



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

PIT52 – TEXTILE QUALITY CONTROL II

I. GENERAL INFORMATION

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|-----------------------|------------------------------------|
| CODE | : PIT52 Textile Quality Control II |
| SEMESTER | : 7 |
| CREDITS | : 3 |
| HOURS PER WEEK | : 5 (Theory–Practice) |
| PREREQUISITES | : PIT51 Textile Quality Control I |
| CONDITION | : Compulsory |
| DEPARTMENT | : Textile Engineering |

II. COURSE DESCRIPTION

The course prepares students in the understanding and application of methods and techniques for the control and quality assurance of textile fibers and fabric, according to national and international norms and standards, and emit an opinion on the product quality based on thread and fabric tests. Spinning and weaving quality control assure the performance of textile clothes for client satisfaction. Students carry out laboratory tests with different types of thread and fabric and analyze their defects and their causes.

III. COURSE OUTCOMES

At the end of the course, students:

1. Relate thread properties with fabric properties.
2. Identify thread characteristics for flat fabric and kitted fabric.
3. Know and apply national and international norms and standards.
4. Understand the procedure of more relevant textile quality tests.
5. Interpret quality tests and evaluate textile quality.
6. Recognize fabric faults and identify their causes.
7. Know and use quality control equipment and instrument, reference materials, normalized scales and color control software.

IV. LEARNING UNITS

1. INTRODUCTION, TITLE AND THREAD TORSION

Introduction / Sequence of a combed cotton weaving process / Quality control tests in each process step.

Numeration systems / Title correction / Measurement equipment / Torsion evaluation methods / Calculations.

2. SPINNING QUALITY CONTROL

Spinning quality / Quality characteristics / parameters affecting laboratory test sensibility / Fabrication random tests / Relationship between fiber and thread properties / Spinning equipment / Conventional spinning / Quality guarantee / Rotor spinning / Bobbins / Robes control in a spinning mill / Common faults in robes.

3. THREAD APPEARANCE DEGREE PILOSITY AND TRACTION STRENGTH

ASTM norms / Procedure and evaluation / Required equipment / Effect of fiber and spinning process parameters on thread pilosity.

Load and thread stress / Tenacity and specific resistance / Stress-strain curve / Fault length / Dynamometers / Thread strength determination methods / ASTM norms.

4. MASS IRREGULARITY

Importance / Fundamental concepts / Spectrogram interpretation / Location of machine defects / Electronic classification of irregularities in thread mass.

5. THREAD TECHNICAL CHARACTERISTICS

Profile of cotton thread for warping, weft and knitting / Elastomeric threads / Characteristics / Identification and recognition in a textile clothe.

6. FABRIC TECHNICAL SPECIFICATIONS

Weight per are / Weight per unit length / Composition / Title, warping and weft / Density / Resistance to fault and elongation.

V. LABORATORY AND PRACTICAL EXPERIENCE

Laboratory 1: Simple and twisted thread torsion

Laboratory 2: Fuller bobbins uniformity

Laboratory 3: Thread resistance

Laboratory 4: Identification of elastomeric threads

Laboratory 5: Quality control of flat fabric

Laboratory 6: Fabric pilling and abrasion resistance

VI. METHODOLOGY

The course takes place in theory, practice and laboratory sessions. In theory sessions, faculty presents the concepts and methods. In practice sessions, students solve diverse problems related to quality control of cotton and wool textile fibers using technical norms and standards. In laboratory sessions, students carry out experimental tests to validate quality control methods. At the end of each experiment, students present a report summarizing procedure, results, drawings and conclusions. Student active participation is promoted.

VII. GRADING FORMULA

The Final Grade PF is calculated as follow:

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

EP: Mid-term Exam EF: Final Exam

PP: Average grade of Practices and Laboratory work.

VIII. BIBLIOGRAPHY

1. GROVER Elliot and HAMBY D.

Handbook of Textile Testing and Quality Control.
Book Publishers Editions, New York 1998.

2. BOOTH John

Principles of Textile Testing.
Butterworth-Heinemann Editions, London, 1998