320181 - DJ - Jacquard 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 CHEMICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
BACHELOR'S DEGREE IN TEXTILE TECHNOLOGY AND DESIGN ENGINEERING (Syllabus 2009).
(Teaching unit Optional)
ECTS credits: 6
Teaching languages: Catalan

Teaching staff
Coordinator: Mònica Ardanuy

Prior skills
It is compulsory to follow the course classes regularly. It is a practical course and the software used to design is only available at the class.

Teaching methodology
Sessions of theory
Sessions of practical work at class

Learning objectives of the subject
OAG1. To known the possibilities and limitations of Jacquard looms.
OAG2. To know how to choose the best way to design depending on the fabric to manufacture and the loom to use.
OAG3. To be able to design Jacquard fabrics.

Study load

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

<table>
<thead>
<tr>
<th>TOPIC 1. JACQUARD MACHINES AND CONFIGURATIONS</th>
<th>Learning time: 12h 30m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 5h</td>
</tr>
<tr>
<td></td>
<td>Self study: 7h 30m</td>
</tr>
</tbody>
</table>

**Description:**
- 1.1. Introduction and history
- 1.2. Identification of Jacquard fabrics
- 1.3. Jacquard machines and implications on the design
- 1.4. Jacquard templates. Interpretation and implications on the picks

**Related activities:**
- 1

**Specific objectives:**
- OE1. To understand the implications of the Design on the use of the Jacquard machines
- OE2. To be able to select the most suitable machine for the design to make

<table>
<thead>
<tr>
<th>TOPIC 2. INTRODUCTION TO JACQUARD DESIGN</th>
<th>Learning time: 25h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 10h</td>
</tr>
<tr>
<td></td>
<td>Self study: 15h</td>
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</tbody>
</table>

**Description:**
- 2.1. Steps to follow for a Jacquard Design
- 2.2. Calculations for a Jacquard Design
- 2.3. Structures of weaves of one face
- 2.4. Structures of weaves of two or more faces

**Related activities:**
- 2

**Specific objectives:**
- OE3. To know the effects of the number of warps and wefts used.
- OE4. To know the effects of the weaves used.
### TOPIC 3. WEAVE DESIGN

**Learning time:** 37h 30m  
Theory classes: 15h  
Self study: 22h 30m

**Description:**
- 3.1. Fundamental weaves and its application  
- 3.2. Complex weaves. Double face fabrics  
- 3.3. Weaves with more than one warp and/or weft  
- 3.4. Unitary, Binary, ternary combinations

**Related activities:**
1,2

**Specific objectives:**
OE5. Two know the steps to generate a design

### TOPIC 4. PROCESS OF JACQUARD DESIGN

**Learning time:** 37h 30m  
Laboratory classes: 15h  
Self study: 22h 30m

**Description:**
- 4.1. Previous calculations

**Related activities:**
3

**Specific objectives:**
OE5. Two know the steps to generate a design

### TOPIC 5. ANALYSIS OF JACQUARD FABRICS

**Learning time:** 12h 30m  
Laboratory classes: 5h  
Self study: 7h 30m

**Description:**
- 4.1. How to tackle a design in function of one initial concept, from a picture or from a fabric.

**Related activities:**
3
TOPIC 6. CAD SIMULATION

Learning time: 25h
Laboratory classes: 10h
Self study: 15h

Description:
4.1. How to tackle a design in function of one initial concept, from a picture or from a fabric.

Specific objectives:
OE6. To be able to select the most appropriate method to make a project for a specific design.
# Planning of activities

<table>
<thead>
<tr>
<th>ACTIVITY 1. THEORY CLASSES</th>
<th>Hours: 62h 30m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classes of theory</td>
<td>Theory classes: 25h</td>
</tr>
<tr>
<td></td>
<td>Self study: 37h 30m</td>
</tr>
</tbody>
</table>

**Description:**
- Classes of theory

**Support materials:**
- Basic and complementary bibliography.
- Power point presentations

**Descriptions of the assignments due and their relation to the assessment:**
- Exam

**Specific objectives:**
- OE1, OE2, OE3, OE4, OE5, OE6

<table>
<thead>
<tr>
<th>ACTIVITY 4. ANALYSIS OF TEXTILE STRUCTURES</th>
<th>Hours: 25h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Laboratory classes: 10h</td>
</tr>
<tr>
<td></td>
<td>Self study: 15h</td>
</tr>
</tbody>
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**Description:**
- To make analysis of complex structures applied to Jacquard fabrics

**Support materials:**
- Jacquard Fabrics

**Descriptions of the assignments due and their relation to the assessment:**
- Report of results

**Specific objectives:**
- OE3, OE4, OE5

<table>
<thead>
<tr>
<th>ACTIVITY 5. VIRTUAL MATERIALIZATION OF JACQUARD DESIGNS</th>
<th>Hours: 37h 30m</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Laboratory classes: 15h</td>
</tr>
<tr>
<td></td>
<td>Self study: 22h 30m</td>
</tr>
</tbody>
</table>

**Description:**
- Simulation with CAD

**Support materials:**
- Basic and complementary bibliography.
- Power point presentations

**Descriptions of the assignments due and their relation to the assessment:**
- Designs simulated

**Specific objectives:**
- OE6
**ACTIVITY 2. STUDY OF JACQUARD LOOM**

**Description:**
Analysis of Jacquard looms

**Support materials:**
- Jacquard loom
- Bibliography
- Power point presentations

**Descriptions of the assignments due and their relation to the assessment:**
- Deliverable

**Specific objectives:**
- OE2

**Hours:** 12h 30m
- Practical classes: 5h
- Self study: 7h 30m

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**ACTIVITY 3. IMAGE MODIFICATIONS**

**Description:**
Treatment of images

**Support materials:**
- Computers CAD
- Image software

**Descriptions of the assignments due and their relation to the assessment:**
- Image

**Specific objectives:**
- OE5

**Hours:** 12h 30m
- Laboratory classes: 5h
- Self study: 7h 30m

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**Qualification system**

Exam: 30%
Deliverables: 70% (20% 1st term, 50% 2nd term)
Bibliography

Basic:


Morera García, S. Dibujo y ornamentación de tejidos. Tarrasa: [s.n.], 1958.


Complementary:
