INTERNATIONAL JOINT MASTER IN INNOVATIVE LEATHER TECHNOLOGY

ENVIRONMENT

COORDINATION
THOMASSET, AGNÈS

ACADEMIC YEAR
2023-2025

SUBJECT GENERAL INFORMATION

Subject name	**ENVIRONMENT**			
Code	*3SEM-SUB4*			
Typology	*3rd semester. Continued evaluation.*			
Course number of credits (ECTS)	*6*			
Type of activity, credits, and groups	*Degree*	*Course*	*Character*	*Modality*
	Joint Master Degree in Leather Technology	*1*	*Compulsory*	*Blended learning*
Coordination	*THOMASSET, AGNÈS*			
University	*ITECH*			
Language	*English*			

LEARNING OBJECTIVES

1. Understand the environmental impact of products and know of the tools used in evaluating these impacts (LCA), about the eco-conception approach and of commercialising a product, including the recycling at the end of the shelf life.
2. To understand actual and future environmental issues in leather industry.
3. To understand regulations in leather industry.
4. To understand the Cr VI problematic in leather and to get some skills to manage it.

LEARNING OUTCOMES

Basic

CB7 That students have the learning skills that allow them to continue studying in a way that will be largely self- directed or autonomous.

CB8 That students are able to integrate knowledge and face the complexity of formulating judgments based on information that, being incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments.

Transversal

CT4. Evaluate the sustainability and social impact of the proposed proposals and act with ethical, environmental and professional responsibility.

CT5. Apply the gender perspective to the functions of the professional field.

Specific

CE3. Apply basic knowledge and applications of environmental technologies and sustainability in the field of leather engineering.

CE4. Apply theories and principles of leather engineering in order to analyse complex situations and make decisions using engineering resources.

CE7. Apply the different evaluation, innovation and communication tools based on the life cycle (LCA).

CE11. Apply the necessary legislation in the field of leather engineering.

CE12. Recognize the different types of companies, understanding their institutional and legal framework, and identifying the essential aspects for the organization and management of companies.

SUBJECT CONTENT

1. SUSTAINABLE DEVELOPMENT, LIFE CYCLE ANALYSES, ECO-CONCEPTION

1.1. The main points of sustainable development
- The concept of sustainable development
- Sustainable development indicators
- Introduction to the environment within a company

1.2. Life cycle analysis
- Environmental impacts
- LCA tools
- Analyse the impacts of a product

1.3. Eco-conception
- The main points of eco-conception
- The tools and their integration in the conception process
- Industrial applications

1.4. Recycling products at the end of their shelf life
- Treatment principles at the end of shelf life
- The recycling field and associated processes
- Rate and costs of end of shelf life treatments

2. LEATHER SUSTAINABILITY

2.1. INTRODUCTION

2.2. LEATHER INDUSTRY: IMPACT INVENTORY
- Water / Energy / Chemicals / Effluents / Solid wastes

2.3. BEST AVAILABLE TECHNIQUES

2.4. FUTURE ISSUES
- Effluent salinity/ solid waste treatment / Leather biodegradability

2.5. ESTIMATION OF THE ENVIRONMENTAL PERFORMANCE FOR LEATHER
- Environmental audits & Ecolabels
- LCA

2.6. CHROMIUM TANIN ALTERNATIVES: review of existing & new chemicals and performances

2.7. LEATHER ALTERNATIVES: review of performances

3. SPECIFIC LEATHER REGULATION AND CHROME 6

3.1. Reach Regulation in articles
- Innocuousness - Basics of REACH
- REACH
- Substances subjected to Communication
- Substances subject to Authorisation
- Substances subjected to Restriction
- REACH specifications: leather, polymer & textiles

3.2. Chromium VI

- Reminder: process, skin and pH
- Chromium VI and safety
- Chromium VI in leathers

METHODOLOGY

THEORY CLASSES

Expository lectures: by the teacher, with the explanation of concepts, materials and work plan.

Conferences: by industrial actors in environmental field.

Support material: Course notes and relevant bibliography.

EXERCISES AND SELFSTUDY

Supervised exercise sessions by the teacher.

General description: Individual exercises, self-learning and individual study.

Support material: Course notes and relevant bibliography.

EVALUATION

Exercises	10%
Exam 1	35%
Exam 2	35%
Exam 3	20%