

Circular Cities (I002772)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size	<i>(nominal values; actual values may depend on programme)</i>			
Credits 3.0	Study time 90 h	Contact hrs	60.0 h	
Course offerings and teaching methods in academic year 2021-2022				
A (semester 1)	English	Gent	integration seminar	20.0 h
			group work	5.0 h
			seminar	7.5 h
			excursion	7.5 h
			guided self-study	5.0 h
			lecture	15.0 h

Lecturers in academic year 2021-2022

Du Laing, Gijs LA24 lecturer-in-charge

Offered in the following programmes in 2021-2022

	crdts	offering
International Master of Science in Sustainable and Innovative Natural Resource Management	3	A
Exchange Programme in Bioscience Engineering: Environmental Technology (master's level)	3	A

Teaching languages

English

Keywords

Sustainability, sustainable cities, circular cities, circular economy

Position of the course

In the yearly CIRCU-CITY summer camp, a group of international students from multiple disciplines (e.g., environmental technology, energy, industrial/civil/environmental engineering, architecture and urban planning, chemistry, materials sciences) is trained and challenged to co-develop novel solutions for sustainable circular cities, with a strong focus on the role of raw materials in the transition to green mobility, renewable energy and digital society. The summer camp makes students aware of the need for (critical) metals and mineral raw materials in the development towards sustainable circular cities. It gives future generations thorough insights in the impact that scarcity of raw materials and policy decisions related to the management of (critical) raw materials may have on sustainable urban development, and stimulate them to find creative alternative solutions to still reach sustainable development goals while being challenged by unforeseen events and policy decisions.

Contents

The summer camp consists of a series of interactive lectures and workshops given by experts in the field related to a variety of aspects of the circular economy, a field visit, a board game, and a 2-day tournament. The field trip will showcase a range of good practices in the circular economy, in particular the renewable energy and e-mobility transition, and the recycling of metals and mineral raw materials. In the board game, each team of players is acting as a product-producing company, gathering raw materials to make products. As in the real world, the future is unknown and a limited number of materials are available, so the players should invest in strategies to address unexpected challenges. All students participate together in the lectures, board game and field trip. In the subsequent 2-days tournament, to be organized for groups of 25 students in 2 or 3 different European cities, multidisciplinary groups of 4-6 students are challenged to design a new city district, meanwhile working towards sustainable

development goals, and dealing with scenario's and challenges imposed by the tournament Board, in which the non-academic sector is also represented. They should visualize their design using Lego building bricks and other materials on a large map, and calculate the raw materials inputs needed to develop and maintain the city district they have designed.

Initial competences

Basic knowledge of chemistry, mathematics and physics

Final competences

- 1 Identify the short- and long-term future consequences of plans and decisions along the entire value chain from an integrated scientific, economical, ethical and intergenerational perspective, and merge this into a solution-focused approach, moving towards a sustainable society
- 2 Have awareness regarding global and long-term dimensions of sustainability and a capacity to identify sustainability issues at local, regional and global scales, involving different stakeholder perspectives
- 3 Assess risks related to different approaches that can be used to increase resource sustainability in the value chain, develop scenarios and mitigation strategies, and assess environmental and social impacts, as well as technical and economic feasibility of these approaches and strategies.
- 4 Think beyond the boundaries of a single (research) domain or economic sector, and systematically explore and generate new ideas to evolve towards a more sustainable society.
- 5 Use knowledge, ideas and technology to create new or significantly improved products, services, processes, policies, new business models or jobs.
- 6 Express openness to innovative scientific developments and their applications in a broad scientific, economic and social context.
- 7 Have the ability to make decisions and show leadership, based on a holistic understanding of the contributions of higher education, research, and business to value creation, in limited sized teams and contexts
- 8 Have intercultural competences, social and communicative skills which are essential to work in an international team and communicate with stakeholders, take leadership positions in the academic as well as non-academic sector, and to collaborate with a variety of stakeholders involved in the raw materials supply chain.

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Guided self-study, excursion, group work, lecture, integration seminar, seminar

Extra information on the teaching methods

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Due to Covid-19, all summer school activities are organized online in the academic year 2020-2021 and some planned activities (e.g. field trip) are replaced by alternative online activities!

Learning materials and price

English lecture slides will be distributed to students. All course material, including background reading material, is distributed electronically by means of Ufora.

References

Course content-related study coaching

The lecturers are available during and directly after the summer camp lectures for questioning, feedback and guidance.

Evaluation methods

continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Examination methods in case of periodic evaluation during the second examination period

Examination methods in case of permanent evaluation

Written examination with open questions, written examination with multiple choice questions, participation, assignment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

Calculation of the examination mark