

# Urban Sustainability and circular Economy

## Lecturers

Ahmed Zaib KHAN MAHSUD (Coordinator) and Aristide ATHANASSIADIS

## Course mnemonic

URBA-H9009

## ECTS credits

5 credits

## Language(s) of instruction

English

## Course period

First term

## Campus

Solbosch

## Course content

Introduction: urban sustainability challenges and circular economy perspectives

Sustainable urbanism: socio-economic, environmental and political dimensions of urbanism

Sustainable circular economy: concepts and approaches

Urban sustainability assessment: concepts and approaches

Metabolism of urban systems – I

Metabolism of urban systems – II

Urban ecosystem services – I

Urban ecosystem services – II

Sustainable urbanism: Micro-scale case studies and best practices

Sustainable urbanism: Macro-scale case studies and best practices

Urban sustainability design, planning, and policy development

## Objectives (and/or specific learning outcomes)

This module aims at analysing and assessing the sustainability of urban systems with an emphasis on circular economy perspectives and sustainable urbanism approaches.

By the end of the module, the student should be able to:

- <sup>1</sup> understand the functioning of urban systems at different scale levels
- <sup>2</sup> analyse the interaction between urban systems and resource flows
- <sup>3</sup> analyse and assess the sustainability of urban systems using state-of-the-art methods, indexes and tools

<sup>4</sup> assess the different initiatives and plans aimed at sustainable urban development

<sup>5</sup> develop strategies and solutions to improve the urban sustainability in terms of urban design, spatial planning and policy

<sup>6</sup> present the analysis and assessment of urban sustainability in the form of a scientific paper

## Teaching method and learning activities

24h lectures: organized to cover the different concepts and methods, including invited guest lectures from practitioners.

12h tutorials: urban sustainability assessment methods and tools application in case studies.

12h case study analysis: students work in groups on a selected case (city, urban area) approved by the coordinator. They will collect data, followed by analysis and assessment with the tools learned during the module.

12h personal work in groups dedicated to the final report in the form of a scientific paper.

## Contribution to the teaching profile

Advanced Masters in Transition Urbanism / Sustainable Urban Design & Regional Planning; and MSc in Urban Studies, and contribution towards: understanding, analysing and assessing the sustainability of urban systems with an emphasis on circular economy perspectives and sustainable urbanism approaches.

## References, bibliography and recommended reading

Adler, Frederick R. and Colby J. Tanner, 2013. *Urban Ecosystems: Ecological Principles for the Built Environment*, Cambridge: Cambridge University Press.

Baccini, P. and P. H. Brunner, 1991. *Metabolism of the Anthroposphere*. Berlin Heidelberg: Springer-Verlag.

Bell, S. and S. Morse, 2008. *Sustainability indicators: measuring the immeasurable?* London: Earthscan.

Cathorpe, Peter, 2011. *Urbanism in the Age of Climate Change*, Washington DC: Island Press.

Ellen Macarthur Foundation, 2013 and 2015. *The circular model - an overview*, and *Circularity Indicators Methodology*, EMF.

Farr, D., 2008. *Sustainable Urbanism: Urban Design with Nature*. New Jersey: John Wiley and Son.

Ferrão, P. and J. E. Fernández, 2013. *Sustainable urban metabolism*, Cambridge (MA): MIT Press.

Jenks, M., & Dempsey, N., 2005. *Future forms and design for sustainable cities*. Boston: Architectural Press.

Loftness, Vivian and Dagmar Haase, eds., 2013. *Sustainable Built Environments*, New York: Springer.

Mostafavi, M., and G. Doherty, eds., 2010. *Ecological Urbanism*. Baden: Lars Muller Publishers.

Pickett, S.T.A. et al. (eds.), 2013. Resilience in Ecology and Urban Design: Linking Theory and Practice for Sustainable Cities (Future City), Dordrecht: Springer.

Stahel, W.R., 2015. *From Waste to Resources - going the opposite way of the Industrial Economy*. London: RESOURCE.

## Course notes

Université virtuelle

## Other information

### Place(s) of teaching

Solbosch

### Contact(s)

Coordinator: Prof. dr. **Ahmed Z. Khan**, BATir Dept., CP 194/2, C Building, Ave Buyl 87, 5<sup>th</sup> floor, room SC5-212, E-mail: [ahmed.khan@ulb.be](mailto:ahmed.khan@ulb.be)

Dr. Aristide ATHANASSIADIS: [arisatha@ulb.be](mailto:arisatha@ulb.be)

## Evaluation method(s)

Other, Group work and Written report

### Evaluation method(s) (additional information)

The students will work in groups and produce:

- A case study analysis assignment during the tutorials using urban sustainability assessment methods and tools (3).
- A final report in the form of a scientific paper (6) describing the selected case study (a city or an urban area) as an urban system (1), analysing the interaction between the urban

system and resource flows (2), assessing the functioning of the urban system at different scale levels in terms of sustainability (1, 3), analysing the recent progress made towards sustainability (4), and proposing strategies and solutions to improve the sustainability (5)

## Determination of the mark (including the weighting of partial marks)

30% case study assignments (data collection, sankey diagrams, and maps).

70% final report in the form of a scientific paper

## Main language(s) of evaluation

English

## Programmes

### Programmes proposing this course at the Brussels School of Engineering

MS-URDE | Specialized Master in transition urbanism and regional planning | unit U

### Programmes proposing this course at the faculty of Architecture La Cambre Horta

MS-URDE | Specialized Master in transition urbanism and regional planning | unit U

### Programmes proposing this course at the faculty of Sciences

MA-GEOG | Master in Geography : General | finalité Urban studies (ULB-VUB)/unit 2