

Government Polytechnic, Pune

'1800B' – Scheme

Programme	Diplôma in ET/CE/EE//ME/MT/CM/IT/DDGM
Programme code	01/02/03/04/05/06/07/ 08 /16/17/21/22/23/24/26
Name of Course	Fundamentals of Drawing
Course Code	DD1101
Prerequisite course code and name	NA

1. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme					
				Theory		Practical		Total Marks	
L	T	P	C	ESE	PA	*ESE	PA		100
00	04	00	04	Marks	00	00	50	50	
				Exam Duration	--	--	2 hrs	--	

(*): OE/POE (Oral Examination/Practical Oral Examination mention whichever is applicable)

Legends: L- lecture-Tutorial/teacher guided theory practice-practical, ESE-End semester examination, PA- Progressive Assessment.

2. RATIONALE

This course provides foundation for drawing, which enables the students to develop skills of illustration. Students can better organize and communicate the idea through drawing skill & combining color effectively. It develops proper execution of elements of drawing to make illustration successful.

3. COMPETENCY

The aim of this course is to attend following industry identified competency through various teaching learning experiences:

Apply Elements of Design to create Textile prints.

4. COURSE OUTCOMES (COs)

The practical experiences associated with this course are to be taught and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

1. Select suitable material for drawing.
2. Demonstrate different types of lines and its shading techniques.
3. Apply textile print and types of repeat by using color media.
4. Use knowledge of forms and shape for creating design.
5. Apply the knowledge of design elements.

5. SUGGESTED PRACTICALS/ EXERCISES

The practicals in this section are PrOs (i.e. sub-components of the COs) to be developed and assessed in the student for the attainment of the competency:

Sr. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Relevant CO	Approximate Hours Required.
1.	I.	Introduction to Drawing Material- Draw motifs and Render it using Dry Material (Pen, Pencil, Stadler, Wax color, etc)	1,4	04
2.		Draw motifs and Render it using Wet Material (Ink, Water color, Poster Color, Marker, etc)	1,4	04
3.	II	Shading Techniques Assignment on Hatching (Pencils-HB,2B,4B,6B)	2,4	02
4.		Assignment on Smudging (Pencils-HB,2B,4B,6B)	2,4	02
5.		Assignment on Stripling (Pencils-HB,2B,4B,6B)	2,4	02
6.		Assignment on Scumbling (Pencils-HB,2B,4B,6B)	2.4	02
7.	III	Elements of Design Draw and Render Specimen Pattern -Line, Color, Texture, Form and Shape.	1,5	04
8.	IV	Conversion of Shape Draw and Render Shape Natural to Geometrical and Natural to Abstract. (Two each)	1,4	04
9.	V	Textile and Repeat Draw a motif and and Repeat to create patterns-Drop, Brick, Triangle, Diamond, Cross and All Over.	1,3	08
10.		Assignment on different Textures –Emboss, Self print, Satin, Net, Fur, Corduroy, Velvet, etc.	1,5	06
11.		Draw and render Embroider pattern using any Ten Stitches.	1,5	04
12.		Illustrate Decorative details-Shirring, Quilting, Tucks, Studding and Patchwork.	1,5	06

13.	VI	Library Formation- (Cutouts from -Magazine/News Paper/ Printouts) Collection of Necklines, Collars, Skirts, Trousers, Sleeves, Jackets. Develop Five basic design using reference.	4,5	10
14.		Draw Button and Buttonhole, Lacing, Zipper, Hook and Eye, Snaps, Loops, Velcro.	1,5	06
Total Hrs				64

Sr.No.	Performance Indicators	Weightage in %
a.	Sketching (Basic)	05
b.	Developing Design	20
c.	Render with suitable Colors Combination.	15
d.	Page Composition and Presentation	05
e.	Completion of Work and Neatness	05
Total		50

6. MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED

The major equipment with broad specification mentioned here will usher in uniformity in conduct of practical, as well as aid to procure equipment by authorities concerned.

Sr.No.	Major Equipment/ Instruments Required	PrO. No.
1	Drawing Table and Drawing Board	1 -14
2	Stationery Material-Drawing Sheets	1 -14
3.	Colouring Material-Poster Color, Staddlers, Markers, etc	1 -14

7. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should conduct following activities in group and prepare reports of about 5 pages for each activity, also collect/record physical evidences for their (student's) portfolio which will be useful for their placement interviews.

- a. Create 10 different textures using household things.
- b. Prepare Collection of trendy prints (Fabric/ Paper cutouts)
- c. Prepare a micro Projects on Types of Dry and Wet material available in market
- d. Collect fabric ornamentation different sample and study its effect with color.
- e. Prepare E-Journal for Embroidery Designs.

8. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

- a. About **15-20% of the topics/sub-topics** which is relatively simpler or descriptive in nature is to be given to the students for *self-directed learning* and assess the

development of the COs through classroom presentations (see implementation guideline for details).

- b. With respect to item No.8, teachers need to ensure to create opportunities and provisions for *co-curricular activities*.
- c. Guide student(s) in undertaking micro-projects.
- d. Correlate subtopics with similar designing software's.
- e. Use proper equivalent analogy to explain different concepts.
- f. Use Flash/Animation to explain various components and operation.
- g. Teacher should ask the students to go through instruction and Technical manuals

9. SUGGESTED LEARNING RESOURCES

S.N.	Title	Author, Publisher, Edition and Year of publication	ISBN Number
1.	The Fundamentals of drawing	Author-Barrington barber Publisher- Barnes and noble books-New York,2002	ISBN-10: 1841932078 ISBN-13: 978-1841932071
2.	The Art of color and design	Author- Matland Graves Publisher- McGraw hill book US (1 January1951)	ISBN-10:0070241198 ISBN-13:978-0070241190
3.	The Elements of Design: Rediscovering Colors, Textures, Forms and Shapes	Author-Loan Oei Publisher- Thames & Hudson ltd. London(4 March 2002)	ISBN-10: 0500283397 ISBN-13: 978-0500283394

10. SOFTWARE/LEARNING WEBSITES

1. <http://en.m.wikipedia.org>
2. <http://facweb.cs.depaul.edu>
3. www.google.com
4. www.pinterest.com
5. <http://youtu.be/ijhNQyF-gg>
6. <http://youtu.be/wOvpkfioveU>

11. PO - COMPETENCY- CO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	0	0	0	0	0	2
CO2	3	0	0	0	0	0	0
CO3	3	0	0	0	0	0	0
CO4	3	0	0	0	0	0	2
CO5	3	0	0	0	0	0	2

	PSO1	PSO2
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CO1	-	-
CO2	-	-
CO3	2	-
CO4	3	3
CO5	3	3

Sign: Name Payal V.Toshniwal (Course Expert /s)	Sign: Name: Chaitrali M Ambikar (I/C Head of Department)
Sign: Name: Shri A.S.Zanpure (CDC)	

Government Polytechnic, Pune

'1800B' – Scheme

Programme	Diploma in ET/CE/EE//ME/MT/CM/IT/DDGM
Programme code	01/02/03/04/05/06/07/08/16/17/21/22/23/24/26
Name of Course	Manufacturing Technology
Course Code	DD-1102
Prerequisite course code and name	-

1. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme					
L	T	P		Theory		Practical		Total Marks	
L	T	P	C	Marks	ESE	PA	*ESE	PA	Total Marks
04	00	04	08	80	20	50	50	200	
				Exam Duration	3 Hrs	1 Hr	3 Hr		

(*):OE/POE (Oral Examination/Practical&Oral Examination mention whichever is applicable)

Legends: L- lecture,T-Tutorial/teacher guided theory practice,P-practical,ESE-End semester examination,PA- Progressive Assesment.

2. RATIONALE

This course gives the fundamental knowledge of various parts of sewing machine and its uses to stitch various components of garments by solving trouble shooting the problems in sewing to maintain quality of garment construction.

3. COMPETENCY

The aim of this course is to attend following industry identified competency through various teaching learning experiences:

- **Stitch various components of a garment.**

4. COURSE OUTCOMES (COs)

The theory, practical experiences and relevant soft skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

- CO1:** Rectify and solve simple problems of the sewing machines.
CO2: Compare Temporary Stitches and Permanent Stitches.
CO3: Construct different seams and finishing techniques on the machines.
CO4: Develop skills of gathers, pleats and tucks on the fabric.
CO5: Identify the types of opening and fasteners according to garments.
CO6: Explain importance of lining and interlining.

5. SUGGESTED PRACTICALS/ EXERCISES

The practicals in this section are PrOs (i.e. sub-components of the COs) to be developed and assessed in the student for the attainment of the competency:

Sr. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Relevant CO	Approximate Hours Required.
1.	I	Demonstration of Parts and Mechanism of sewing machine.	CO1	4
2.	II	Solve the common machines problems and give the remedies.	CO1	4
3.	III	Prepare sample by using Temporary and Permanent stitches	CO2	8
4.	III	Prepare sample by using Various Seams.	CO3	8
5.	IV	Prepare a sample by using tucks, pleats, gathers frills, shirring and dart finishes.	CO4	12
6.	V	Uses of support materials.	CO6	12
7.	VI	Prepare sample by using necklines, plackets, and closures	CO5	16
		Total Hrs		64

S.No.	Performance Indicators	Weightage in %
f.	Set up drafting, cutting and stitching materials.	10
g.	Handling of tools and machines during performing practical	10
h.	Follow Safety measures	10
i.	Accuracy in performance	10
j.	Submission in time	10
Total		50

6. MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED

The major equipment with broad specification mentioned here will usher in uniformity in conduct of practical, as well as aid to procure equipment by authorities concerned.

Sr.No.	Major Equipment/ Instruments Required	PrO. No.
1	Sewing Machines:- Single Needle lock stitch Machine Juki, 5-thread Over lock Machine	1 TO 7
2	Cotton ,poplin fabric, sewing thread, needles, scissors	3 TO 7
3	Various Closures, Paper canvas, press canvas.	3 TO 7

7. THEORY COMPONENTS

The following topics/subtopics should be taught and assessed in order to develop UOs for achieving the COs to attain the identified competency.

Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
UNIT 1. Fundamentals Of Sewing Techniques (Weightage-12 , Hrs- 10)	
1a. Identifying the types of sewing machines. 1b. Select appropriate sewing machine for different end uses. 1c. Describe the mechanism of different parts of sewing machine. 1d. Solve common machine problems. with remedies	1.1 Types of Sewing Machines. 1.1.1 Hand – Operated Sewing Machine. 1.1.2 Treadle Sewing Machine. 1.1.3 Electric Sewing Machine. 1.2 Parts of a Sewing Machine and their Functions. 1.3 Threading the Machine. 1.4 Common Machine Troubles and Remedies- Needle, Stitches / Seams, Thread, Machine, Fabric 1.5 Care of the Machine 1.5.1 Cleaning 1.5.2 Oiling
UNIT 2 Hand Sewing Techniques (Weightage- 14 , Hrs- 10)	

Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
2a. Define Temporary stitches and permanent stitches. 2b.Explain types of basting.	2.1 Temporary Stitches 2.1.1 Even basting 2.1.2 Uneven basting 2.1.3 Diagonal basting 2.1.4 Slip basting 2.1.5 Pin basting 2.2 Permanent Stitches 2.2.1 Running stitch 2.2.2 Hemming 2.2.3.Over sewing
UNIT 3 Seams and Seam Finishes (Weightage- 14 , Hrs- 12)	
3a. Classify the seams. 3b.Select the appropriate seam. 3c.Distinguish between plain seam and flat fell seam. 3d.Explain the uses of seams.	3.1 Definition of seams 3.2 Classification of Seams 3.3 Selection of Seams 3.4 Types of Seam and Uses 3.4.1 Plain Seam 3.4.2 Flat fell seam 3.4.3 French Seam 3.4.4 lapped seam 3.4.5 Bound seam 3.4.6 Counter seam 3.5 Seam Finishes 3.5.1 Pinked Finish 3.5.2 Double stitched Finish 3.5.3 Edge Stitched Finish
UNIT 4 Creating fullness in Garment (Weightage- 16 , Hrs- 12)	
4a.Explain the types of tucks 4b.Classify type of tucks 4c.Differentiate between gathering and shirring	4.1 Tucks:- Pin tucks, Shell or scalloped tucks, Piped or corded tucks, Cross tucks 4.2 Pleats:- Knife pleats, Inverted pleat, Box Pleats 4.3 Gathers:- Gathering by Hand, Gathering by using elastic 4.4 Shirring or Gauging 4.5 Frills or Ruffles 4.6 Godets 4 .7 Smocking 4.8 Dart Finishes -Single Point Darts, French Dart or Fish Dart.
UNIT 5 Various Construction Details and support material. (Weightage- 08 , Hrs- 08)	
5a.Identify support materials. 5b.Compare Lining and Interlining. 5c. Describe Uses Of support	5.1 Lining 5.2 Interlining 5.3 Facing 5.4 Interfacing

Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
materials.	5.5 underlining 5.6 purpose of supporting fabrics 5.6 Shoulder pads 5.7 Can- can 5.8 Cups silica 5.9 Canvas 5.10 Wadding
UNIT 6 Opening For Clothing and Closures (Weightage- 16 , Hrs- 12)	
6a.Classify the plackets 6b.Explain the difference between a kurta placket and one piece placket. 6c.Describe different ways of finishing a neckline 6d.Define term Fasteners. 6e.Explain Functions of Fasteners.	6.1 Plackets:- Types Of Plackets , standards of good plackets. continuous Bound Placket, Two-piece placket, Kurta plackets, 6.2 Pockets and types 6.3 Necklines :- Different methods of finishing necklines 6.4 Selection of Fasteners 6.5 Buttons: Buttons with holes, Shank buttons 6.6 Button Holes 6.7 Hooks and Eyes 6.8 Button Loops 6.9 Snaps 6.10 Fancy Buttons

8. SUGGESTED SPECIFICATION TABLE FORQUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Fundamentals Of Sewing Techniques	10	02	04	06	12
II	Hand Sewing Techniques	10	04	06	04	14
III	Seams and Seam Finishes	12	04	06	04	14
IV	Creating fullness in Garment	12	04	06	06	16
V	Various Construction Details and support material	08	02	02	04	08
VI	Opening For Clothing and Closures	12	04	06	06	16
Total		64	20	30	30	80

9. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should conduct following activities in group and prepare reports of about 5 pages for each activity, also collect/record physical evidences for their (student's) portfolio which will be useful for their placement interviews:

- f. Prepare journals based on practical performed in laboratory.
- g. Study of Innovative Pattern from the Basic Pattern.
- h. Prepare chart of given practical performed in laboratory.

10. SUGGESTED LEARNING RESOURCES

S.N.	Title	Author, Publisher, Edition and Year of publication	ISBN Number
1	Fashion Production Terms	Debble Ann Gioello and Beverly Berke, Fairchild publications	13-978-0870052002 10-0870052004
2	Complete Guide to sewing	Readers Digest,	13-978-0895770264 10-0895770261
3	The Encyclopedia of sewing Techniques	Wendy Gardiner Running	10-0762416513 13-978-0762416516

11. SOFTWARE/LEARNING WEBSITES

1. www.sewdeliicious.com
2. www.pocketmouse.co.uk
3. www.crftsy.com

12. PO – COMPETENCY- CO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	-	2	-	-	-	3
CO2	1	-	-	2	-	-	2
CO3	2	-	1	2	1	-	2
CO4	1	2	-	3	1	2	2
CO5	2	-	-	3	-	-	2
CO6	2	-	3	1		-	3

	PSO1	PSO2
CO1	3	-
CO2	1	2
CO3	2	2
CO4	2	2
CO5	2	2
CO6	3	3

Sign: Name: S.E.Kurzekar (Course Expert /s)	Sign: Name: Smt.C.M.Ambikar (Head of Department)
Sign: Name: Shri A.S.Zanpure (CDC)	

Government Polytechnic, Pune

'1800B' – Scheme

Programme	Diploma in ET/CE/EE//ME/MT/CM/IT/DDGM
Programme code	01/02/03/04/05/06/07/08/16/17/21/22/23/24/26
Name of Course	Basics of Drafting
Course Code	DD1103
Prerequisite course code and name	-

1. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory		Practical		Total Marks
L	T	P	C	ESE	PA	*ESE	PA	
02	00	04	06	Marks	-	50	50	100
				Exam Duration	-	3 Hr		

(*):OE/POE (Oral Examination/Practical&Oral Examination mention whichever is applicable)

Legends: L- lecture,T-Tutorial/teacher guided theory practice,P-practical,ESE-End semester examination,PA- Progressive Assesment.

2. RATIONALE

This course is to understand various working room terms, size chart to draft patterns in standard size used in Industry for garments manufacturing. It also develops psychomotor skills on dart manipulation with accurate measurement for various patterns.

3. COMPETENCY

The aim of this course is to attend following industry identified competency through various teaching learning experiences:

- **Develop various garment patterns by manipulating standard sized draft used to manufacture garment.**

4. COURSE OUTCOMES (COs)

The theory, practical experiences and relevant soft skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

CO1: Identify various working room terms.

CO2: Interpret a size chart for apparel pattern.

CO3: Use drafting skills in pattern making and develop skills for taking accurate body measurements

CO4: Apply the concept of dart manipulation.

CO5: Develop Patterns for various Garment Components.

5. SUGGESTED PRACTICALS/ EXERCISES

The practicals in this section are PrOs (i.e. sub-components of the COs) to be developed and assessed in the student for the attainment of the competency:

Sr. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Relevant CO	Approximate Hours Required.
1.	I	Taking vertical, horizontal and Circumference Body Measurements	CO1	2
2.	I	Apply the standard measurement charts for various sizes.	CO1	2
3.	II	Measure Dress Forms using Industry Standards.	CO2	4
4.	III	Draft Close Fitting Bodice Block using standard measurement chart in 1:4 scale	CO3	8
5.	III	Draft Easy Fitting Bodice Block using standard measurement chart in 1:4 scale	CO3	8
6.	III	Draft One Piece Sleeve Block using standard measurement chart in 1:4 scale	CO3	8
7.	III	Draft Skirt Block using standard measurement chart in 1:4 scale	CO3	8
8.	IV	Draft collars, sleeves and skirts in 1:4 scale	CO4	12
9.	V	Manipulate the pattern using patternmaking techniques –slash and spread techniques and pivotal transfer techniques with single dart series and two dart series.(Any Two)	CO5	12
		Total Hrs		64

S.No.	Performance Indicators	Weightage in %
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S.No.	Performance Indicators	Weightage in %
k.	Set up drafting and cutting materials.	10
l.	Handling of tools and equipments during performing practical	10
m.	Follow Safety measures	10
n.	Accuracy in performance	10
o.	Submission in time	10
Total		50

6. MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED

The major equipment with broad specification mentioned here will usher in uniformity in conduct of practical, as well as aid to procure equipment by authorities concerned.

Sr.No.	Major Equipment/ Instruments Required	PrO. No.
1	Measuring tools :-Scale, scale Triangle, Measuring Tape, French Tape Cutting Tools:- scissors, Pinking Shears Tracing Tools:- Tracing Paper, Graph Paper	1 to 9
2	Standard Dummies	1 to 3
3	General Tools:- Pencil, eraser, scale, brown paper Drafting Book	1 to 9

7. THEORY COMPONENTS

The following topics/subtopics should be taught and assessed in order to develop UOs for achieving the COs to attain the identified competency.

Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
UNIT 1. The Workroom terms (Hrs- 08)	
1a. List name of various working room terminologies. 1b. Define terminology of patternmaking, pattern production, dart, fabric and drafting. 1c. Distinguish patternmaking, pattern production, dart, fabric and drafting terminology.	1.1 Patternmaking terms Pattern drafting ,Flat patternmaking, Basic pattern set, working Pattern 1.2 Pattern Production Terms First pattern, Production Pattern, Marker Maker 1.3 Dart Terminology Bust Point, Dart, Dart Legs, Dart Intake 1.4 Fabric Terminology Muslin, Grain, Lengthwise Grain, Crosswise Grain, off grain , On Grain, Selvedge, True Bias, Bias 1.5 Drafting Terminology Apex Of Dart, Balance Line, Final Pattern, Sloper, Seam Allowance, Seam Allowance, Seam Line,
UNIT 2 Form and Measurements (Hrs- 08)	

Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
2a. Define symbol and landmark terms. 2b. Describe industrial Standard. 2c. Compare standard measurement chart.	2.1 Industry Standards 2.1.1 Landmark Terms 2.1.2 Symbol Keys 2.1.3 ASTM standards 2.1.4 Pattern Industry Standards 2.1.5 Department Store Standards 2.2 Measuring The Forms 2.2.1 Circumference Measurements 2.2.2 Horizontal Balance Line 2.2.3 Horizontal Measurements 2.2.4 Vertical Measurements 2.3 Standard Measurement Chart
UNIT 3 Introduction to Blocks (Hrs- 4)	
3a. Classify the basic block. 3b. Describe the basic blocks.	3.1 The Close Fitting Bodice Block 3.2 The Easy Fitting Bodice Block 3.3 One Piece Sleeve Block 3.4 Skirt Block
UNIT 4 Patternmaking Principles (Hrs- 08)	
4a. Describe charting dart location. 4b. Explain manipulation techniques. 4c. Define Pattern Making terms.	4.1 Patternmaking Techniques 4.1.1 Introduction of Slash and Spread Techniques 4.1.2 Introduction of Pivotal Transfer Techniques 4.2 Patternmaking Terms 4.2.1 Pattern Plot 4.2.2 Pattern manipulation 4.2.3 Design Pattern 4.2.4 Pivotal Point 4.2.5 Basic Pattern 4.3 Charting Dart Location
UNIT 5 Components Of Garment (Hrs- 04)	
5a. Identify types of collars, sleeves, and skirts. 5b. Classify types of collars, sleeves, and skirts.	5.1 Sleeves:- Short Basic Sleeve, Petal Sleeve, Leg-o-Mutton sleeve, Puff sleeve 5.2 Collars:- Peter Pan collar, Sailor Collar, Mandarin Collar 5.3 Skirts:- circular Skirt (Umbrella skirt), Cowl Skirt, Skirt with inverted pleats.

8. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should conduct following activities in group and prepare reports of about 5 pages for each activity, also collect/record physical evidences for their (student's) portfolio which will be useful for their placement interviews:

- i. Prepare journals based on practical performed in laboratory.
j. Study of Innovative Pattern from the Basic Pattern.

9. SUGGESTED LEARNING RESOURCES

S.N.	Title	Author, Publisher, Edition and Year of publication	ISBN Number
1	Fashion Production Terms	Debble Ann Gioello and Beverly Berke, Fairchild publications	13-978-0870052002 10-0870052004
2	Metric pattern cutting for women's wear	Winifred Aldrich, Blackwell Edition	978-1-4443-0929-4
3	Pattern making for fashion design	Helen Joseph Armstrong, Pearson	0136069347 978-0136069348
4	Metric pattern cutting for children's wear babywear	Winifred Aldrich ,Blackwell Edition	978-1-4051-8292-8

10. SOFTWARE/LEARNING WEBSITES

1. www.leenas.com
2. www.fashion-era.com/pattern_drafting
3. <https://www.pinterest.com/explore/pattern>

11. PO - COMPETENCY- CO MAPPING

	<u>PO1</u>	<u>PO2</u>	<u>PO3</u>	<u>PO4</u>	<u>PO5</u>	<u>PO6</u>	<u>PO7</u>
<u>CO1</u>	-	2	-	3	-	2	3
<u>CO2</u>	1	3	1	3	-	3	3
<u>CO3</u>	2	2	2	2	-	-	3
<u>CO4</u>	2	1	2	3	-	1	2
<u>CO5</u>	2	1	2	3	-	-	2

	<u>PSO1</u>	<u>PSO2</u>
<u>CO1</u>	2	-
<u>CO2</u>	2	3
<u>CO3</u>	2	2
<u>CO4</u>	1	1
<u>CO5</u>	1	3

Sign: Name: S.E.Kurzekar (Course Expert /s)	Sign: Name: C.M.Ambikar (Head of Department)
Sign: Name: Shri A.S.Zanpure (CDC)	

Government Polytechnic, Pune
'180 OB' – Scheme

Programme	Diploma in ET/CE/EE//ME/MT/CM/IT/DDGM
Programme code	01/02/03/04/05/06/07/08/16/17/21/22/23/24/26
Name of Course	Tool Engineering
Course Code	DD1104
Prerequisite course code and name	--

1. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks	
				Theory		Practical			
L	T	P	C	ESE	PA	*ESE	PA		
04	00	00	04	Marks	80	20	00	00	100
				Exam Duration	3 Hrs	1 Hr	--	--	

(*): OE/POE (Oral Examination/Practical Oral Examination mention whichever is applicable)

Legends: L- lecture-Tutorial/teacher guided theory practice, P-practical, ESE-End semester examination, PA- Progressive Assessment.

1. RATIONALE -This course gives the fundamental knowledge of tools, equipment's, and machineries used in garment manufacturing industry. Also gives insight of sustainable packaging & material handling equipment's.

2.COMPETENCY-Aim of the course is to provide knowledge of different tools & machines required for garment manufacturing and understand the standards that maximize the speed as well as the quality of product by use of various industrial machines.

3. COURSE OUTCOMES (COs)-The theory is associated with this course are to be taught and implemented, so the student will able to exhibit the following COs

CO1:Identify the types of tools used for clothing construction.

CO2: Explain working principles of cutting machine.

CO3: Compare types pressing tools used in garment industry.

CO4: Enlist benefits of industrial machines & attachments.

CO5: Describe types of packaging.

CO6: Explain the use of material handling equipments.

4. THEORY COMPONENTS

The following topics/subtopics should be taught and assessed in order to develop UOs for achieving the COs to attain the identified competency.

Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
UNIT 1. Tools for Clothing Construction (Weightage-12 , Hrs- 08)	
1.a Enlist measuring equipment's 1.b. State uses of pinning types equipment's 1.c. State uses of Marking equipment's. 1.d. Importance of Storage & Packing equipment's. 1.e. Classify General equipment's in Apparel construction.	Tools for Clothing Construction 1.1 Measuring Equipment's - Measuring Tape, Seam Gauge, Yardstick or Meter Stick, Transparent Ruler, and Skirt Marker etc. 1.2 Pinning Equipment's – Silk Pins, Ball Point Pins, T – Pins Cushion etc. 1.3 Marking Equipment – Tracing Wheel, Dressmakers Tracing Paper and Tailors Chalk etc. 1.4 Storage Equipment's – Boxed goods, Hanging good. 1.5 Packaging Equipment's – Bagging, Boxing 1.6 General Tools – Sewing Threads, Dummy, Mirror, Hangers, drill marker, knotcher etc.
UNIT 2. Cutting Technology (Weightage- 16 , Hrs- 12)	
2.a. Describe manual cutting equipment's. 2.b. Enlist working principles of semi-automatic machine. 2.c. Explain functions of fully automatic machines.	2.1 Manual Cutting Equipment's 2.1.1 Cutting Equipment's-Shears & Scissors, 2.1.2 Dress Makers Shears, 2.1.3 Scalloping Shears, and Cutting Table etc. 2.2 Principals and working of Semi Automatic Cutting Equipment's 2.2.1 Powered scissors 2.2.2 Straight Knife cutting machine 2.2.3 Round Knife cutting machine 2.2.4 Bend Knife cutting machine 2.2.5 Die cutter 2.2.6 Knotcher Machine 2.2.7 Drill Machine 2.3 Principals and working of fully Automatic Cutting Equipment's 2.3.1 Laser Cutting Machine.
UNIT 3 Pressing Technology (Weightage- 14 , Hrs- 14)	
3.a. Define Types of Pressing equipment's 3.b. Describe utility of types of Pressing equipment's 3.c. Explain working of industrial	3.1 Hand pressing equipment's 3.1.1 Charcoal Iron 3.1.2 Dry Iron 3.2 Automatic Pressing equipment's 3.2.1 Electric Steam

pressing equipment's	3.2.2 Steam Press/ Buck press 3.2.3 Trouser pressing 3.2.4 Steam Dolly 3.2.5 Tunnel Finishing 3.2.6 .crease machine 3.2.7 Pleating iron 3.2.8 Permanent Press 3.2.9 Garment steamer
UNIT 4 Sewing Technology (Weightage- 18, Hrs- 14)	
4.a. Identity& classify sewing machine beds. 4.b.Describe use of pressure foots& gauges. 4.c.Explain working principles of Industrial machines.	4.1. Working type of Beds of sewing machine 4.2 Attachments for Sewing Machine- 4.2.1 Types of Pressure Foot – Roller foot, Binding foot, Zipper foot, Teflon coated foot, Cording Foot, Shirring foot, Gathering foot. 4.2.2Types of Gauge – Seam gauge, Quality guide bar & guides buttonholes, gauge, Spacing gauge 4.3 Types of industrial Machines 4.3.1 Lock stitch machine & its parts 4.3.2.Over lock machine 4.3.2 Button fixing machine 4.3.3 Button hole machine 4.3.4 Blind stitch machine 4.3.4 Embroidery machine 4.3.5 Flat lock machine 4.3.6 Bar Tack 4.3.7 Fusing Machine
UNIT 5 Packaging (Weightage- 12 , Hrs- 10)	
5.a. Define packaging and state its purpose. 5.b. Differentiate types of packaging 5.c. Identify packaging materials. 5.d.Describe functions of cartoon packaging 5.e. Enlist importance of sustainable packaging	5.1 Definition of packaging, purpose of packaging 5.2 Benefits of Packaging 5.3 Types of packaging Advantages & limitations 5.3.1Stand up pack: Shirt 5.3.2 Flat pack: Sport wear/Shirt/Trouser 5.3.3 Hanger pack: Blazer, Coats, Pants 5.3.4 Semi stand up pack for Shirt 5.3.5 Half fold pack for Pant

	5.3.6 Dead man pack 5.8 Sustainable Packaging options 5.9.Functions of Packaging 5.10 Flowchart of Packaging 5.11. Garment packaging Material
UNIT 6 Material handling equipment's (Weightage-08 , Hrs-06)	
6.a. Acknowledge the importance of material handling. 6.b. Identify types of material handling. 6.c.Describe material handling equipment's.	6. Types of Material handling equipment are used in apparel industry. 6.1 Material handling system in apparel industry- 6.1.2cutting Department- Trolley, Bakers Trolley plastic trays and trolleys ,fabric bags, Racks 6.2Material handling equipment for stitching department 6.2.1 Conventional Table, side table, trolley, plastic crates & bins 6.2.2 Conveyors, electric tugs, cranes ,industrial trucks, positioning equipment's, unit load equipment, storage equipment,

5. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Tools for Clothing Construction	08	06	04	02	12
II	Cutting Technology	12	06	06	04	16
III	Pressing Technology	14	02	08	04	14
IV	Sewing Technology	14	04	08	06	18
V	Packaging	10	04	08	--	12
VI	Material handling equipment's	06	04	04	--	08
Total		64	26	38	16	80

6. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should conduct following activities in group and prepare

reports of about 5 pages for each activity, also collect/record physical evidences for their (student's) portfolio which will be useful for their placement interviews:

- a. Prepare charts of tools used for pattern making.
- b. Search information, Pictures, costs and specifications of sewing machines and its parts.
- c. Collect information of sustainable packaging methods & materials.
- d. Prepare a list of automated machines used for material handling.

7. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

- h. About **15-20% of the topics/sub-topics** which is relatively simpler or descriptive in nature is to be given to the students for **self-directed learning** and assess the development of the COs through classroom presentations (see implementation guideline for details).
- i. Use proper equivalent analogy to explain different concepts.
- j. Use Flash/Animations to explain various components, operation and
- k. Teacher should ask the students to go through instruction and Technical manuals

8. SUGGESTED LEARNING RESOURCES

S.N.	Title	Author, Publisher, Edition and Year of publication	ISBN Number
1	Complete Guide to Sewing	Reader's digest	London Blackwell- ISBN- 9780276001826
2	Clothing Manufacturing	Gerry coocklin	Focal press N.Y.- ISBN - 9780632058464
3	Encyclopedia of Sewing Techniques	Jan eaten	London Crange Books ISBN -978-0812058154
4	Clothing Decisions	Anita Webb	ISBN 978-0026680202
5	Garment Technology for Fashion Designers	Gerry Cooklin	BlackwellISBN -9780632047758

9. SOFTWARE/LEARNING WEBSITES

<https://fashion2apparel.blogspot.com/2016/12/types-fabric-cutting-machines.html>

1. www.crftsy.com

10. PO - COMPETENCY- CO MAPPING

	<u>PO1</u>	<u>PO2</u>	<u>PO3</u>	<u>PO4</u>	<u>PO5</u>	<u>PO6</u>	<u>PO7</u>
<u>CO1</u>	3	2	--	--	--	--	3
<u>CO2</u>	3	2	3	3	--	--	2
<u>CO3</u>	3	2	2	--	--	--	2
<u>CO4</u>	3	3					2
<u>CO5</u>	3	2	3		2	--	2
<u>CO6</u>	3	3	2	2	--	--	3

	<u>PSO1</u>	<u>PSO2</u>
<u>CO1</u>	3	1
<u>CO2</u>	3	--
<u>CO3</u>	3	--
<u>CO4</u>	3	1
<u>CO5</u>	3	2
<u>CO6</u>	2	1

Sign: Name: Mrs..C.M.Ambikar (Course Expert)	Sign: Name: Mrs..C.M.Ambikar (I/C Head of Department DDGM)
Sign: Name: Shri A.S.Zanpure (CDC)	