



NATIONAL UNIVERSITY OF ENGINEERING
COLLEGE OF CHEMICAL AND TEXTILE ENGINEERING
TEXTILE ENGINEERING PROGRAM

PIT62 – FABRIC DESIGN AND ANALYSIS II

I. GENERAL INFORMATION

CODE	: PIT62 Fabric Design and Analysis II
SEMESTER	: 8
CREDITS	: 3
HOURS PER WEEK	: 5 (Theory–Practice)
PREREQUISITES	: PIT-61 Fabric Design and Analysis I
CONDITION	: Compulsory

II. COURSE DESCRIPTION

The course includes the study of more complex designs like cords, checkerboards, terry, velvet, chiffon, color effect and ways of making the weaving arrangements.

III. COURSE OUTCOMES

Achieve a greater knowledge of textile design and the analysis of various textile samples.

IV. LEARNING UNITS

1. FABRIC ANALYSIS

Weight per linear meter of fabric leaving the loom / Provision for weaving and making calculations / Calculating the total number of warp yarns / Beam width / Cost Estimation of a fabric.

2. ELEMENTAL STRUCTURES AND CORDS

Huckaback fabric / varieties / False gauze / Openwork effect / Uses of cords / Varieties / Rib effect / Twill combination of lace / Effects of distorted threads.

3. CORDS

Simple cords / Warp and weft classifications / Effects / Corkscrew cords / Opening designs for obtaining laces / Longitudinal and cross sections.

4. BEDFORD CORDON

Processing method / Introduction of filling yarns / Cords with alternate courses / Cords of flat surface.

5. PIQUE FABRICS

Processing methods / Cuts / Pique with relief effect / Classes of Pique ligation / Classes of Pique ligament / Introduction of fill passes.

6. CHECKERBOARDS AND LISTINGS

Listings / Color by sorting and title / Methods for obtaining / Checkerboards by reversal / Rules for designs on checkerboards.

7. COLOR EFFECTS I

Color effects and design / Ligament, color and design / colors and their characteristics / Harmonization and contrast of colors / Obtaining of color effect from the main elements.

8. COLOR EFFECTS II

Classification of effects / Getting the main elements from the effect of color and design / Rules of errors and failures in the color effect.

9. RASTER VELVET

Velvets classification / Plot Velvet: Corduroy and smooth corduroy / Rough cut / Duplexing corduroy / Tilled corduroy.

10. VELVET BY WARP AND TERRY FABRICS

Velvet fabric on looms without iron of single and double shed / Comparisons / Warp velvet with irons.

11. TERRY FABRICS

Terry warp: towels / Manufacture method: Turkish and Terry towels / Based designs for towels of 4, 5 and 6 passes / Plush of one or both sides / Ripple effect and peeling / Towels tilled.

12. TWO-SIDED FABRICS AND DOUBLES FABRICS

Two-sided fabrics per frame / Lined fabrics / Lined warp and weft / Face-reverse relationship / List of face-reverse titles / Double fabrics / Classes: Fully disunited, joined by a selvage, joined at the two selvage and united in its entirety / Rules for the double fabric weave.

13. LENO AND JACQUARD MOUNTS

Methods of making leno / Fabric characteristics / Past table / calculations of arcades distribution / Grids used.

14. OTHER CONCEPTS

Classification and nomenclature of fabric families / Specifications / Varieties / Applications.

V. LABORATORY AND PRACTICAL EXPERIENCES

First laboratory: Passed by wire mesh and comb looms.

Second laboratory: Fabric density. Crude width calculation and finishing, total yarns. Comb width. Comb number.

Third laboratory: Symmetric distribution of colored thread.

Fourth laboratory: Determination of color effects with 4 samples of fabrics.

Fifth laboratory: Computer Design.

First practice: Fabric density, width and finishing oil, total yarns, comb width and Comb numbers.

Second practice: Symmetric distribution of colored thread.

Third practice: Obtaining ligament and distribution of warp and weft colors.

Fourth practice: Duplex fabrics and double fabrics.

VI. METHODOLOGY

The course is developed in theory and practical sessions. In the theory sessions, the instructor presents the concepts, theorems and applications. In the practical sessions, various problems are solved and their solutions are analyzed. In all sessions the active participation of the student is encouraged.

VII. EVALUATION FORMULA

The Average Grade PF is calculated as follow:

$$PF = (EP + 2*EF + PP) / 4$$

EP: Mid-Term Exam

EF: Final Exam

PP: Average of practices

VIII. BIBLIOGRAPHY

1. GALCERAN, V.

Fabric Technology. Volume I and II.

2. WATSON, W.

Textile Design and Color.

3. UWAJI, Y.

Analysis and Design of Cotton Fabric.