



Life Cycle Assessment Course

Fundamentals and Applications



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1. Introduction

The “*Life Cycle Assessment: fundamentals and applications*” is a training offered by the Sustainability group of the [Aachen-Maastricht Institute for Biobased Materials \(AMIBM\)](#), Maastricht University.

Life Cycle Assessment (LCA) is a standardized method to quantify the environmental impacts of a product or a service over its life cycle and has been used extensively in different sectors as an important decision-making tool for researchers, engineers, scientists, managers, and policymakers. LCA plays a crucial role in a transition toward a more circular economy and sustainable development.

2. Objectives of the course

The “*Life Cycle Assessment: Fundamentals and applications*” aims to:

- Provide a clear explanation of the framework and principles of LCA (following the international ISO standards).
- Provide the basic knowledge on how the participants can perform an LCA study.
- Show the potentials and applications of LCA in the transition toward sustainability and a biobased and circular economy.
- Stimulate criticism regarding sustainability claims and conducted LCA studies.

At the end of the course, you should be able to:

- recall the fundamentals of **life cycle thinking**
- describe and understand **what and why LCA** is an important tool for sustainability
- explain four **standardized steps** of an LCA study
- explain what a **functional unit** is and give an example for a product or system
- explain what defining **system boundaries** means
- classify different types of **allocation** systems in LCA studies
- summarize how **environmental impacts** are calculated in an LCA study
- **interpret** the results of an LCA study
- **compare** the results of different LCA studies for similar products or systems
- **critically analyse** a conducted LCA study

3. Course Outline

This course includes four **online sessions via Zoom** and the links will be sent to the participants before the first session. The lectures will be recorded and shared with the participants. Besides, literature and references will also be provided. In the online sessions, the principles and fundamentals of sustainability assessment and LCA methodology will be presented. Each session has a duration of approximately 90 min followed by a 30-min session for questions and comments on the presentations. A **preliminary** timetable of the sessions is presented below.


Session 1 – Introduction, sustainability assessment, and circularity
Date: April 5th 14.00 – 16.00

Time	Content	Instructor
14.00	Welcome and introduction of the course	Carolina Bettker Vasconcelos
14.10	Sustainability Assessment	Yvonne van der Meer
14:40	Break	
14.45	Life Cycle Thinking and Circularity	Cris Garcia Saravia
15.30	Open Session: Q&A	
16.00	End of the session	

Session 2 – LCA methodology: Goal & Scope Definition and Life Cycle Inventory
Date: April 12th 14.00 - 16.00

Time	Content	Instructor
14.00	LCA framework (Part 1): Goal & Scope definition	Marco Serafini
14.40	Break	
14.50	LCA Framework (Part 2): Life cycle inventory	Michelle Gian
15.30	Open Session: Q&A	
16.00	End of the session	

Session 3 – LCA methodology: Impact Assessment and Interpretation of Results
Date: April 19st 14.00 – 16.00

Time	Content	Instructor
14.00	LCA framework (Part 3): Impact Assessment	Pranav Nakhate
14.40	Break	
14.50	LCA Framework (Part 4): Interpretation	Felicitas Pellengahr
15.30	Open Session: Q&A	
16.00	End of the session	

Session 4 – LCA applications: Case studies
Date: April 26th 14.00 – 16.00

What? - In this last session, a case study is provided to the participants on a relevant topic (see, *topics ideas*). Participants will be assigned to groups depending on their field of expertise and background. The participants in each group are divided in two teams: **Team A** provides arguments supporting the case study and **Team B** provides arguments against the case study.

How? - Both teams will prepare a 7-min pitch presentation, where the participants will provide arguments in favor or against the case study using scientific literature (publications, reports, etc.) focusing on the LCA framework, namely the selection of system boundaries, functional units, allocation approach and environmental impacts. Afterward the pitch presentations, the participants will receive feedback from the instructors.



Why? - The aim of this session is to foster the participants' critical thinking and questioning of subconscious perceptions in the area of sustainability through discussions on a scientific level (scientific as opposed to populist). This "small competition" will encourage an open debate between the participants and instructors on the importance and challenges of LCA.

Time	Content
14.00	Participants presentations
15.00	Break
15.05	Participants presentations
16.00	<i>End of the session</i>

Case Study Topics

Case study topics will be disclosed later in our course. Some possible topics are: plastics, biomass, textiles.

Please note that the topics will focus on biobased applications.

4. Certification

Participants will receive a certificate upon successful completion of the course.

5. Course Fees

Participants	Fee
Industry participant	500 €
Non-profits, PhDs, Academics	350 €
Students (limited spots)	100 €

6. Registration

Participants are welcomed to register to the course [HERE](#).

After signing the Registration Form, you will receive a payment link through e-mail within a couple of days. As soon as your payment is confirmed, you will receive a confirmation e-mail.



7. Supporting team

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8. Contact

If you have any questions, please contact the course coordinator Carolina Bettker Vasconcelos.