**320076 - MDPT - Materials for Textile Design**

**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). (Teaching unit Compulsory)  
**ECTS credits:** 6  
**Teaching languages:** Catalan, Spanish  

**Coordinating unit:** Carrera Gallissà, Enric  
**Ardanuy Raso, Monica**  
**Others:** Carrera Gallissà, Enric  
**Ardanuy, Mònica**  

**Opening hours**  
**Timetable:** To be agreed with the students  

**Degree competences to which the subject contributes**  

**Specific:**  
1. TEX: Knowledge of the chemical compound behaviour for the for the textile ennoblement.  
2. TEX: Knowledge of materials and their application in the textile industry  

**Transversal:**  
4. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.  

**Teaching methodology**  
- Face sessions to present content.  
- Face sessions of practical work.  
- Self study and exercises.  
- Preparation and measurable activities.  

At its exhibition contents professor will introduce the theoretical foundations of the subject, concepts, methods and results and illustrate them with examples for easy understanding.  
The practical sessions in the classroom will be the Physics Laboratory and Textile Chemistry and Textile Laboratory Polymers  
The students will have to study independently to assimilate concepts, solve exercises  

**Learning objectives of the subject**  
GLO1. Knowledge of the science, the physical and chemical technology and properties of the materials textile amenable to spinning and weaving.  
GLO2. To be able to design any type of fabric of analogous characteristics to which habitually they are attributed to conventional fabric with the typical properties of conventional ones.  
GLO3. Capacity to know, understand and be able to select textile materials as a function of the specifications of the target
product and a predetermined design.
GLO4. To know, understand and be able to use available equipment and techniques for the fibre analysis of textile materials with a view to ensuring appropriate use.
GLO5. To understand textile material degradation and dry interaction with the environment with a view to its avoidance or minimization.

**Study load**

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

### Topic 1: TEXTILE FIBRES. PROPERTIES RELATED TO FIBRE GEOMETRY. FIBRE ANALYSIS

**Learning time:** 25h  
Theory classes: 4h  
Practical classes: 6h  
Self study: 15h

**Description:**
1.1. Textile fibres. Definition, classification and general concepts.  
1.2. Fibre length. Characterization and significance to textile processes and design.  
1.3. Crimping. Characterization and significance to textile processes and design.  
1.4. Fineness. Characterization and significance to textile processes and design.  
1.5. Cross-sectional shape. Characterization and significance to textile processes and design.

**Related activities:**  
RA1, RA2, RA3

### Topic 2: PROPERTIES RELATED TO THE NATURE OF FIBRES

**Learning time:** 25h  
Theory classes: 6h  
Laboratory classes: 4h  
Self study: 15h

**Description:**
2.1 Fibre density. Characterization and significance to textile processes and design.  
2.2 Mechanical properties of fibres. Characterization and significance to textile processes and design.  
2.3 Technical properties of fibres. Characterization and significance to textile processes and design.  
2.4 Sorption properties of fibres. Conditioning. Characterization and significance to textile processes and design.  
2.5 Optical properties of fibres. Characterization and significance to textile processes and design.  
2.6 Electrical properties of fibres. Characterization and significance to textile processes and design.

**Related activities:**  
RA4, RA5, RA6
320076 - MDPT - Materials for Textile Design

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**Topic 3: NATURAL FIBRES. PROPERTIES, IDENTIFICATION AND RELATIONSHIP TO TEXTILE DESIGN**

**Learning time:** 33h  
Theory classes: 7h  
Practical classes: 6h  
Self study: 20h

**Description:**
- 3.1. Structure and properties of cellulose natural fibres.  
- 3.2. Structure and properties of wool, silk and the main types of piles.  
- 3.3. Identification of natural fibres.

**Related activities:**  
RA7, RA8

**Topic 4: CHEMICAL FIBRES. PRODUCTION, PROPERTIES AND IDENTIFICATION. RELATIONSHIP TO TEXTILE DESIGN**

**Learning time:** 56h  
Theory classes: 11h  
Practical classes: 12h  
Self study: 33h

**Description:**
- 4.1. Polymerization reactions and spinning processes for chemical fibres.  
- 4.2. Relationship between structure and properties in chemical fibres.  
- 4.3. Identification of chemical fibres.

**Related activities:**  
RA9, RA10, RA11, RA12

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**Qualification system**

- In application of the regulations for the return of unsatisfactory results of ESEIAAT, there will be a recovery of the 1st part, consisting of a review, with the same format and basis of contents as the 1st partial examination.  
- This reconduction examination will be carried out in the space, day and hours assigned for the second partial. In other words, whoever completes the reconduction examination will have four hours to do the second and partial exam.  
- Those who, having obtained a grade lower than 5.0 of the first partial exam, will be entitled to take the exam of the renewal, request to take the examination of renewal. This request will be made by the way and within the period indicated by the responsible teacher.  
- The mark of the examination of the renewal will replace the mark obtained in the first partial examination, provided that the mark of the examination of renewal is higher than that of the 1st partial examination.

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:


Complementary: