

Course guide

320083 - CET - Tailorability of Textile Structures

Last modified: 02/04/2024

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 702 - CEM - Department of Materials Science and Engineering.

Degree: BACHELOR'S DEGREE IN TEXTILE TECHNOLOGY AND DESIGN ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2024 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Ventura Casellas, Heura

Others: González López, Laura

PRIOR SKILLS

An adequate knowledge of yarns and fabrics, basic mechanics and production organization is desirable. It is recommended to have passed the subjects of Materials for product textiles design, Design of laminar woven structures, and Design of laminar knitted structures.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

CE21-GETDT. Ability to develop comprehensive textile products and industrial garment making. (Specific Technology Module: Textile)

TEACHING METHODOLOGY

The theoretical classes will be, mainly, participatory lectures on content, where the fundamentals of the topics, concepts, methodologies and calculations will be introduced with the help of by means of industrial practice-related examples to facilitate their understanding.

The face-to-face sessions of practical work will be classes based on the resolution, with the students participation, of practical cases and/or exercises related to the contents of the subject, as well as laboratory/workshop practices.

Students must also work autonomously, both individually and in groups, in solving proposed problems, exercises and assignments, assimilating other collateral subjects.

LEARNING OBJECTIVES OF THE SUBJECT

The course class is structured in two parts: the first regards the pattern making and material consumption, and second regards the joining of fabric pieces.

The objective of the first part is to introduce the pattern making methodology for textile products, and the fabric cutting planning to minimise its consumption.

The objective of the second part is to analyse the product/garment under two points of view: the technical point of view of the operations required for joining the pieces that compose the product/garment, and the organisation point of view to organise those operations.



STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	20.00
Hours small group	30,0	20.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

TOPIC 1. INDUSTRIAL PATTERN MAKING

Description:

- 1.1 Anatomical and garment sizes
- 1.2. Design methodology for basic patterns
- 1.3. Size grading

Specific objectives:

To understand proportions on garment design
To design patterns from sizes

Full-or-part-time: 37h 30m

Theory classes: 7h 30m

Laboratory classes: 7h 30m

Self study : 22h 30m

TOPIC 2. PLANNING THE FABRIC CUT ORDER FOR MANUFACTURE

Description:

- 2.1. Assessment of the laying plan
- 2.2. Definition of the cut order planning
- 2.3. Management of fabric remnants and defects at the manufacturing process
- 2.4. Elaboration of the bill of materials (BOM)

Specific objectives:

To improve fabric consumption utilisation
To optimize consumptions for a cut order
To relate the purchasing and supply functions with other function of the business
To define a fault detection system
To determine purchase lot size and to elaborate a bill of material (BOM)

Full-or-part-time: 37h 30m

Theory classes: 7h 30m

Laboratory classes: 7h 30m

Self study : 22h 30m

TOPIC 3. SEWING TECHNOLOGY

Description:

- 3.1. Types of stitches and seams
- 3.2. Characteristics of sewing machine needles and threads
- 3.3. Feeding systems in sewing machines

Specific objectives:

- To be able to specify the different elements in seams
- To be able to draw the different seam designs

Full-or-part-time: 25h

Theory classes: 5h

Laboratory classes: 5h

Self study : 15h

TOPIC 4. SEWABILITY

Description:

- 4.1. Relationship needle-thread-fabric
- 4.2. Seam resistance
- 4.3. Determination of the needle penetration force
- 4.4. Determination of the seam puckering

Specific objectives:

- To find the best relationship needle-thread-fabric
- To determine the causes and solutions for sewing faults

Full-or-part-time: 25h

Theory classes: 5h

Laboratory classes: 5h

Self study : 15h

TOPIC 5. ANALYSIS OF SEWING OPERATIONS

Description:

- 5.1. Operations plan for joining textile products
- 5.2. Sequential analysis of sewing operations
- 5.3. Flows study with MTM
- 5.4. Evaluation of the operations work

Specific objectives:

- To rationalize the sewing work
- To quantify the time required for the operations (production time)

Full-or-part-time: 25h

Theory classes: 5h

Laboratory classes: 5h

Self study : 15h

GRADING SYSTEM

A continuous evaluation model will be applied in order to evaluate the autonomous work and teamwork of students.

The evaluation of acquisition of knowledge, skills and abilities will be based on:

- Practical activities and tasks: 20%
- Written exam: 40%
- Project deliverable(s): 20%
- Oral project defense: 20%

The teacher may request, at any time, a justification of the conclusions of the activities to prove the active participation of the student.

Students who have failed the written test, which will be done during the partial exam period, will be able to opt for the recovery. The recovery will be carried out with a written test during the final exam period, after the oral defense of the project, and will be evaluated with a grade between 0 and 7. The grade obtained will replace the initial grade in case of being higher.

For those students who meet the requirements and submit to the re-evaluation examination, the grade of the re-evaluation 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 practices, tasks, projects and presentations will be kept.

If the final grade after re-evaluation is lower than 5.0, it will replace the initial one only if it is higher. If the final grade after re-evaluation is greater or equal to 5.0, the final grade of the subject will be pass 5.0.

BIBLIOGRAPHY

Basic:

- Carr, Harold; Latham, Barbara; Tyler, David J. Carr and Latham's technology of clothing manufacture [on line]. 4th ed. Oxford: Blackwell, 2008 [Consultation: 12/12/2022]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=428196>. ISBN 9781405161985.
- Hayes, S; McLoughlin, J; Fairclough, D. Cooklin's garment technology for fashion designers [on line]. 2nd ed. Chichester: Wiley, 2012 [Consultation: 15/06/2022]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=822566>. ISBN 9781405199742.
- Eberle, Hannelore [et al.]. Clothing technology. Haan-Gruiten: Verlag Europa-Lehrmittel, 1999. ISBN 3808562218.
- Jones, I.; Stylios, G.K. Joining textiles: principles and applications [on line]. Oxford: Woodhead Publishing, 2013 [Consultation: 12/04/2022]. Available on: <https://www.sciencedirect-com.recursos.biblioteca.upc.edu/book/9781845696276/joining-textiles>. ISBN 9781845696276.
- Capdevila Juan, Xavier. Confección industrial de tejidos destinados a prendas de vestir : aspectos tecnológicos y de proceso. 3a ed. 2001. ISBN 8460075834.

Complementary:

- Capdevila Juan, Xavier. Tecnología del termofijado de entretelas. Barcelona: Entre Telas, 1992. ISBN 8488445008.
- Oficina Internacional del Trabajo. Introducción al estudio del trabajo. 4a ed. Ginebra: OIT, 1996. ISBN 9223071089.