

Academic Year: ( 2023 / 2024 )

Review date: 28-04-2023

Department assigned to the subject: Mechanical Engineering Department

Coordinating teacher: RODRIGUEZ MARQUEZ, ALICIA

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 1

## OBJECTIVES

Learning:

- Knowledge of circular economy paradigms.
- Knowledge of Life Cycle Assessment (LCA) methodologies.
- Knowledge of environmental certifications and regulations and concepts such as Environmental Product Declaration (EPD).
- Knowledge of materials with low environmental impact and their mechanical behavior.

Skills:

- Ability to manage environmental opportunities and requirements within the design process.
- Ability to integrate sustainability into the company's strategy and objectives (design for sustainability).

Competence:

- Development and implementation of LCA studies to optimize to sustainability, using tools such as SiLCA (Simplified LCA).

## DESCRIPTION OF CONTENTS: PROGRAMME

1. Sustainability and strategy: value creation and global vision (design for sustainability).
2. Optimization of sustainability in the product lifecycle
3. Sustainable supply chain
4. Circular economy in industry
5. Sustainable business models, entrepreneurship and sustainable innovations.
6. Certifications and regulations for sustainability

## LEARNING ACTIVITIES AND METHODOLOGY

Training activities:

- Theoretical class
- Practical class
- Individual student work
- Tutorials
- Partial and final exams

Teaching methodologies:

- Class lectures by the professor with the support of computer and audiovisual media, in which the main concepts of the subject are developed and the bibliography is provided to complement the students' learning.
- Critical reading of texts recommended by the professor of the subject: press articles, reports, manuals and/or academic articles, either for later discussion in class, or to expand and consolidate the knowledge of the subject.
- Resolution of practical cases, problems, etc. posed by the teacher individually or in groups.
- Presentation and discussion in class, under the moderation of the teacher of topics related to the content of the subject, as well as case studies.
- Elaboration of works and reports individually or in groups.

#### Training activities:

- Theoretical class
- Practical class
- Individual student work
- Tutorials
- Partial and final exams

#### Teaching methodologies:

- Class lectures by the professor with the support of computer and audiovisual media, in which the main concepts of the subject are developed and the bibliography is provided to complement the students' learning.
- Critical reading of texts recommended by the professor of the subject: press articles, reports, manuals and/or academic articles, either for later discussion in class, or to expand and consolidate the knowledge of the subject.
- Resolution of practical cases, problems, etc. posed by the teacher individually or in groups.
- Presentation and discussion in class, under the moderation of the teacher of topics related to the content of the subject, as well as case studies.
- Elaboration of works and reports individually or in groups.

### ASSESSMENT SYSTEM

<b>% end-of-term-examination:</b>	40
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	60

The acquisition of the knowledge competences will be evaluated by means of a test at the end of the term, which will account for 40% of the final grade.

Ongoing assessment will account for 60% of the final grade. Through the works and practical cases developed by the students, the relative competences of knowledge as well as the skills and attitudes pursued will be evaluated.

Likewise, the degree of participation of the student in the sessions will be evaluated, as well as his skills and abilities in the development, resolution and discussion of the practical cases of the different subjects.

### BASIC BIBLIOGRAPHY

- Mats Larsson Circular Business Models Developing a Sustainable Future, Springer, 2018

- Paul Polman & Andrew Winston NET POSITIVE: HOW COURAGEOUS COMPANIES THRIVE BY GIVING MORE THAN THEY TAKE, HARVARD BUSINESS REVIEW PRESS, 2021