GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3162913
Semester: VI

Subject Name: Advanced Fabric Structure & Computer Aided Design

Type of course: Professional Elective Course

Prerequisite: Knowledge of fabric structure – basic weaves & derivatives

Rationale: Knowledge of other advance woven structures is required as per the specific need of industries and society. It is necessary to describe and correlate advance fabric structure and its properties with view of end use of product. Knowledge of CAD software and advanced fabric structure is very important to engineer special types of woven fabric.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Content:

Sr. No.	Content	Total Hrs
1	Simple Colour & Weave Effects	03
2	Compound Colour & Weave Effects	03
3	Construction & Development of Jacquard Designs	05
4	Damask, Brocade & Tapestry Structures.	02
5	**Backed Cloth:** Principle of construction, warp backed & weft backed cloth, warp wadded & weft wadded design, Factors considered in the construction.	04
6	**Double Cloth:** Principle of construction, factors affecting double cloth, different methods of tying double cloth.	02
7	**Double cloth :** Opening in two width, tubular cloth, self stitch, wadded, centre stitched, interchanging double Cloth	04
8	**Treble Cloth:** Construction & designs.	02
9	Gauze & Leno Structures	04
10	Weft Pile Fabrics	03
11	Terry Pile Structures	03
12	Warp Pile Fabrics	02
13	Introduction to CAD systems and it's application in Textiles.	01
14	Developments of Dobby & Jacquard design using different available software packages. Features of different available software packages.	03

15	Practical utilization of CAD systems in the preparation, creation & processing of designs for textile printing	**01**

Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	**20**	**30**	**10**	**10**	**10**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Watson Textile Design and Colour, Z. GROSICKI.
2. Watson's Advanced Textile Design (Compound Woven Structures), Z. GROSICKI.
3. Grammar of Textile Design, Nisbet.

Course Outcomes:

After learning the course the students should be able to

Sr. No.	CO statement	Marks % weightage
CO-1	Weave multi-layer fabric	30
CO-2	Develop Jacquard design.	15
CO-3	Construct weft pile, warp pile design.	20
CO-4	Analyze weaves used for gauze and leno fabrics.	10
CO-5	Analyze the colour & weave effect fabric, and compound fabric	15
CO-6	Develop/Process Dobby, Jacquard & Printed design software	10

List of Experiments:

1. Samples analysis of compound structures.
2. Weaving Samples of compound weaves on hand loom.
3. Analyse backed cloth samples
4. Prepare tubular and self stitch double cloth sample on sample loom/weaving machine.
5. Analyse double cloth samples

6. Develop Jacquard design on point paper/computer
7. Analyse leno fabric
8. Analyse pile fabric
9. Developing / Processing of dobby designs using software.
    a. Description of different tools of the software.
    b. Steps for creating and developing dobby designs.
    c. Development of dobby designs (colour & weave effect, fancy weaves, small figuring, etc.)
    d. Fabric simulation & graphical Outputs.
10. Developing / Processing of jacquard designs using Software.
    a. Description of different tools of the software.
    b. Steps for creating Jacquard designs.
    c. Development of Jacquard designs (jacquard figuring, double cloth/tapestry)
    d. Fabric simulation & graphical Outputs.
11. Developing / Processing of printed designs using software.
    a. Description of different tools of the software.
    b. Steps for creating printed designs.
    c. Development of printed designs.
    d. Fabric simulation & graphical Outputs.

Major Equipment:

1. Computers with well supported textile designing software.
2. Pick Glass
3. Hand loom

List of Open Source Software/learning Website:

http://nptel.iitm.ac.in, World Wide Web, Google Search Engine etc.