GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
Semester-IV

Course Title: Computer Aided Textile Design
(Course Code: 4345901)

Diploma programme in which this course is offered	Semester in which offered
Textile Design	4th Semester

1. RATIONALE

CATD or Computer Aided Textile Design has brought a revolution in the Textile industry. The time consuming and cumbersome process of textile designing has been made easier by CAD. Many thoughtful and innovative designs are available to the textile designers and textile manufacturers at the click of a mouse. The textile designs are the original works of the designers. CATD helps students to visualize and see their imaginative design in final form without producing any sample swatch. Sometimes, it becomes very helpful for textile designers to design according to their particular requirement of the customers. These may be in the form of painted artwork or fabric samples and sometimes film negatives. The textile designers, with the help of CAD, convert them into workable designs. For this to be done the sample is scanned with the help of either scanners or digital cameras and then they are edited to obtain the final design. Almost all industry sectors are using CAD in their designing departments. CAD can help to draw textile designs for textile industries.

2. COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences.

The student will be able to make designs as per the requirement of the customers which are in the form of artwork or fabric samples or a photo of sample and convert them into workable textile designs.

3. COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with this competency are to be developed in the student to display the following COs:

a) Students will understand terminology used in various software's used in CATD
b) Students will be able to create design as per the customer requirement
c) Students will be able to simulate the printed design as per the related to garment
d) Students will be able to use different software tools and techniques to understand customer requirement in the form of Image, Sample or Sketch.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (CI+T/2+P/2)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	CA	ESE	CA	ESE	
0	-	6	3	-	-	100	50	150

(*): Out of 30 marks under the theory CA, 10 marks are for assessment of the micro-project to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be taken during the semester for assessing the attainment of the cognitive domain UOs required for the attainment of the COs.

***Legends: L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** -Practical; **C** – Credit, **CA** - Continuous Assessment; **ESE** -End Semester Examination.*

5. SUGGESTED PRACTICAL EXERCISES

The following practical outcomes (PrOs) are the sub-components of the COs. *ThesePrOs need to be attained to achieve the Cos.*

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1.	**Introduction to Vector Image**	1	
	• System requirement		01
	• Creating up Windows for Corel Draw		02
	• Memory requirement & Display Setting		01
2.	**Basic Shapes :- (Grey Scale)**	2	
	• Circles, Square, Rectangles and Polygons		02
	• Ellipses , Arcs , Pie, Stars		02
	• Spiral , Grid , Arrow , Call Out		02
3.	**Advance Shape (Coloured)**	3	
	• Shape by using Interactive Tool , Blending tool ,Lens		02
	• Shape by Contouring the Object , Distorting the Objects		02
	• Shape by using Envelope tool , Extruding of the Object , Drop Shadow		02
4.	**Croquis Design**		
	• 8 Head , 10 Head & 12 Head		02
	• Basic Skirt, Sleeve , Pant , Yoke		02
5.	**Butti Design (Minimum- 4)**	3	
	• Butti Design by Hand on Drawing Sheet		02
	• Scanning of Design by Scanner		02
	• Create Design on Scanned Image		02
6.	**Butta Design (Minimum -2)**	3	
	• Butta Design by Hand on Drawing Sheet		02
	• Scanning of Design by Scanner		02
	• Create Design over Scanned Image		02
7.	**Calendar**	3	

	• Creation of Calendar of One Month		02
	• Creation of Calendar of One Year		02
8.	**Logo Design (Minimum- 4)**	3	
	• Logo Design by Hand on Drawing Sheet		02
	• Scanning of Design by Scanner		02
	• Create Design on Scanned Image		04
9.	**Introduction to Pixel Image**	1	
	• System requirement		01
	• Creating up Windows for Photoshop		02
	• Memory requirement & Display Setting		01
10.	**Butti Design (Minimum- 2)**		
	• Butti Design by Hand on Drawing Sheet	4	02
	• Scanning of Design by Scanner		02
	• Create Design on Scanned Image		04
	• Do colour Separation & Print Negatives of Each Colour		02
11.	**Butta Design (Minimum -1)**	4	
	• Butta Design by Hand on Drawing Sheet		02
	• Scanning of Design by Scanner		02
	• Create Design over Scanned Image		04
	• Do colour Separation & Print Negatives of Each Colour		02
12.	**Photo Editing**	5	
	• Click your own Picture & Import in Photoshop		02
	• Face Change , Dress Change , Back Ground Change		02
13.	**Plaids**	5	
	• Plain Weave , Twill Weave		02
	• Even , Uneven		02
14.	**Saree Design**	5	
	• Scanning of Saree Design by Scanner		02
	• Create Design over Scanned Image		04
	• Do colour Separation & Print Negatives of Each Colour		02
	Total		84

Note

i. *More **Practical Exercises** can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.*

ii. *The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical Exercises** of this course required which are embedded in the COs and ultimately the competency..*

S. No.	Sample Performance Indicators for the PrOs	Weightage in %
1	Students' understanding and mastery in using different type of tools to create Butta/Butti	20
2	Imagination skill to think about different shapes ,logo ,	20

	colours to create unique design	
3	Willingness and attitude to complete different assignment	10
4	Initiative regarding innovative way to complete the assignment	20
5	Overall preparedness and progress during the assignment.	30
Total		**100**

6. MAJOR EQUIPMENT/ INSTRUMENTS AND SOFTWARE REQUIRED

These major equipment with broad specifications for the PrOs is a guide to procure them by the administrators to usher in uniformity of practical in all institutions across the state.

S. No.	Equipment Name with Broad Specifications	PrO. No.
1	Corel Draw , Adobe Photoshop softwares	1 to 14
2	A3 Size Scanner , A3 Size Colour Printer ,A3 size Drawing Sheet , Water colors and colour pencils for filling color , Tracing paper	1 to 14

7. AFFECTIVE DOMAIN OUTCOMES

The following ***sample*** Affective Domain Outcomes (ADOs) are embedded in many of the above mentioned COs and PrOs. More could be added to fulfil the development of this course competency.

a) Follow safety practices.
b) Practice good housekeeping.
c) Demonstrate working as a leader/a team member.
d) Maintain tools and equipment
e) Follow ethical practices.

The ADOs are best developed through the laboratory/field based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

i. 'Valuing Level' in 1st year
ii. 'Organization Level' in 2nd year.
iii. 'Characterization Level' in 3rd year.

8. UNDERPINNING THEORY

The major underpinning theory is given below based on the higher level UOs of *Revised Bloom's taxonomy*thatare formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of COs and competency.

Note*: The Unit Outcomes (UOs) need to be formulated at different level of Revised Bloom's Taxonomy' to accelerate the attainment of the COs and the competency.*

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Unit – I Software Application in Designing	1a. Use of software in designing field 1b. Application of Software – Auto CAD or Adobe Photoshop or Corel draw or Open Source 1c. Advantages of software over manual designing	1.1 Need of software in Textile Design 1.2 Advantage of Software 1.3 Limitation of Manual Designing
Unit – II Difference between Vector & Pixel based software	2a Vector based Design 2b Pixel Based Design 2c Advantages & Disadvantage of vector based Design 2d Advantages & Disadvantage of pixel based Design	2.1 Design Size 2.2 Aspect Ratio 2.3 Printing of Design made in vector based software 2.4 Printing of Design made in pixel based software
Unit– III Textile CAD Software - CorelDraw	3a. Introduction to Corel Draw 3b. Navigating , menus & panels , opening new file & existing File in CorelDraw	3.1 New, Open, Open As, Close, Save, Save as ,Pick Tool ,Page Setup ,Shape Tool 3.2 Knife Tool ,Smudge brush ,Bezier Tool ,Free hand Tool ,Pen Tool 3.3 Free Transform Tools ,Shape Tool , Crop Tool ,Zoom Tool, Curve Tools
Unit – IV Textile CAD Software - Photoshop	4a Introduction to Photoshop 4b Navigating , menus & panels , opening new file & existing File in Photoshop	4.1 Move Tool ,Rectangular Marquee tool ,Elliptical Marquee tool 4.2 Lasso tool ,Magnetic Lasso tool ,Polygonal Lasso tool 4.3 Spot Healing Brush tool, Healing Brush tool ,Clone Stamp tool ,Pattern Stamp tool
Unit – V Application of CorelDraw & PhotoShop in Textile Industry	5a Scanning the Saree or Palav Design by scanner 5b Tracing on the scanned design by available tool 5c Printing the design on tracing paper for each colour	5.1 Understand the repeat in scanned image 5.2 Copy the repeat to make the whole saree or Palav Design 5.3 Print the various colour on tracing paper 5.4 prepare Screen to print the saree design

9. 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	Software Application in Designing	-NA-	-NA-			
II	Difference between Vector & Pixel based software					
III	Textile CAD Software -CorelDraw					
IV	Textile CAD Software - Photoshop					
V	Application of CorelDraw & Photo Shop in Textile Industry					

Total					

Legends: *R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)*

Note*: This specification table provides general guidelines to assist students for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions to assess the attainment of the UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may slightly vary from above table.*

10. 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 perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

a) Make Unique & beautiful design by using various tools of the software
b) Undertake micro-projects in teams
c) Development of new logo or design
d) Visit any textile company & undergo their design making department

11. 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) Massive open online courses (***MOOCs***) may be used to teach various topics/sub topics.
b) Guide student(s) to take micro-projects.
c) Blend the basic concepts with more specialized instruction
d) Visualization, Cooperative Learning, inquiry based instruction, differentiation, effective use of technology, think-pair and share etc pedagogies can be implemented as per the enlisted course outcomes.
e) Give at least 10 competitive problems for each course outcomes of this course
f) Practice, practice and practice - expose students to wide range of problems
g) About ***20% of the topics/sub-topics*** which are relatively simpler or descriptive in nature is to be given to the students for ***self-learning***, but to be assessed using different assessment methods.
h) With respect to ***section No.10***, teachers need to ensure to create opportunities and provisions for ***co-curricular activities***.
i) Guide students on how to address issues on environment and sustainability using the knowledge of this course

12. SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project

are group-based (group of 3 to 5). However, **in the fifth and sixth semesters**, the number of students in the group should ***not exceed three.***

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The duration of the micro-project should be about **14-16** ***(fourteen to sixteen) student engagement hours*** during the course. The students ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. This has to match the competency and the COs. Similar micro-projects could be added by the concerned course teacher:

Suggested List of Micro-Project.

1. Product development through fashion illustration in apparels and accessories
2. Saree Design Analysis – Motif ,Repeat , Colours, in the Saree Design
3. Make portfolio having collection of different types of Saree Design with colour seperation

13. SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1	How to Use Adobe Photoshop 7	Daniel Giordan	Que Publishing Indiana, ISBN No :- 0-7897-2770-6
2	Corel Draw 10 Learning e-Book	E -Book	E -Book
3	Print, make, wear _ creative projects for digital textile design-	Melanie Bowles	Laurence King Publishing (2015), ISBN :- 978-1780674704
4	Corel Draw Training Guide	Satish Jain	BPB Publications (2018) ISBN No :- 9789387284005
5	Adobe Photoshop for Textile Design	Frederick L Chipkin	Origin inc. (2012) ISBN No :- 978-0972731768
6	CorelDRAW™ 10: The Official Guide	Steve Bain	McGraw-Hill Education (2001) ISBN No :- 978-0072130140

14. SUGGESTED LEARNING WEBSITES

a) https://www.javatpoint.com/coreldraw-basics
b) http://dcac.du.ac.in/documents/E-Resource/2020/Metrial
c) https://www.vandelaydesign.com/
d) https://www.photoshopessentials.com/basics/
e) https://helpx.adobe.com/in/photoshop/how-to/ps-basics-fundamentals.html
f) https://www.testgorilla.com/
g) https://www.coreldraw.com/en/learn/tutorials/

h) 15. PO-COMPETENCY-CO MAPPING

Semester:- III[rd]	Fashion Illustration & Pattern Making – I						
	POs						
Competency & Course Outcomes	**PO 1 Basic & Discipline specific knowledge**	**PO 2 Problem Analysis**	**PO 3 Design/ develop-ment of solutions**	**PO 4 Engineering Tools, Experimen-tation&Testing**	**PO 5 Engineering practices for society, sustainability & environment**	**PO 6 Project Manage-ment**	**PO 7 Life-long learning**
To make designs as per the requirement of the customers which are in the form of artwork / samples/ photo of sample and convert them into workable textile designs.							
Course Outcomes CO a)	3	1	1	-	1	-	3
CO b)	3	2	3	-	1	-	3
CO c)	3	2	3	-	1	-	3
CO d)	3	2	3	1	1	2	3

Legend: '**3'** for high, '**2**' for medium, **'1'** for low and**'-'** for no correlation of each CO with PO.

16. COURSE CURRICULUM DEVELOPMENT COMMITTEE

GTU Resource Persons

Sr. No.	Name and Designation	Institute	Contact No.	Email
1.	Mr. S B Goswami, Lecturer	GPG Surat	9377568889	goswami.shailesh@gmail.com
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