UCLouvain

larct2076

2025

Re-Design: Materiality and Circularity

3.00 credits	30.0 h	Q1

This biannual learning is being organized in 2025-2026

Teacher(s)	Gobbo Emilie ;
Language :	French
Place of the course	Tournai
Main themes	This course addresses the environmental impact of design choices and renovation interventions on existing buildings, emphasizing a resource-saving approach. It explores and discusses key concepts such as life cycle analysis, reuse, reversibility, circularity, relocation, and the valorization of waste as a resource, examining their influence on the architectural design process.
Learning outcomes	**At the end of this learning unit, the student is able to :** **Specific Learning Outcomes** By the end of this course, students will be able to: · Understand the environmental challenges specific to the construction sector, particularly regarding resource availability and waste recovery, · Apply life-cycle principles and concepts at various building scales to promote circular design, · Explore and utilize environmental assessment tools (e.g., TOTEM), · Analyze and compare different intervention scenarios for a case study using the tools introduced in the course, · Develop and articulate a clear, concise argument based on comparative analysis findings. **General Learning Outcomes** In line with the program's learning outcomes (LOs), this course contributes to the development and acquisition of the following LOs: · LO1.1 Prioritize the parameters and issues of a given situation. · LO1.6 Integrate Sustainable Development requirements into the design process, at multiple scales. · LO2.6 Proficiently depict environmental, social, and economic phenomena. · LO3.4 Understand and assess the environmental, social, and economic consequences of construction and technical choices. · LO4.4 Understand and assess the environmental, social, and economic consequences of architectural choices. · LO5.1 Act in full awareneness of one's responsibilities. · LO5.4 Advocate for and act in favor of exemplary architecture in light of Sustainable Development requirements. · LO6.3 Present the results of research within and about architecture while adhering to the conventions of scientific communication. · LO6.4 Incorporate the requirements of sustainable development into the research process: question, body of work, and scientific monitoring.
Evaluation methods	As part of this course, students are assessed in two ways: · Continuous assessment, including a compulsory assignment to be submitted at the end of the term (60% of the final mark). · An oral examination based on the submitted assignment (40% of the final mark). According to Article 72 of the General Regulations for Studies and Examinations, the course instructor may recommend to the examination board that a student who does not submit the assignment on time be denied registration for the examination. Please note that if generative artificial intelligence (AI) is used, it must be used responsibly and in accordance with academic and scientific integrity practices. Using generative AI in any way that does not comply with the uses specified in the course description for the teaching unit in question constitutes an irregularity under Article 107 of the RGEE (non-personal work produced by the student in the context of an assessment).
Teaching methods	Theoretical presentations Practical exercises Site visit
Content	This course is divided into five main sections, with the concept of environmental impact running through all of the sessions. 1. Life cycle and circular construction

	2. Correlated environmental impacts: Decision-making and assessment tools (TOTEM). 3. Manufacturing stage (inflow): Making 'conscious' and resource-efficient design and construction choices to reduce production-related impacts. 4. End-of-cycle stage (outflow): Reducing and recovering waste as a resource – focus on reuse. 5. Use: Rethinking needs – introduction to low-tech Potential site visits and certain external interventions are also planned to provide context for the topics covered.
Inline resources	All information is shared on MOODLE: · Course plan and structure · Course materials posted online after each class · Useful resources
Bibliography	Brand, Stewart. (1994). How Buildings Learn: What Happens After They're Built.Viking. Dautremont, C., & Gobbo, E. (2025). Mapping of Circular Construction Ecosystems' Characteristics: Interconnections, Relationships, and Synchronization of Stakeholders at the Micro, Meso, and Macro Scales. *Sustainability, 17* (2), 541. https://doi.org/10.3390/su17020541 Galle, Waldo & Temmerman, Niels & Cambier, Charlotte & Elsen, Stijn & Herthogs, Pieter & Lanckriet, Wesley & Poppe,Jeroen & Tavernier, Ineke & Vandervaeren, Camille.(2019). Building a Circular Economy. Buildings, a Dynamic Environment Gobbo, E. (2015). Déchets de construction, matières à conception file:///C:/Users/user/Downloads/emiliegobbo_THESE_151102.pdf Gobbo, É., Maghsoudi Nia, E., Straub, A., & Stephan, A. (2024). Exploring the effective reuse rate of materials and elements in the construction sector. *Journal of Building Engineering, 98* , Article 111344. https://doi.org/10.1016/j.jobe.2024.111344 Ghyoot, M., Warnier, A., Billiet, L., & Devlieger, L. (2018).Déconstruction et réemploi : comment faire circuler les éléments de construction. Lausanne : Presses polytechniques et universitaires romandes. Huuhka, Satu & Vestergaard, Inge. (2019). Building conservation and the circular economy: a theoretical consideration. Journal of Cultural Heritage Management and Sustainable Development. Nordby, Anne Sigrid & Berge, Bjørn & Hakonsen, Finn & Hestnes, Anne. (2009). Criteria for salvageability: The reuse of bricks. Building Research & Information. 37. 55-67. European Commission. (2020). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Renovation Wave for Europe–greening our buildings, creating jobs, improving lives.COM (2020) 662 final.
Faculty or entity in charge	LOCI

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Architecture (Tournai)	ARCT2M	3		
Master [120] in Architecture (Bruxelles)	ARCB2M	3		