

SMART CITIES AND DIGITALISATION WITH FOCUS ON URBAN ENERGY SUPPLY

00: TEASER

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Elective

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A satellite night view of Europe, showing the continent's outline and the dense network of city lights across its landmass. The lights are concentrated in major urban centers and along coastlines, creating a glowing pattern against the dark background of the sea and unlit land.

2

2 % of
earth's
surface
covered by
cities

50

>50 % of the
global
population
live in cities

75

>75 % of
global energy
consumption
in cities

80

80 % of all
carbon
emissions in
cities

10

But by 2050 cities have
to come down to 10 % of
the annual emissions in
comparison to 1990

0

By 2050 there will
be no more cars
with combustion
engines in our cities

1

In Europe this is to happen
on the back of one single
market for energy and
digital services

COURSE CONTENT AND SCHEDULE

FORMS OF LECTURE AND EXAMINATION

Date	No.	Module name
Basic competences "Smart City as an approach to urban development"		
11.09.23	1	Smart City as an Urban Development Approach
	2	Financing a Smart City & Procurement
	3	Smart City Policies
	4	Stakeholders in the Urban Environment
12.09.23	5	Open Systems
	6	Data and Privacy
	7	Living Labs & co-creation
	8	Digital Planning

Date	No.	Module name
Competencies profile "Urban Energy"		
13.09.23	9	Introduction to Positive Energy Districts
	10	Energy Regulations
		Online city visit 1: Stockholm
	11	Sustainable Energy & Climate Action Plans (SECAPs)
	12	Generation and Storage
		Online city visit 2: Cologne
14.09.23	13	Energy efficient buildings
		Online city visit 3: Vienna
	14	Smart and flexible grids
	15	Cross-sectoral integration of Energy and Mobility
	16	The Future of Urban Energy

Date	No.	Module name
Summary, group work and presentations, test		
tbd		Own preparation of project work
tbd		Content summary, tasks for test preparation
tbd		Project task group work presentations 1
tbd		Project task group work presentations 2
tbd		Test (60 min)

Forms of examination

- Written exam (multiple choice, 60 minutes, 2/3 points)
- Project work (2-3 students, presentation in class, 1/3 points)

Form of lectures

- Lectures as block seminar at HSD
- Project work prep. in home office
- Project work presentation at HSD
- Best time for project work presentations and exam will be decided together on 11.09.2023
- Everything in English language

Understanding cities as complex systems

The module considers practical insights on pressing challenges in European cities to implement sustainable urban development and energy supply. The areas of data and smart city management, innovation, system integration, business models and finance are considered.

Students will be able to

- understand the theoretical foundations and practical applications of state-of-the-art urban development and energy concepts,
- compare best practices for sustainable urban development in leading smart cities,
- describe societal challenges cities are facing,
- be able to identify how technology and innovation shape the urban landscape,
- discuss the complexity of urban systems,
- link theoretical foundations with practical applications in European cities

Teaching and learning methods

- Lecture slides
- Exercises and group work
- Practical examples e.g. virtual city tours
- Case studies and practical projects

