Product and Environment

Professor: Alba Bala Gala
Office hours: by appointment
Course Type: Compulsory
Credits: 3 ECTS
Term: Second

1. COURSE PRESENTATION

Course Description

The development of cleaner products and services is increasingly becoming a necessity and a catalyst for companies. In this course, the necessary tools to determine the environmental impact associated with them will be provided. The course gives students the necessary information to understand and apply different tools for environmental evaluation of products (mainly environmental indicators, MET-METCO matrices, and LCA). It shows students the applications of these tools, including communication and Ecodesign of products and services. It also provides students with a critical mindset for analyzing products and services available in the market, as well as the basics of using one of the most widely used LCA software tools in the world.

The course in the study plan

This **compulsory** course belongs to the subject of **Environmental Dimension of Sustainability** of the study plan. It takes place in the **second quarter**.

Learning Objectives

At the end of the course, students should:

- Know the existence of different types of tools for the environmental analysis of products, and understand the main differences between them as well as their pros and cons.
- Better understand the life cycle (LC) approach for the assessment of products and services, and why it is necessary to apply it.
- Have a deep learn about life cycle assessment (LCA) (references, applications,

and methodology)

- Know the basic knowledge required for using SIMAPRO software, a specific LCA software tool.
- Have basic knowledge of the use of LCA for EcoDesign purposes.

Related SDG

SDG 9: Industry, Innovation and Infrastructure
SDG 12: Responsible Consumption and Production
SDG 13: Climate Action

2. COURSE LEARNING PLAN

Methodology

The course comprises eight 3-hour sessions, which combine theory lecturing with practical exercises and the use of some tools. Participants will also engage in presentations of reports, cases, or project assignments. Activities will require both individual and group work.

The course also involves a substantial amount of autonomous work outside the classroom that will help them to gain a deeper understanding of the material covered in the class.

Hours devoted by the student (according to ECTS): **75**

Evaluation criteria

Three elements concur in the final mark:

- **Final exam (30%):** the final exam is used to assess the individual level of knowledge and understanding of each student. It will include questions covering topics from all the classes. To pass the exam the minimum grade is 5.
- **Practical exercises and deliveries (60%):** during the sessions, some exercises related to different topics would be done, and delivered, to account for the final grade. Eventually, some extra exercises to be prepared at home would be asked. They will also account for the final grade.
- **Class attendance and active participation (10%):** Class attendance is compulsory and will be considered in the final grades; punctuality is a must. It is the students' responsibility to comply with this measure.

Other evaluation criteria to take into consideration:

Retake

Students who fail the course during regular evaluation will be allowed ONE re-take of the examination/evaluation. Students that pass any Retake exam should get a 5 by default as a final grade for the course. If the course is again failed after the retake, students will have to register again for the course the following year.

No-show

In case of a justified no-show to an exam, the student must inform the corresponding faculty member and the director(s) of the program so that they study the possibility of

rescheduling the exam (one possibility being during the "Retake" period). In the meantime, the student will get an "incomplete", which will be replaced by the actual grade after the final exam is taken. The "incomplete" will not be reflected on the student's Academic Transcript.

Plagiarism

Plagiarism is to use another's work and to present it as one's own without acknowledging the sources in the correct way. All essays, reports or projects handed in by a student must be original work completed by the student. By enrolling at any UPF BSM Master of Science and signing the "Honor Code," students acknowledge that they understand the schools' policy on plagiarism and certify that all course assignments will be their own work, except where indicated by correct referencing. Failing to do so may result in automatic expulsion from the program.

Calendar and Contents

Session 1: 15 January 2025

- Introduction to the course.
- Life Cycle Thinking: environmental indicators, MET matrix and LCA.

Session 2: 22 January 2025

- LCA Methodology: Goal and Scope (Exercise).
- LCA Methodology: Inventory (Exercise).

Session 3: 5 February 2025

- LCA Methodology: Impact Assessment and interpretation (Exercise; simplified LCA).

Session 4: 6 February 2025

- LCA Application: Eco Desing - Guest speakers (Inèdit).
- LCA vs PEF and EPD.

Session 5, 6 and 7: 19 and 27 February and 5 March 2025

- Introduction to LCA software Tools.
- SIMAPRO Training and Practice.

Session 8: 12 March 2025

- Summary of the theoretical contents of the course
- Debate about future trends

Final Exam: 20 March 2025

Hours devoted by the student (according to ECTS) **75**

3. PROFESSOR

Dra. Alba Bala graduated in Environmental Science in 2000 at Universitat Autònoma de Barcelona (UAB). She holds a Master in Environmental Sciences and obtained her PhD from UAB in 2015.

She is currently the Executive Director of the UNESCO Chair in Life Cycle and Climate Change, and lecturer at ESCI-UPF. She worked as a teacher in Ecodesign and Environmental Analysis of products at the School of Industrial Design (ESDI, Ramón Llull University) and at Elisava Design School. She was a researcher at the Institute of Environmental Science and Technology (UAB). She has developed more than 30 national and international projects on LCA, green procurement and eco-design. Member of the Spanish LCA Network.

Awards. Finalist of the international awards "Europe Innova Awards", 2008 edition, awarded by the European Commission, DG Enterprise and Industry. Winning of the “Design for Recycling (2000)” awarded by the Catalan Government.

4. READING MATERIALS/ BIBLIOGRAPHY/RESOURCES

No textbook is required for this course. All the required material will be provided. Any readings, notes, handouts, dataset, or additional course material will be available through the course website.