARTMENTS:**

#### **Training:**

1. Who is head?
2. Training duration
3. Psycho motor Activities
4. Hand eye co-ordination Activities

#### **Merchandising:**

1. Who is head?
2. People / designations involved in- their roles and responsibilities
3. Documents maintained
4. Duties of merchandiser
5. Types of samples to be sent to buyer to get approval.

#### **Production Planning & Control**

1. Who is head?
2. People / designations involved in- their roles and responsibilities
3. Documents maintained
4. Responsibilities
5. Planning of material required to in house including wastages and allowances

#### **Fabric Store:**

1. Who is head?
2. People / designations involved in- their roles and responsibilities
3. Documents maintained
4. Type of Fabric used- Technical specifications if so.

5. Fabric Inspection, Classification of faults.
6. Shade sorting
7. Fabric grading systems- four point/ ten point
8. Quality levels- Acceptation and rejection

**Sampling & CAD:**

1. Who is head?
2. People / designations involved in- their roles and responsibilities
3. Documents maintained
4. Study of Manual / CAD System of pattern making.
5. Types of machines in Sampling Dept.
6. Types of samples prepared.

**Cutting Department:**

1. Who is head?
2. People / designations involved in- their roles and responsibilities
3. Documents maintained
4. No. and types of machines in Cutting Dept.- their technical specification,
5. Study of Manual and Automatic Cutting Machine.
6. Study of Fabric Laying and Cutting Process.
7. Production per shift.
8. Bundling, ticketing, relaying

**Sewing Department:**

1. Who is head?
2. People / designations involved in- their roles and responsibilities
3. Documents maintained
4. No. and types of machines in Sewing Dept.- their technical specification like Speed & Efficiency.
5. No. of lines set and active
6. No. of machines per line.
7. Type of machines in the line.
8. Shift wise productivity and ancillary labor.
9. Transportation of Material.
10. Various production systems followed- linear, skill center
11. Observations at various modules- front, back, collar, cuff, assembly and special operations.
12. Quality inspection at various stages.

**Embroidery:**

1. Who is head?
2. People / designations involved in- their roles and responsibilities
3. Documents maintained
4. No. and types of machines in Embroidery Dept.- their technical specification like Speed & Efficiency.

**Finishing (Checking, Button Sewing & Buttonhole, Inspection, Washing, Pressing, Packing, Dispatch):**

1. Who is head?
2. People / designations involved in- their roles and responsibilities
3. Documents maintained
4. No. and types of machines in Finishing Dept.- their technical specification like Speed & Efficiency.
5. Defects in Garments and Solutions.
6. Type of pressing- form/ flatbed pressing
7. Type of packing for Local and Export.
8. Type of Storage/ Warehousing/ Dispatch

**Quality Control Department:**

1. Study of Testing Machines, Calibration of machines.
2. Department wise Quality Assurance activities, various studies, Audit.
3. Quality Parameters obtained.
4. Norms followed.
5. Quality Management Programs like TPM, KAIZEN etc.

**Finance department:**

The following information can be gathered if possible. If the management is reluctant to supply the information, do not to insist upon.

1. Wages and fringe benefits given to the worker of various department.
2. Method of depreciation used for cost purpose.
3. Administrative charges.
4. Cost of Fabric.
5. Cost for Garment Production.
6. Method of Costing.

7. Electricity Cost.
8. Factory Overhead Charges

**Industrial Engineering Department:**

1. Plant layout- frequency of changing
2. Fire handling systems.
3. Water requirements and Water supply system.
4. Generator – Capacity / Type.
5. Electrical units consumed per day
6. Types of wastage.
7. Price of waste obtained in various departments.
8. Control and elimination of wastage.

**Personnel & human resources department:**

1. Duties / responsibilities of various levels of workers.
2. Welfare schemes of workers / staff.
3. Labor handling.
4. Workload of various categories of workers.
5. Sanitation and other human right facilities provided.

**ASSESSMENT STRATEGY**

- a) Report of the industrial training shall be prepared by each student on the basis of his/her actual work done, during the six weeks industrial training.
- b) This report should be submitted in typed and bound form within 1 month after completion of the industrial training.
- c) Industrial training should be assessed equally by external and internal examiners for the oral exam assessment.
- d) Industrial training should be assessed by internal examiner only for term work assessment.