Valid from 2024.HS

Module description: Real Estate, Energy and Waste Management

Module Code	w.MA.XX.REEWAM.23HS
ECTS Credits	6
Language of Instruction/Examination	English
Module Description	The construction and real estate sectors are responsible for around two-thirds of waste generation and half of resource consumption. To be able to deal with the very limited resources available in the future in an economical and environmentally compatible way and to use potentials to a high degree, a paradigm-shift in the direction of circular economy and sustainable building design, use, and management is indispensable. The level of consideration is also extended to neighborhoods and cities in the sense of regional cycles and the role of the public sector. The principles of the circular economy are taught in the context of planning/construction/use/operation of buildings, infrastructures, and cities using theoretical contexts as well as projects and examples. Methodological knowledge for the assessment of circularity at product, energy, building, and city level is deepened with current tools in practical application.
Organizational Unit	CCR Ltg.
Module Coordinator	Carsten K. Druhmann
Deputy Module Coordinator	Vicente Carabias-Hütter
Program and Specialization	• Circular Economy Management
Legal Framework	Academic Regulations MSc in Circular Economy Management dated 02.06.2022, Appendix to the Academic Regulations for the degree program in Circular Economy Management, first adopted on 23.09.2022
Module Category	**Module Type** Compulsory Elective
Prerequisite Knowledge	Students should be able to: • know the importance of the real estate and construction sector as resource consumers and waste producers. • explain and align the Sustainable Development Goals (SDG) of the UN Agenda 2030 and the EU Environmental, Social and Governance (ESG) Taxonomy. • identify problematic developments in real estate/construction, the energy and waste management industry, and urban development.
Contribution to Program Learning Objectives (by the concerned Module)	• Professional Competence • Methodological Competence • Social Competence • Self-Competence

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Contribution to Program Learning Objectives	**Professional Competence** • Knowing and Understanding Content of Theoretical and Practical Relevance • Apply, Analyze, and Synthesize Content of Theoretical and Practical Relevance • Evaluate Content of Theoretical and Practical Relevance **Methodological Competence** • Problem-Solving & Critical Thinking • Scientific Methodology • Work Methods, Techniques, and Procedures • Information Literacy • Creativity & Innovation **Social Competence** • Written Communication • Oral Communication • Teamwork & Conflict Management • Intercultural Insight & Ability to Change Perspective **Self-Competence** • Self-Management & Self-Reflection • Ethical & Social Responsibility • Learning & Change
Module Learning Objectives	Students... • understand the relationship between resource consumption and waste production and can describe recent developments in the relevant industries. • can apply definitions and strategies for implementing the circular economy within their own contexts. • understand life cycle assessment principles and can understand and describe a building/infrastructure/city “system” as an adaptable model with various life cycle layers. • can evaluate and interpret circular design/construction/use/operation principles for new and existing buildings and apply them to projects. • are able to identify key factors that can be used to improve the circularity of both an existing building/infrastructure and one that is being planned. • understand both the environmental impacts of different product/building phases and the best environmental assessment methods, as well as their benefits. • are familiar with quantitative indicators used to assess circularity and the potential for waste prevention, understand how these are reflected in certification systems, and can apply them. • gain practical experience in illustrating and optimizing the circularity of products. • understand how circular economy compliant projects or properties can be procured.
Module Content	• Introduction to the circular economy in the context of construction, real estate, energy, and waste management. Principles of circular planning, construction, use, and operation. Consideration of environmental impacts along the life cycle. Mapping of circularity at product, building, and infrastructure level. New circular economy business models in the relevant sectors. Methods and tools for assessing the circularity of buildings, infrastructures, and cities.
Links to other modules	This module is linked to the following modules: • w.MA.XX.TEAS.23HS • w.MA.XX.SSEC.23HS • w.MA.XX.MES.23HS • w.MA.XX.BUPAST.23HS
Digital Learning Resources	• Reader • Teaching Videos • Teaching Materials
Methods of Instruction	• Project Work • Case Studies • Interactive Instruction • Exercises • Application Tasks • Problem-Oriented Teaching • Lecture Social Settings Used: • Pair Work • Group Work

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Type of Instruction

	Classroom Instruction	Guided Self-Study	Autonomous Self-Study
Lecture	28 h	86 h	
Excercise	28 h	-	
Project Work	38 h	-	
Seminar	-	-	
Total	**94 h**	**86 h**	**0 h**

Performance Assessment

End-of-module exam	Form	Length (min.)	Weighting
-			
Permitted Resources			

Others	Assessment	Format	Length (min.)	Weighting
Written Assignment	Grade	Partnerarbeit	0	100.00

Classroom Attendance Requirement

75%

On site attendance is compulsory for the lecture/discussion sessions with external speakers, field trip(s) (dates to be confirmed), and presentation of project work results. Coaching sessions for the project work will be possible, including online.

Compulsory Reading

Recommended Reading

Comments