GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

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

Course Title: COMPUTER GRAPHICS FOR GARMENT DESIGNING
(Course Code: 4325106)

Diploma programme in which this course is offered	Semester in which offered
Computer Aided Costume Design & Dress Making	Second

1.   RATIONALE

This course will give knowledge & practice of the advance software viz. CorelDraw, and AutoCAD that is used for designing purpose and its real-life application in various fields of textile & garment designing. A course is designed to provide the students with a fundamental understanding of a range of computer graphics software applications. The main emphasis would be knowledge & practice of the advance software that is used for designing purpose and caters application of various fields of textile & Garment designing. Software application would provide Graphic based platform as per demands & standards of the fashion industry.

2.   COMPETENCY

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competency:

- **Create flat garment drawings, motifs, weaves and human figures using AutoCAD and Corel Draw software effectively.**

3.   COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with the identified competency are to be developed in the student for the achievement of the following COs:

a) Design 2D drawings using AutoCAD software.
b) Develop proportionate human figure using AutoCAD software.
c) Create flat garment design using various tools of Corel Draw software.
d) Create motifs and skirts with special effects using various tools of Corel Draw software.

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P/2)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	CA	ESE	CA	ESE	
0	0	4	2	0	0	50*	50	100

(*): For this practical only course, 50 marks under the practical CA has two components i.e. the assessment of micro-project, which will be done out of 10 marks and the remaining 40

marks are for the assessment of practical. This is designed to facilitate attainment of COs holistically, as there is no theory ESE.

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. T*hey are crucial for that particular CO at the 'Precision Level' of Dave's Taxonomy related to 'Psychomotor Domain'.*

Sr. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Draw Real figure (8 ½ head) of female using AutoCAD software.	II	04*
2	Draw Fashion figure (10 ½ head) of female using AutoCAD software.	II	06*
3	Draw Fashion figure (12 ½ head) of female using AutoCAD software.	II	06*
4	Draw Basic Weaves (Plain, Rib, Basket, Twill, Satin and Sateen) using AutoCAD software.	II	06*
5	Create Basic blocks (Front, Back and Sleeve) of female using AutoCAD software.	II	04*
6	Create different types of Motifs using Corel Draw software. (Any Four)	IV	08*
7	Design Flat garment using Corel Draw software. • T-shirt and Capri • T- shirt and Short • Shirt and Trouser • Top and Skirt • Traditional garment for male • Traditional garment for female	IV	12*
8	Create different types of Skirt using Corel Draw software. (Any Five) • Box or Inverted box pleat skirt • Trumpet skirt • Tiered skirt • Double wrapper skirt • Handkerchief skirt • Knife pleat skirt • Half or Full Umbrella skirt	IV	10*
	Minimum Practical Hours		**56**

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.*

Sr. No.	Sample Performance Indicators for the PrOs	Weightage in %
1	Select appropriate tools and command for drawing.	10
2	Create drawing as per given specification.	50
3	Accuracy of drawing/designing.	20
4	Submission of the drawing as per given guidelines.	20
Total		**100**

6.   MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED

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

Sr. No.	Equipment Name with Broad Specifications	PrO. No.
1.	Computer System.	1 to 8
2.	Color Printer	1 to 8

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) Work as a leader/a team member.
b) Practice good housekeeping.
c) 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 that are 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.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Unit – I **AutoCAD Basics**	1a. Draw drawing editor of AutoCAD software. 1b. Select and Zoom object in AutoCAD software. 1c. Use command line and Pull-down menu in AutoCAD software. 1d. Create and save AutoCAD drawing. 1e. Explain Property bar in AutoCAD software. 1f. Modify entity property in AutoCAD software.	1.1 Introduction to AutoCAD Meaning and its use. 1.2 Object selection method. 1.3 Setting and modifying entity property. 1.4 Launching AutoCAD. 1.5 Drawing Editor. 1.6 Pull-down menu. 1.7 Command line. 1.8 Property bar. 1.9 Zoom and pan the drawing in AutoCAD. 1.10 Creating a new drawing in AutoCAD. 1.11 Opening an existing drawing in AutoCAD. 1.12 Saving AutoCAD drawing in AutoCAD
Unit – II **AutoCAD tools and commands**	2a. Create Real figure and fashion figure using AutoCAD drawing Entities. 2b. Create basic weaves using AutoCAD drawing Entities. 2c. Edit drawing using AutoCAD Modifying Entities. 2d. Insert appropriate Text using AutoCAD software 2e. Create and Edit block in AutoCAD software 2f. Use AutoCAD Libraries.	**2.1 Drawing Entities** 2.1.1 Line 2.1.2 Circle 2.1.3 Arc 2.1.4 Ellipse 2.1.5 Rectangular 2.1.6 Polygons 2.1.7 Poly line 2.1.8 SP line 2.1.9 Hatch 2.1.10 Fill 2.1.11 Point **2.2 Modifying Entities** 2.2.1 Offset 2.2.2 Copy 2.2.3 Paste 2.2.4 Erase 2.2.5 Trim 2.2.6 Break 2.2.7 Mirror 2.2.8 Array 2.2.9 Move 2.2.10 Rotate 2.2.11 Stretch 2.2.12 Lengthen 2.2.13 Trim 2.2.14 Extend 2.2.15 Break at point 2.2.16 Chamfer 2.2.17 Fillet

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
		2.3 Creating and managing Layers. **2.4 Working with block** 2.4.1 Make Block 2.4.2 Insert block 2.4.3 Edit block **2.5 Working with Text** 2.5.1 Single line text 2.5.2 Multi line Text 2.5.3 formatting text style 2.5.4 Editing text **2.6 Applying components from AutoCAD Libraries (Design Centre) to drawing**
Unit– III **Corel Draw Basics**	3a. Draw drawing editor of Corel Draw software. 3b. Select object of Corel Draw software. 3c. Use Pull-down menu of Corel Draw software. 3d. Create and save drawing in Corel Draw software. 3e. Explain Property bar of Corel Draw software. 3f. Modify entity property of Corel Draw software.	3.1 Introduction to Corel Draw Meaning and its use. 3.2 Selecting objects. 3.3 Setting and modifying entity property. 3.4 Launching Corel Draw. 3.5 Drawing Editor. 3.6 Pull-down menus. 3.7 Property bar 3.8 Zoom and pan the drawing in Corel Draw. 3.9 Creating a new drawing in Corel Draw 3.10 Opening an existing drawing in Corel Draw 3.11 Saving Corel Draw drawing in Corel Draw
Unit– IV **Corel Draw tools and commands**	4a. Explain Corel draw tool bar 4b. Create and manipulate objects in Corel Draw software. 4c. Use appropriate tools and command in Corel Draw software. 4d. Create Text with special effects using Corel Draw software. 4e. Create flat drawing of the Garments using Corel Draw software. 4f. Create motifs for fabric using Corel	**4.1 Drawing and Shaping tools for flat drawing** 4.1.1 Using the Freehand Tool 4.1.2 Drawing Lines and Poly lines 4.1.3 Drawing Freehand Polygons 4.1.4 Drawing Perfect Shapes 4.1.5 Reshaping Lines and

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
	Draw software. 4g. Draw different types of skirt using Corel Draw software.	Poly lines 4.1.6 Drawing Curves 4.1.7 Reshaping Curves 4.1.8 Drawing Rectangles 4.1.9 Drawing Ellipse and Circles **4.2 Editing tools** 4.2.1 Selecting and Deselecting Objects 4.2.2 Moving Objects 4.2.3 Copying and Deleting Objects **4.3 Transforming Objects** 4.3.1 Mirroring Objects 4.3.2 Rotating Objects 4.3.3 Skewing Objects 4.3.4 Sizing Objects 4.3.5 Scaling Objects **4.4 Outlining Objects** 4.4.1 Setting Outline 4.4.2 Choosing Outline Thickness 4.4.3 Choosing Outline Colors 4.5 Filling Objects 4.5.1 Eyedropper Tools 4.5.2 Paint bucket Tools 4.5.3 Using Fill Tool 4.5.4 Uniform Fill, Fountain Fill, Pattern Fill 4.5.5 Interactive Mesh fill **4.6 Arranging Objects** 4.6.1 Power clip 4.6.2 Grouping and Ungrouping 4.6.3 Aligning 4.6.4 Arranging 4.6.5 Combining and Breaking 4.6.6 Welding 4.6.7 Intersection

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
		4.6.8 Trim **4.7 The Text Tool** 4.7.1 Creating Artistic Text 4.7.2 Editing Text 4.7.3 Formatting Text 4.7.4 Setting Text Options 4.7.5 Creating Paragraph Text

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
	Not Applicable					

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

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)   Prepare croquis of human figure with different poses.
b)   Internet based assignments.
c)   Teacher guided self learning activities.
d)   Draw drawing Editor of AutoCAD software.
e)   Draw drawing Editor of Corel Draw software.

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) in undertaking micro-projects.
c) ***'L' in section No. 4*** means different types of teaching methods that are to be employed by teachers to develop the outcomes.
d) 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.

e) With respect to *section No.10*, teachers need to ensure to create opportunities and provisions for *co-curricular activities*.

f) Guide students for using the strategies given in various video for giving special effects.

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 microproject 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:

a) **Shapes and Forms:** Draw any ten 2D shapes and any five 3D forms using AutoCAD software.

b) **Design Repeat:** Create Full drop, Half drop, Brick, Diamond, Random and Stripe design repeat using Corel Draw software.

c) **Texture:** Apply texture on flat garment designs using Corel Draw software.

d) **Decorative Weaves:** Create any two decorative weaves on fabric using Corel Draw software.

13.   SUGGESTED LEARNING RESOURCES

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
1	AutoCAD	Berghauser /schlieve	BPB Publication, new Delhi.
2	AutoCAD 2020 Beginning and Intermediate	Munir Hamad	Mercury Learning & Information (April 19, 2019) ISBN-13: 978-1683923916
3	AutoCAD 2020 For Beginners Paperback – May 15, 2019	CAD Folks	Independently published (May 15, 2019) ISBN-13: 978-1098820978
4	Corel Draw Training Guide Paperback – 1 January 2018	Satish Jain	BPB; First edition (1 January 2018) ISBN-13: 978-9387284005
5	CorelDRAW 12: The Official Guide (Corel Press) Paperback – Import, 16 February 2004	Steve Bain	McGraw-Hill Education (16 February 2004) ISBN-13: 978-0072231915
6	CorelDRAW 2021 & CorelDRAW Essentials 2021 - Training Book	Peter Schiessl	Lindemann Group (June 15, 2021)

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
	with many Exercises: Suitable for CorelDRAW Essentials 2021, CorelDRAW Home and Student 2021 and CorelDRAW 2021 [Print Replica]		ASIN: B097CKBD4K

14.   SOFTWARE/LEARNING WEBSITES

a) AutoCAD software
b) https://youtu.be/pvKVy-eMDYc
c) https://youtu.be/hu7tVlS3vls
d) https://youtu.be/yrHNmSHS5HA
e) https://youtu.be/2xoxxGkUXqg
f) Corel Draw software
g) CorelDRAW Graphics Suite X3 Essential Training CD
h) www.softwaretrainingtutorials.com/coreldraw
i) https://youtu.be/FJYgNUYUvZc
j) http://www.insidegraphics.com/corel_draw

15.   PO-COMPETENCY-CO MAPPING

Semester II	COMPUTER GRAPHICS FOR GARMENT DESIGNING (Course Code: 4325106)						
	POs						
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/ development of solutions	PO 4 Engineering Tools, Experimentation & Testing	PO 5 Engineering practices for society, sustainability & environment	PO 6 Project Management	PO 7 Life-long learning
Competency	Create flat garment drawings, motifs, weaves and human figures using AutoCAD and Corel Draw software effectively.						
Course Outcomes CO a) Design 2D drawing using AutoCAD software.	3	2	3	2	2	-	2
CO b) Develop proportionate human figure using AutoCAD software.	3	3	3	2	-	-	2
CO c) Create flat garment design using various tools of Corel Draw software.	3	2	3	2	2	2	2
CO d) Create Motifs and Skirts with special effects using various tools of Corel Draw software.	3	2	3	2	2	2	2

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

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