

## GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

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

#### Course Title: Fabric Design-II (Course Code: 4335905)

Diploma programme in which this course is offered	Semester in which offered
Textile Design	Third

#### 1. **RATIONALE**

Fabric design is the process of creating patterns, designs and structures for woven, knitted, non-woven or embellishments of fabrics. It involves producing fabric used in clothing (Sarees, Kurta, salwar, dupatta, pants, shirts, etc), household textiles (curtains, bedcovers, sofa covers, table covers, etc), towels and decorative textiles such as carpets. It is a creative field that bridges fashion design, carpet manufacturing and any other cloth-related field. The Textile designers should have knowledge of different types of weave design and fabric structure for the process of fabric manufacturing for different end uses. This will assist them to create designs during fabric production. This subject provides knowledge regarding construction of different types of compound weave design on point paper, fabric structure, as well as analysis of weave design and different fabric parameters for different end uses.

#### 2. **COMPETENCY**

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

- **Construct compound weave design patterns for fabrics using principles of woven design and fabric structure.**

#### 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) Classify various types of compound fabric structure.
- b) Create compound weave design on the point paper.
- c) Create weave design patterns using simple colour and weave effect.
- d) Create weave design patterns for specific end use.

#### 4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T/2+P/2)	Examination Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
3	0	3	C	CA	ESE	CA	ESE	200
			5	30	70	50	50	

(\*): 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 the 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) that are the sub-components of the COs. Some of the PrOs marked ‘\*’ are compulsory, as they are crucial for that particular CO at the ‘Precision Level’ of Dave’s Taxonomy related to ‘Psychomotor Domain’.

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Analysis of various types of compound fabric structure.	I	03
2	Prepare sample for Barley Corn weave using design , draft & lifting plan	II	03
3	Prepare sample for Stitched Hopsack weave using design , draft & lifting plan	II	03
4	Prepare sample for Mock Leno weave using design , draft & lifting plan	II	03
5	Prepare sample for Diamond weave using design , draft & lifting plan	III	03
6	Prepare sample for Diaper weave using design , draft & lifting plan	III	03
7	Prepare sample for Honey comb weave using design , draft & lifting plan	III	03
8	Prepare sample for Huck-a-back weave using design , draft & lifting plan	III	03
9	Prepare sample for Hound’s tooth pattern using simple colour & weave effect.	IV	03
10	Prepare sample for Bird’s-eye or spot effect using simple colour & weave effect.	IV	03
11	Prepare sample for Hair lines pattern using simple colour & weave effect.	IV	03

12	Prepare sample for Step pattern using simple colour & weave effect.	IV	03
13	Prepare sample for Bed ford cord weave using design , draft & lifting plan	V	03
14	Prepare sample for Gauze and Leno structure using top douping & bottom douping method.	V	03
<b>Total</b>			<b>42</b>

### 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	Classify various types of compound fabric structure	25
2	Representation of compound fabric weave on point paper for design creation	25
3	Construction of woven design patterns for simple clour and weave effect	25
4	Construction of woven design patterns for specific end use	25
<b>Total</b>		<b>100</b>

## 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.

S. No.	Equipment Name with Broad Specifications	PrO. No.
1	Basic stationary material Pencil, scale, eraser, sketch pen/highlighter etc.	All
2	Fabric analysis kit (pick glass, ruling scale, forcipes plucker)	All
3	Point paper/ Design paper	All
4	Handloom/ Cardboard	All
5	Yarn for weaving	All
6	Computer System with Internet connection and weave design software	All

## 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 competency.

- a) Work as a designer/team member of a textile design studio.
- b) Creation of woven design as per end use requirement.

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 1<sup>st</sup> year
- ii. 'Organization Level' in 2<sup>nd</sup> year.
- iii. 'Characterization Level' in 3<sup>rd</sup> year.

• **UNDER PINNING THEORY**

Only the major Underpinning Theory is formulated as higher level UOs of *Revised Bloom's taxonomy* in order development of the COs and competency is not missed out by the students and teachers. If required, more such higher level UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs)	Topics and Sub-topics
<b>Unit – I</b> <b>Introduction to compound weave design</b>	1a. Identify compound weave design  1b. Represent compound weave patterns on point paper  1c. Create weave patterns on point paper  1d. Analyze weave patterns for compound structure	1.1 Classification of compound weave design 1.2 Method of representation of compound weave design 1.3 Creation of compound weave design on point paper 1.4 Collection and analysis of compound woven fabric structure
<b>Unit – II</b> <b>Development of compound weave design</b>	2a. Represent weave patterns on Design paper  2b. Create weave patterns on Design paper  2c. Create Design, Draft, lifting plan for weave patterns on point paper	2.1 Barley Corn weave 2.2 Stitched Hopsack 2.3 Twilled Hopsack 2.4 Mock Leno weave

<b>Unit – III</b> <b>Development of fancy weave design</b>	3a. Represent weave patterns on Design paper 3b. Create weave patterns on Design paper 3c. Create Design, Draft, lifting plan for weave patterns on point paper	3.1 Diamond weave 3.2 Diaper weave 3.3 Honey comb weave 3.4 Huck-a-back weave
<b>Unit– IV</b> <b>Simple colour and weave effect</b>	4a. Identify types of colour and weave effect 4b. Representation colour and weave effect 4c. Create weave patterns on bases of simple colour and weave effect	4.1 General considerations of combination of colour and weave effect 4.2 Representation of colour and weave effect on design paper 4.3 Continuous line effects 4.4 Hound’s tooth patterns 4.5 Bird’s-eye and spot effects 4.6 Hair lines 4.7 Step patterns 4.8 All over effects
<b>Unit– V</b> <b>Development of weave design patterns for specific/ special end use</b>	5a. Identify weave designs for special end use 5b. Understand the material need as per end use application 5c. Create the weaves designs for specific end use 5d. Draw cross section for weave design	5.1 Introduction to weave designs for special end use 5.2 Development of cord structure 5.2.1 Corkscrew weave 5.2.2 Bed ford cord weave 5.3 Development of Gauze and Leno structure 5.3.1 Technique of manufacturing 5.3.2 Top Douping structure 5.3.3 Bottom Douping structure

*Note: The UOs need to be formulated at the ‘Application Level’ and above of Revised Bloom’s Taxonomy’ to accelerate the attainment of the COs and the competency.*

### SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A	Total Marks
1	Introduction to compound weave design	06	2	2	2	6
2	Development of compound weave Design	08	4	4	8	16
3	Development of fancy weave design	08	4	4	8	16

4	<b>Simple colour and weave effect</b>	10	4	6	6	16
5	<b>Development of weave design patterns for specific/ special end use</b>	10	4	6	6	16
<b>Total</b>		<b>42</b>	<b>18</b>	<b>22</b>	<b>30</b>	<b>70</b>

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

**Note:** This specification table provides general guidelines to assist student for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions 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 vary slightly from above table.

## 5 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:

- Collect fabric samples based on its structure & end uses.
- Analyse the given cloth samples for different weaves
- Construct compound woven design patterns for different weaves

## 6 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:

- Massive open online courses (**MOOCs**) may be used to teach various topics/sub topics.( please check availability, else cover to "Online Courses")
- Guide student(s) in undertaking micro-projects.
- 'L' in section No. 4** means different types of teaching methods that are to be employed by teachers to develop the outcomes.
- 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.
- With respect to **section No.11**, teachers need to ensure to create opportunities and provisions for **co-curricular activities**.

## 7 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. However, in the fifth and sixth semesters, it should be preferably be **individually** undertaken to build up the skill and confidence in every student to become problem solver so that

s/he contributes to the projects of the industry. In special situations where groups have to be formed for micro-projects, 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 total duration of the micro-project should not be less than **16 (sixteen) student engagement hours** during the course. The student 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) Explore weave design software from online resources and prepare a comparison for any two/three
- b) Visit various weaving units and prepare report on any one unit on points such as – machinery required, specifications of machine and raw material used, manpower required, skills of the various persons employed, weaves used in the unit, etc
- c) Prepare report of different weave designs currently used in a market for clothing.

## 8. SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1	Watson's Textile Design and Colour: Elementary Weaves and Figured Fabrics	William Watson and Z Grosicki	Woodhead CBSPD, 1975, New Dehli, ISBN: 978-1855739956
2	Advanced Textile Design and Colour	William Watson and Z Grosicki	Woodhead CBSPD, 1977, New Dehli, ISBN: 978-1855739963
3	Grammar of Textile Design	Harry Nisbet	Wentworth Press, 1906, ISBN: 978-1362902478
4	Elementary Textile Design and Fabric Structure	John Read	Read Books, 1931, ISBN: 978-1447401100
5	Woven Textile Design	Jan Shenton	Laurence King Publishing, 2014, ISBN: 978-1780673370

## 9. SOFTWARE/LEARNING WEBSITES

1. <https://www.textileworld.com/>

2. <https://nptel.ac.in/courses/>
3. [www.thetextileblogspot.in](http://www.thetextileblogspot.in)
4. <https://www.textileschool.com/453/woven-design/>
5. <https://www.youtube.com/watch?v=DdwhvbxMiD4>

## 10. PO-COMPETENCY-CO MAPPING

Semester III	Fabric design –II (Course Code: 4335905)								
	POs and PSOs								
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	PSO 1	PSO 2
Competency	Construct elementary weave design patterns for fabrics using principles of woven design and fabric structure.								
CO a) Classify various types of compound fabric structure	3	1	2	2	-	1	1	3	2
CO b) Create compound weave design on the point paper	3	1	2	2	-	1	1	3	2
CO c) Create weave design patterns using simple colour and weave effect	3	2	2	2	-	1	1	3	2
CO d) Create weave design patterns for specific end use	3	2	2	2	-	1	1	3	2

Legend: '3' for high, '2' for medium, '1' for low or '-' for the relevant correlation of each competency, CO, with PO/ PSO

## 11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

### GTU Resource Persons

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