

# SYLLABUS

course description

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| Course title   | <b>Life Cycle Assessments</b><br><b><i>Materials and Design for a Circular Economy</i></b><br><b>Area: Seminar 1</b>   |
| Course code  | <b>96024</b>   |
| Scientific sector  | -  |
| Degree   | <b>Master in Eco-Social Design (LM-12)</b>   |
| Semester   | <b>I</b>   |
| Year   | <b>1<sup>st</sup> and 2<sup>nd</sup></b>   |
| Credits  | <b>2</b>   |
| Modular  | <b>No</b>  |
| Lecturer   | <b>Aart van Bezooijen</b><br>office F3.04, e-mail ....@unibz.it, tel. +39 0461 015226/-27 Webpage<br><a href="http://www.unibz.it/en/design-art/people/StaffDetails.html?personid=">http://www.unibz.it/en/design-art/people/StaffDetails.html?personid=</a> |
| Scientific sector of the lecturer  | -  |
| Teaching language  | <b>English</b>   |
| Office hours   | -  |
| Teaching language  | <b>English</b>   |
| Total lecturing hours  | <b>18</b>  |
| Total hours of self-study and/or other individual educational activities | <b>32</b>  |
| Attendance   | <b>mandatory</b>   |
| Prerequisites  | -  |
| Course page  | -  |

## **Course description**

In this workshop, we will focus on the role and importance of materials and design in the context of a circular economy. The course will provide information through inspiring lectures followed by practical exercises to apply the discussed materials and methods. We will discuss the importance of life-cycle-assessment, what it can (and cannot) do, and assess and compare the environmental impact of existing products ourselves. In short, a “learning by doing” approach involving short information sessions, group work and presentations to share knowledge, support critical thinking and discuss positions.

## **Educational objectives**

### **Students will be able to:**

- ✓ Know which tools and methods are available for circular design.
- ✓ Are able to analyze and calculate the environmental impact of products through eco-indicators (e.g. Ecolizer Design Tool).
- ✓ Insight in the environmental implications of materials and processing selection
- ✓ Are able to define which parts of the lifecycle (production, consumption and disposal) are crucial for product optimization.
- ✓ Learn to see and assess products in the context of their lifecycles

### **Knowledge will be acquired in the following fields:**

- ✓ Circular design tools and methods
- ✓ Lifecycle Assessment (LCA)
- ✓ Cradle to Cradle methodology
- ✓ Eco-design principles
- ✓ Materials Driven Design

**List of topics covered**

- Circular design tools and methods
- Lifecycle Assessment (LCA) focusing on the phases of Processing, Packaging, Transport, Usage and Recycling
- Cradle to Cradle methodology
- Eco-design principles
- Materials Driven Design

**Teaching format**

Frontal lectures combined with hands-on exercises and group presentations.

**Learning outcomes***Knowledge and understanding:*

Fields of circular design and material driven design

*Applying knowledge and understanding:*

Use of Lifecycle Assessment tools and methods

*Making judgments:*

Ability to estimate environmental impact of products

*Communication skills:*

Share findings through group presentations (visual and spoken)

*Learning skills:*

Offering references of online resources and tools for further research

**Assessment**

Assessment the environmental impact of an existing product with a given LCA-method.

Providing one or more possibilities to improve the analyzed product.

**Assessment language:** English

**Evaluation criteria and criteria for awarding marks:**

Calculation with the LCA-method.

Suggested improvement proposals (production, use and disposal).

**Required readings**

No required readings.

**Supplementary readings**

- The Story of Stuff – Annie Leonard
- Cradle to Cradle. Remaking the Way We Make Things – Braungart and McDonough
- Werkzeuge für die Designrevolution – IDR – Institute of Design Research Vienna
- The World we Made – Jonathon Porritt