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

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 702 - CMEM - Department of Materials Science and Metallurgy
Academic year: 2019
Degree: BACHELOR'S DEGREE IN TEXTILE TECHNOLOGY AND DESIGN ENGINEERING (Syllabus 2009).
ECTS credits: 6
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: Riba Moliner, Marta
Others: Casadesus Fuste, Marta

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
- 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>Total learning time: 150h</th>
<th>Hours large group: 30h</th>
<th>20.00%</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 0h</td>
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<tr>
<td></td>
<td>Hours small group: 30h</td>
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<td></td>
<td>Guided activities: 0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
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## Content

<table>
<thead>
<tr>
<th>Topic 1: DESIGN OF CONTINUOUS DYEING PROCESSES</th>
<th>Learning time: 50h</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 10h</td>
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<tr>
<td></td>
<td>Laboratory classes: 10h</td>
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<tr>
<td></td>
<td>Self study: 30h</td>
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</tbody>
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### 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.

### 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:
1. Printing paste rheology.
2. Classification of printing techniques and design effects.
3. Main criteria for the assessment of printed fabrics.
5. Printing machinery.
6. Machinery for dye fixation and aftertreatment.
7. Analysis of industrial printing sequences.
8. 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:
1. Application fields for textile coated materials.
2. Technical specifications of the substrates for coating.
3. Application of Chemical formulae and fields of use.
4. Coating techniques.

#### Related activities:
RA3, RA4, RA5

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


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


Others resources: