



WASTE MANAGEMENT

COORDINATION

CIATEC

ACADEMIC YEAR

2023-2025

SUBJECT GENERAL INFORMATION

Subject name	WASTE MANAGEMENT			
Code	4SEM-GD-SUB2			
Typology	4th semester. Continued evaluation.			
Course number of credits (ECTS)	3			
Type of activity, credits, and groups	<i>Degree</i>	<i>Course</i>	<i>Character</i>	<i>Modality</i>
	<i>Joint Master Degree in Leather Technology</i>	<i>1</i>	<i>Compulsory</i>	<i>Blended learning</i>
Coordination	<i>Arcibar Orozco, Javier Antonio</i>			
University	<i>CIATEC</i>			
Language	<i>English</i>			

LEARNING OBJECTIVES

1. To know the regulations and the contamination parameters of the tanning industry.
2. To analyse the management of water and effluents in industry.
3. To know the current alternatives for wastewater treatment.
4. To understand the importance of waste management for sustainability and environmental care in tanning processes.
5. To understand the circular economy through illustrative practices.
6. To know the analysis of the life cycle focused on the leather process.

LEARNING OUTCOMES

Basic

CB6 Possess and understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context

CB10 That students have the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous

General

CG1. Appropriately apply mathematical, analytical, scientific, instrumental, technological and management aspects.

CG2 Technically and economically manage projects, facilities, plants, companies and technology centres.

CG3. Research, develop and innovate.

Transversal

CT1 Communicate clearly and precisely orally and in writing in English.

CT2 Efficiently use digital technologies in their professional field.

CT3 Propose innovative, creative and entrepreneurial solutions in situations typical of the professional field.

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

Specific

CE2 Analyse, apply and project the main unit operations and the systems that make up the leather manufacturing process.

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

CE5 Identify the main industrial processes of leather manufacturing in its three phases: beamhouse, tanning and post-tanning and finishing.

CE9 Project, calculate and design products, processes, facilities and plants, related to the field of leather engineering.

SUBJECT CONTENT

1. POLLUTION IN THE TANNING INDUSTRY

1.1 Definition

1.2 Legislation

1.3 Main parameters: oxidizable matter, suspended solids, nutrients, salinity. inhibitory matter

1.4 Action of the parameters on the medium

1.5 Discharge limits to different receiving media

1.6 Pollution control methods

2. WATER MANAGEMENT IN INDUSTRY

L2.1 Management needs

L2.2 Principles of water management

L2.3 Water management in the tannery: objectives, diagrams. study cases

3. CONTAMINANT LOADS IN THE TANNERY

3.1 Introduction.

3.2 Analysis of contamination by:

Operations and processes

Type of leather and product

3.3 Calculation of costs and concentrations

3.4 Study of discharge tables

4. BEST PRACTICES

4.1 Actions available in the different stages and operations

4.2 Possibilities of reducing the different parameters and compliance with discharge limits

5. WASTEWATER TREATMENT

5.1 Percentages of elimination of different treatments and choice of the appropriate treatment, according to the receiving environment

5.2 Description and calculation of the different treatment operations

5.3 Previous treatments

Homogenization

Primary settling

5.4 Physical chemical treatment

5.5 Biological treatments

Active sludge

Trickling filters

Biodisks

Nutrient removal

6. CIRCULAR ECONOMY

- 6.1 Design without waste
- 6.2 Vision of systems
- 6.3 Encourage diversity
- 6.4 Energy efficiency

7. ANALYSIS OF THE LIFE CYCLE OF AUTOMOTIVE LEATHER UPHOLSTERY.

- 7.1 Introduction
- 7.2 Methodological structure of the Life Cycle Assessment, LCA
- 7.3 Inputs in the automotive upholstery process
- 7.4 Technical sheet
- 7.5 Main phases of the life cycle of automotive upholstery
- 7.6 General diagram of the life cycle of a product
- 7.7 Impacts associated with the products
- 7.8 Norms that allow the certification of the study
- 7.9 Categories of environmental impacts associated with the life cycle of products and services

METHODOLOGY**THEORY CLASSES**

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

Support material: Course notes and relevant bibliography.

EXERCISES AND SELFSTUDY

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

Support material: Course notes and relevant bibliography.

Deliverable: Exercises and practices to deliver at the end of each unit.

WRITTEN EXAMS

General description: 2 written exams of the different topics addressed in the classes will be applied.

EVALUATION

Exercises	40%
Practices	60%
Exam 1	25%
Exam 2	25%