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

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 714 - ETP - Department of Textile and Paper Engineering
Academic year: 2018
Degree: BACHELOR'S DEGREE IN TEXTILE TECHNOLOGY AND DESIGN ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: Josep Mª Canal Arias
Others: Cristina Rodríguez Sorigué

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

Degree competences to which the subject contributes
Specific:
CE20. TEX: Applied knowledge of sizing and finishing processes
CE23. TEX: knowledge of unitary operations of preparing, dyeing and blanching
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.
• Self-directed study and report preparation. Cooperative learning.
• 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></th>
<th>Hours large group:</th>
<th>Hours medium group:</th>
<th>Hours small group:</th>
<th>Guided activities:</th>
<th>Self study:</th>
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<tbody>
<tr>
<td><strong>Total learning time</strong>: 150h</td>
<td>30h</td>
<td>0h</td>
<td>30h</td>
<td>0h</td>
<td>90h</td>
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### Content

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

<table>
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<tr>
<th>Description:</th>
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| 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. |

<table>
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<th>Learning time:</th>
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| 50h  
Theory classes: 10h  
Laboratory classes: 10h  
Self study: 30h |

**Related activities:**
- RA0, RA1

**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.
### Topic 2: DESIGN OF PRINTING PROCESSES

**Learning time:** 50h  
- Theory classes: 10h  
- Laboratory classes: 10h  
- Self study: 30h

**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.  
2.4. Printing assessment criteria.  
2.5. Machinery for dye fixation and aftertreatment.  
2.6. Analysis of industrial printing sequences.  
2.7. Control criteria for printing processes.

**Related activities:**

RA2, RA3, RA4

**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.

### Topic 3: TEXTILE COATING PROCESSES

**Learning time:** 50h  
- Theory classes: 10h  
- Laboratory classes: 10h  
- Self study: 30h

**Description:**

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

**Related activities:**

RA3, RA4, RA5

**Specific objectives:**

SO10. Knowledge of the reproducibility criteria for (various) coating methods.
Students will be assessed in a continual manner for self-directed learning and team work.

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:


Canal, J. M. Criteris per a la innovació de processos de tintura en base a la MTD. Terrassa: EUETIT, 2007.


#### Others resources: