# SYLLABUS

course description

| Course title          | Life Cycle Assessments  
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<td>Materials and Design for a Circular Economy</td>
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<td>Area: Seminar 1</td>
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<tr>
<td>Semester</td>
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<td>Year</td>
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<td>Credits</td>
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<tr>
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<tr>
<td>Lecturer</td>
<td>Aart van Bezooijen</td>
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<td>office F3.04, e-mail <a href="mailto:....@unibz.it">....@unibz.it</a>, tel. +39 0461 015226/-27</td>
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<td>Scientific sector of the lecturer</td>
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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 – IDRV – Institute of Design Research Vienna
- The World we Made – Jonathon Porritt