Learning objectives of the subject

OE1: To have a general view of the possibilities that the textile materials and technologies for product design
OE2: To be capable to solve design problems with textile materials

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 small group: 30h</td>
<td>20.00%</td>
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<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
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</tbody>
</table>
### Chapter 1. Introduction to the textile and clothing industry

**Description:**
- Structure of the textile industry
- Socioeconomic importance
- Uses of textiles
- Basic nomenclature of textiles
- The concept of textile design

**Specific objectives:**
- Know and understand the structure of the textile cycle, its socioeconomic importance, the nomenclature and the main applications of the products obtained by this industry, as well as the concept of textile design

**Learning time:** 5h
- Theory classes: 2h
- Self study: 3h

### Item 2. Textile fibers and their possibilities in product design

**Description:**
- Classification of textile fibers, abbreviations
- Natural fibers of plant, animal and minerals
- Man made fibers
- Main physical properties that influence the design
- Major chemical properties that influence the design
- Textile Labelling

**Related activities:**
- P1. Identification microscopy and organoleptic textile fibers
- P2. Marches analytical identification of textile fibers

**Specific objectives:**
- Learn to identify textile fibers classified by their nature. Know the main properties of textile fibers from the perspective of engineering design and labeling legislation. Learn to identify the main textile fibers with optical microscopy techniques and analytical gears

**Learning time:** 40h
- Theory classes: 6h
- Laboratory classes: 4h
- Self study: 30h
Item 3. Spinning and processes from the perspective of design

Learning time: 24h
Theory classes: 6h
Laboratory classes: 4h
Self study: 14h

Description:
Properties of wires and their influence on the design of textiles
Cotton spinning process: Opening and cleaning of fibers, Card, Draw frame, Roving, Ring spinning, OE spinning, air jet spinning, spinning friction, coil twisted.
Worsted spinning process
Process of spinning wool carding
Process spinning regenerated

Related activities:
P3. Determination title and twisting wires
P4. Workshop on the practical operation of the main machines of the spinning process

Specific objectives:
Know and understand the basic operations of spinning processes, the characteristics of cotton spinning processes, yarn, wool carding and regenerated and the main properties of the wires from the perspective of product design. Learn practical way to determine the main properties of the threads as tittle, twisting and retaliation, as well as the regularity of mass.

Item 4. Woven fabrics, knitting and weaving from the perspective of design

Learning time: 24h
Theory classes: 6h
Laboratory classes: 4h
Self study: 14h

Description:
Fundamentals of Theory woven
Ligaments basic: Plain, tweet and Ras.
Principles of double fabric, cloth both sides, and special fabrics Jacquard
Design ligaments puff
Operation and pierced mesh looms
Knitted fabric and its applications
Properties of tissues that influence product design

Related activities:
P5. Workshop on the practical operation of the shed looms
P6. Workshop CAD design fabrics

Specific objectives:
Learn the basics of the theory of woven and ligaments fundamental bases of complex derivatives and ligaments as well as the main tools used in the design of ligaments woven. Learn the basics of knitted fabrics and applications. Learn practical way the main tests used to characterize tissue from the perspective of product design.
### Item 5. Nonwoven

**Learning time:** 5h  
- Theory classes: 2h  
- Self study: 3h

**Description:**  
Major acquisition systems  
Properties of Nonwovens for product design, main applications

**Specific objectives:**  
Learn the fundamentals of the technology of obtaining the nonwoven and its main applications.

### Item 6. Finishing from the perspective of design

**Learning time:** 10h  
- Theory classes: 2h  
- Laboratory classes: 2h  
- Self study: 6h

**Description:**  
Finishing processes for the production of textile materials applied to product design  
Bleaching and dyeing processes  
Sizing and finishing processes

**Related activities:**  
P7. Prototyping from the end product specifications

**Specific objectives:**  
Learn the basics of the main finishing processes and its possibilities from the perspective of product design.

### 7. Clothing Industry

**Learning time:** 16h  
- Theory classes: 2h  
- Laboratory classes: 6h  
- Self study: 8h

**Description:**  
The garment design process. Pattern and marked  
Cutting, sewing and ironing

**Related activities:**  
P8. Workshop CAD design pattern  
P9. Evaluation tissue properties

**Specific objectives:**  
Learn the principles of pattern and design as well as industrial processes of cutting, sewing and ironing.
Item 8. Technical textiles

Learning time: 18h
- Theory classes: 4h
- Laboratory classes: 2h
- Self study: 12h

Description:
- Geotextiles
- Textile medicine
- Textile sport
- Textiles for the automotive and other transport
- Other applications of textiles

Related activities:
P10. Visit a textile industry

Specific objectives:
Know the main applications of textiles for technical use.

Qualification system

First exam: 25%
Second exam: 25%
Practice workshop or laboratory: 5%
Work on labeling: 5%
Work on textile fibers: 20%
Work on technical fabrics: 20%
Bibliography

Basic:


Complementary:


