205402 - Functional Innovations in Textile Finishes

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 702 - CEM - Department of Materials Science and Engineering
Academic year: 2019
Degree: MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Teaching unit Optional)
ECTS credits: 5
Teaching languages: Spanish

Teaching staff
Coordinator: Ardanuy Raso, Monica
Others: González López, Laura

Prior skills
The usual graduates in engineering

Teaching methodology
Theoretical classes
Analysis of Case Studies
Laboratory classes

Learning objectives of the subject
- In the current environment, innovation has become a competitive priority of the highest order. The company has identified new products, processes and services, and being able to implement them.
- The objective of the course is to provide the tools to develop innovative projects, managing innovation in all areas of the textile company to achieve competitive leadership.
- Develop the ability of students to identify areas of process innovation and textiles, structure them and present them to engineering projects.
- Boosting the knowledge of chemical finishing of fabrics, primarily from the points of view of the finished fabric quality aspects and ecological implications of products and processes. Study of biotechnological processes textiles.
- Develop specific skills associated with academic and transverse.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 125h</th>
<th>Hours large group: 30h</th>
<th>24.00%</th>
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<tbody>
<tr>
<td>Hours medium group:</td>
<td>0h</td>
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<tr>
<td>Hours small group:</td>
<td>15h</td>
<td>12.00%</td>
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<td>Guided activities:</td>
<td>0h</td>
<td>0.00%</td>
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<tr>
<td>Self study:</td>
<td>80h</td>
<td>64.00%</td>
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## Content

### Unit 1: Introduction
- **Description:** General introduction to Innovations in textile finishing
- **Learning time:** 9h
  - Theory classes: 9h

### Unit 2: Sol-gel finishing
- **Description:**
  1. Concept of Sol-gel
  2. Examples of applications of sol-gel finishing to textiles
- **Related activities:**
  - Laboratory work I
- **Learning time:** 29h
  - Theory classes: 9h
  - Self study: 20h

### Unit 3: Micro-nanoencapsulation finishing
- **Description:**
  1. Concept of Micro-nanoencapsulation
  2. Examples of applications of Micro-nanoencapsulation finishing to textiles
- **Related activities:**
  - Laboratory work II
- **Learning time:** 29h
  - Theory classes: 9h
  - Self study: 20h

### Unit 4: Plasma treatments
- **Description:**
  1. Concept of plasma treatments
  2. Examples of applications of plasma treatment on textiles finishing
- **Related activities:**
  - Laboratory work III
- **Learning time:** 29h
  - Theory classes: 9h
  - Self study: 20h
Unit 5: Multifunctional and smart finishing

<table>
<thead>
<tr>
<th>Learning time: 29h</th>
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<tbody>
<tr>
<td>Theory classes: 9h</td>
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<tr>
<td>Self study: 20h</td>
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**Description:**
5.1. Examples of applications of multifunctional finishing of textiles
5.2. Examples of applications of smart finishing of textiles

**Related activities:**
Laboratory work IV

Qualification system

Exam 1: 20%
Exam 2: 20%
Exercises and practical cases: 30%
Laboratory reports: 30%.

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 5.0.

Regulations for carrying out activities

Will promote teamwork and individual tutorials to achieve the objectives

Bibliography

**Basic:**


**Complementary:**


**Others resources:**