Course guide
320085 - DPTER - Design of Dyeing, Printing and Coating Processes

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

Coordinating lecturer: Riba Moliner, Marta
Others: Buscio Olivera, Valentina

PRIOR SKILLS

Previously studying the subject Materials for Textile Product Design is highly desirable. Previously studying the subject of Design of bleaching and dyeing processes. Colorimetry is highly desirable.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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)

TEACHING METHODOLOGY

· Presential sessions for delivery of the topics with active student involvement.
· Presential sessions of practical work.
· Preparation and conduct of assessable activities in groups.

LEARNING OBJECTIVES OF THE SUBJECT

GLO1. To become a professional in the design of colour spaces and of technologies for continuous dyeing, printing and coating in the framework of quality and safety management of processes and products.

GLO2. To acquire the ability to know the network of dyeing and finishing industries, and the technical specifications for finished textiles with a view to their integration into the body of operations of the textile production process.

GLO3. To develop the specific and transversal skills associated to the academic work.
STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>30,0</td>
<td>20.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>30,0</td>
<td>20.00</td>
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**Total learning time:** 150 h

CONTENTS

**Topic 1: DESIGN OF CONTINUOUS DYEING PROCESSES**

**Description:**
1.1. Continuous dyeing machinery.
1.2. Pad-Batch processes.
1.3. Thermosol process.
1.4. Pad-Steam processes.
1.5. Continuous washing processes.
1.6. Simulation criteria for continuous processes.
1.7. Optimization criteria for dyeing processes.

**Specific objectives:**
SO1. To produce laboratory test planning forms.
SO2. To assess the accuracy of laboratory tests.
SO3. To know the reproducibility criteria for different continuous dyeing methods.
SO4. To plan process and product quality control tests.
SO5. To understand the result specification criteria used in international trade

**Full-or-part-time:** 50h
Theory classes: 10h
Laboratory classes: 10h
Self study: 30h
**Topic 2: DESIGN OF PRINTING PROCESSES**

*Description:*
2.1. Printing paste rheology.
2.2. Classification of printing techniques and design effects.
2.3. Main criteria for the assessment of printed fabrics.
2.3. Printing assessment criteria.
2.3. Printing machinery.
2.5. Machinery for dye fixation and aftertreatment
2.6. Analysis of industrial printing sequences.
2.7. Control criteria for printing processes.

*Specific objectives:*
SO6. To know the reproducibility criteria for various dyestuff application methods.
SO7. Assay planification for process and product quality control.
SO8. To understand the result specification criteria used in international trade
SO9. To understand the relationships) between colour spaces and textile products design.

*Full-or-part-time: 50h*
Theory classes: 10h
Laboratory classes: 10h
Self study : 30h

**Topic 3: TEXTILE COATING PROCESSES**

*Description:*
3.2. Technical specifications of the substrates for coating.
3.3. Application of Chemical formulae and fields of use.
3.4. Coating techniques.

*Specific objectives:*
SO10 Knowledge of the reproducibility criteria for (various) coating methods.

*Full-or-part-time: 50h*
Theory classes: 10h
Laboratory classes: 10h
Self study : 30h
GRADING SYSTEM

Students will be assessed in a continual manner for self-directed learning and team work. The presence to practical work is mandatory. Only 2 justified absences will be accepted. Knowledge and skill acquisition will be assessed as follows:

- First evaluation: 30%.
- Second evaluation: 30%.
- Laboratory technical reports: 30%.
- Presentation of technical rapport: 10%

The recovery of the first exam will take a written test, the second day of the exam, then the same with grade 0 to grade 5. replace the initial qualification provided they exceed

Teachers may at any time ask students to justify the conclusions of their reports in order to verify that they have been actively engaged in the activities.

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: