Course guide
320081 - DBTC - Design of Bleaching and Dyeing Processes. Colorimetry

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: 2022  ECTS Credits: 6.0  Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: Riba Moliner, Marta
Others: Cayuela Marin, Diana

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

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES
Specific:
1. TEX: knowledge of unitary operations of preparing, dyeing and blanching
CE20. TEX: Applied knowledge of sizing and finishing processes
CE25. TEX: Knowledge of the chemical compound behaviour for the for the textile ennoblement.

TEACHING METHODOLOGY
· Presental sessions for delivery of the topics with active student involvement.
· Presental sessions of practical work.
· Preparation and development of assessable group activities.

LEARNING OBJECTIVES OF THE SUBJECT
GLO1. To acquire a professional knowledge for the design of colour spaces and the preparation, bleaching, batch dyeing and surface colorimetry of all types of textiles.
GLO2. To develop skills for industrial quality and safety management in batch dyeing processes.
GLO3. To become acquainted with the industrial network of dye and finish manufacturers and the technical specifications for finished textiles, with a view to the integral development of textile production processes.
GLO4. 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>Hours large group</td>
<td>30.0</td>
<td>20.00</td>
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<tr>
<td>Hours small group</td>
<td>30.0</td>
<td>20.00</td>
</tr>
<tr>
<td>Self study</td>
<td>90.0</td>
<td>60.00</td>
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</tbody>
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Total learning time: 150 h

CONTENTS

**Topic 1: DESIGN OF PREPARATION AND BLEACHING PROCESSES**

**Description:**
1.1. Unit processes: Singeing, carbonising, scouring, degreasing, washing, chemical and optical bleaching.
1.2. Optimization of processes formulations.
1.3. Optimization of production processes.
1.4. Technical specifications for the resulting textile products, with emphasis on international trade

**Specific objectives:**
OE2. Assessing the reliability of tests
OE3. Planning testing quality control process and product.

**Related activities:**
RA0, RA1

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

**Topic 2: INDUSTRIAL USES OF COLORIMETRY**

**Description:**
3.1. Fundamentals of instrumental colorimetry.
3.2. Colour measurement
3.3. White degree measurement
3.4. Colour differences and tolerances
3.5. Kubelka Munk's laws.

**Full-or-part-time:** 50h
- Theory classes: 8h
- Laboratory classes: 10h
- Self study: 32h
Topic 3: DESIGN OF BATCH DYEING PROCESSES

Description:
2.2. Technical information about dye preparations: reception control.
2.3. Relationship between specific types of textile materials and the most suitable dyestuffs for their dyeing.
2.4. Batch dyeing machinery and textile dyeing processes. Technology management.
2.5. Optimization criteria for dyeing processes.

Related activities:
RA2, RA3, RA4

Full-or-part-time: 50h
Theory classes: 12h
Laboratory classes: 10h
Self study: 28h

GRADING SYSTEM

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

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

Students who have suspended the first partial exam may choose, by communicating to the teacher, a review of recovery. 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.

The teacher may request at any time, a justification of the conclusions of the reports the student has to prove participation.

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: