

Module number 24 - 26 (BW) 27 - 29 (BM) 33 (EB)	Module title Specialised Elective Module: Circular Economy		
Code CEC	Semester 4/5, 6, 7	Number of WSH 4	Module offered Changing Catalogue. Details can be found online.
Module coordinator Prof. Dr. Sophia Schepers	Tuition type Seminar-style tuition		Module duration 1 Semester
Lecturer Prof. Dr. Sophia Schepers	Compulsory/Elective Elective		Module language English
<p>Learning outcomes</p> <p>The qualification goals mentioned below are subdivided into three dimensions. Each dimension corresponds to a target competence level. The following competence levels have been defined:</p> <ul style="list-style-type: none"> • Competence level 1 (awareness): cursory awareness of simple structures, only previously learned knowledge is tested • Competence level 2 (comprehension): basic understanding of multiple structures up to deeper understanding of the relations between structures, learned knowledge is analysed, combined and applied • Competence level 3 (deep understanding and application): deeper understanding of the relations between structures up to independent transfer and extension of knowledge to new structures, learned knowledge is critically questioned and/or evaluated, interrelations between structures and their consequences are reflected and explained <p>The competence level of the respective qualification goal is represented by the corresponding number (1, 2 or 3) in the competence descriptions below.</p> <p>On completing the module the students will have achieved the following learning outcomes on the basis of scientific methods:</p> <p><u>Subject skills</u></p> <p>Students acquire knowledge of the fundamental terms, concepts, and principles of the circular economy (1). They understand the circular economy as a central element of sustainable economic models and can classify its ecological, economic, and societal dimensions (2). They are able to critically evaluate circular business models, principles such as reduce, reuse, repair, recycle, as well as regulatory requirements, and transfer them into practical application examples (3).</p> <p><u>Method skills</u></p> <p>Students are familiar with fundamental methods for analyzing material and substance flows as well as ecological and economic assessment approaches (1). They can apply concepts such as design for circularity and product life-cycle analyses (2) and use them to evaluate the durability, reparability, and recyclability of products (3).</p> <p><u>Social skills</u></p> <p>Students understand the societal relevance of resource conservation, waste prevention, and sustainable consumption practices (1). Based on their newly acquired knowledge, students can develop solutions to sustainability and circular-economy challenges in teams and represent these solutions in dialogue with stakeholders (2). They can prepare and present complex issues in a manner appropriate for specific target audiences (3).</p> <p><u>Personal skills</u></p>			

Students reflect on the significance of the circular economy for their own actions and develop an awareness of their responsibility toward the environment, the economy, and society (2). They are able to critically question their own behavior and contribute to sustainable, resource-conserving decision-making (3).

Content

Foundations of the Circular Economy

- Sustainability as a driver of the Circular Economy
- Resource conservation and waste prevention
- Political frameworks
- Goals and principles of the Circular Economy
- Circularity assessment methods

Implementation of the Circular Economy

1. Circular Product Design

- Design for circularity
- Transparency in supply chains
- Reverse logistics

2. Circular Business Models

- Use-oriented models: sharing, leasing, product-as-a-service
- Circular Business Model Canvas

3. Digitalization as enabler

- Digital value chains
- Digital product passports & digital twins

4. Transformation processes

- Innovation management
- Change management
- Education and research

5. Challenges in implementation

- Regulatory and financial barriers
- Stakeholder-related and organizational obstacles

6. International perspectives and best practices

- International cooperation and standards
- Practical examples

Literature

Required reading

Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. Resources, conservation and recycling.

MacArthur, E. (2013): Towards the circular economy. Journal of industrial ecology.

Further reading will be announced in the course

Recommended reading

Binder, J., & Braun, M. (2024). The Circular Business Revolution: A Practical Framework for Sustainable Business Models. Pearson.

Braungart, M., & McDonough, W. (2009). Cradle to cradle. Random House.

Additional literature in German (not mandatory)

Büttner, S., Handmann, U., & Irrek, W. (2024): Transformation zur Circular Economy: Kleine und mittlere Unternehmen im Wandel begleiten. Springer-Verlag.

Münger, A. (2021): Kreislaufwirtschaft als Strategie der Zukunft: Nachhaltige Geschäftsmodelle entwickeln und umsetzen. Haufe-Lexware.

Teaching and learning methods

Seminar-style tuition in presence and students' presentations

Type of examination/Requirements for the award of credit points

Written Examination

Other information

Max. number of participants: 30
 Registration necessary. Details can be found in ELO.
 Lecture Times: Will be released in the schedule.

ECTS-Credits 5	Workload 150 hours Contact/attendance time: 60 h Additional work: 90 h	Weighting of the grade in the overall grade 5
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