

## Course guide

### 320082 - PAA - Finishing Processes

**Last modified:** 19/04/2023

**Unit in charge:** Terrassa School of Industrial, Aerospace and Audiovisual Engineering  
**Teaching unit:** 702 - CEM - Department of Materials Science and Engineering.

**Degree:** BACHELOR'S DEGREE IN TEXTILE TECHNOLOGY AND DESIGN ENGINEERING (Syllabus 2009). (Compulsory subject).

**Academic year:** 2023    **ECTS Credits:** 6.0    **Languages:** Catalan, Spanish

#### LECTURER

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**Coordinating lecturer:** Riba Moliner, Marta

**Others:** Buscio Olivera, Valentina

#### PRIOR SKILLS

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Previously studying the subject Materials for Textile Product Design is highly desirable.

Previously studying the subject of Desing of bleaching and dyeing processes. Colorimetry is highly desirable

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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**Specific:**

CE20-GETDT. Applied knowledge of sizing and finishing processes. (Specific Technology Module: Textile)

CE23-GETDT. Applied knowledge of preparation, bleaching, and dyeing unit operations. (Specific Technology Module: Textile)

CE25-GETDT. Applied knowledge of chemistry for the textile industry. (Specific Technology Module: Textile)

**Transversal:**

CT03 N3. Efficient oral and written communication - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

#### TEACHING METHODOLOGY

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- Presential lecturing sessions for delivery of the topics with active student involvement.
- Presential sessions of practical work (Mandatory attendance)
- Self-directed study and preparation of reports. Cooperative learning.
- Preparation and completion of assessable teamwork activities.
- Oral and written presentation work performed individually or in group

#### LEARNING OBJECTIVES OF THE SUBJECT

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GLO1. To become professionals in the design of chemical and mechanical finishing processes, the management of quality and safety in industrial processes, and the criteria for international trade

GLO2. To acquire a sound knowledge of finished textiles manufacturers, the technical specifications for the products and their applicability to other textile processes.

GLO3. To know the existing industrial network of dye and finish enterprises, the technical specifications for finished textile products, and the requirements for the integral design of a textile production process.

GLO4. To develop the specific and transversal skills associated to the academic work.

## STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	20.00
Self study	90,0	60.00
Hours small group	30,0	20.00

**Total learning time:** 150 h

## CONTENTS

### Topic 1: Fundamentals of the mechanical and chemical finishing operations

#### Description:

1.1. Concept of the mechanical and chemical finishing operations

Significance to textile design.

1.2. Main effects contributed by finishing operations.

1.3. Finishes application systems.

1.4. Drying and condensation/polymerization processes.

#### Specific objectives:

OE3. Knowledge of criteria for reproducibility of different methods of application of preparations.

OE4. Evaluation touch organoleptic and practical effects on textile sizing.

OE5. Influence of finishing on color.

#### Full-or-part-time: 20h

Theory classes: 6h

Laboratory classes: 2h

Self study : 12h

### Topic 2: EFFECT DESIGN BASED ON CONDITIONING FINISHES

#### Description:

2.1. Unit effects of finishes: stiffening, antislip, run-proof, antipilling, ant snagging, antipicking, matting and softening finishes.

2.2. Combined effects of finishes.

2.3. Measurement standards.

#### Full-or-part-time: 36h

Theory classes: 8h

Laboratory classes: 10h

Self study : 18h

### Topic 3: DESIGN OF WASH AND WEAR FINISHES

**Description:**

3.1. Fields of use and target textiles products for wash and wear with low free-formaldehyde finishes: shrink-proof, crease-proof, "wash and wear", easy ironing.

3.2. Ecotoxicological characteristics related with finishes.

**Specific objectives:**

Apply acquired knowledge for planning trials of finishing wash and wear.

OE8. Learn to identify and implement quality controls required by the final destination of the finished article.

OE9. Criteria for the submission of results, effects on international trade.

**Full-or-part-time:** 28h

Theory classes: 6h

Laboratory classes: 6h

Self study : 16h

### Topic 4: FINISHES FOR TECHNICAL TEXTILES

**Description:**

4.1. Effect of water-proof, water-repellent, oil-repellent and soil-release finishes.

4.2. Bacteria and fungi: antimicrobial (bactericidal and fungicidal), deodorizing and insecticide (moth-proof) finishes.

4.3. Behaviour of textile materials in fire.

4.4. Fundamentals of Individual Protection Equipment (IPE)

4.5. Flame retardation mechanisms.

4.6. Fire-proofing systems.

4.7. Fire-proofing of textile fibres.

4.8. Standards and methods for testing effects.

**Specific objectives:**

OE10. Knowledge of technical fabrics and fields of application.

OE11. Apply knowledge of the effects of different articles repellencia

OE12. Get quality controls to determine the effects of repellency contributed textiles

OE13. Apply theoretical knowledge about Fireproofing in different tissues

OE14. Learn the controls to determine the quality of the effects of Fireproofing contributed textiles

**Full-or-part-time:** 42h

Theory classes: 8h

Laboratory classes: 10h

Self study : 24h

## Topic 6: FINISHING TECHNOLOGY AND PRODUCT DESIGN

### Description:

6.1. Design of textile products via the following operations:

- Calendering effects
- Napping
- Grinding
- Shearing

### Related competencies :

CT03 N3. Efficient oral and written communication - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

### Full-or-part-time: 24h

Theory classes: 2h

Laboratory classes: 2h

Self study : 20h

## GRADING SYSTEM

Students will be assessed in a continual manner for self-directed learning and team work.

The presence to practical work sessions is mandatory. Only 2 justified absences will be accepted.

Knowledge and skill acquisition will be assessed as follows:

- Oral and written tests (First evaluation: 30%, Second evaluation: 30%)
- Laboratory: 30%
- Other deliveries : 10%

Students who have suspended the first partial exam may choose, by communicating to the teacher, a review of recovery. Recovery will perform the first exam is written with a prueba, the second day of the exam, después del mismo, con calificación of 0 to 5. The note Obtenido sustituirá the initial calificación long as it higher

The teacher will be able to request at any moment, a Justification of the conclusions of the reports has hecho the students to demonstrate the active participation of students.

For those students who meet the requirements and submit to the reevaluation examination, the grade of the reevaluation exam will replace the grades of all the on-site written evaluation acts (tests, midterm and final exams) and the grades obtained during the course for lab practices, works, projects and presentations will be kept.

If the final grade after reevaluation is lower than 5.0, it will replace the initial one only if it is higher. If the final grade after reevaluation is greater or equal to 5.0, the final grade of the subject will be pass 5.0.

## BIBLIOGRAPHY

### Basic:

- Schindler, W.D.; Hauser, P.J. Chemical finishing of textiles. Boca Raton: CRC, 2004. ISBN 1855739054.
- Heywood, Derek. Textile finishing. Bradford: Society of Dyers and Colourists, 2003. ISBN 0901956813.
- Carr, C.M. Chemistry of the textiles industry. London: Blackie Academic & Professional, 1995. ISBN 0751400548.
- Behery, Hassan M. Effect of mechanical and physical properties on fabric hand. Boca Raton: CRC Press, 2005. ISBN 0849334799.
- Cegarra Sánchez, José. Fundamentos y tecnología del blanqueo de materias textiles. Barcelona: Universitat Politècnica de Catalunya, 1997. ISBN 8460565262.