

Curriculum at LAB University of Applied Sciences 2024-2025

Master of Engineering, Urban Climate and Sustainability (MurCS) 24K, Lahti

Code	Name	1 y	2 y	ECTS total
TLTIYMUR24K-1001 CORE COMPETENCE				60
TLTIYMUR24K-1002 Advanced Professional Studies				30
TLTIYMUR24K-1003 Professional Studies				20
TE00BS48	Urban and Interactive Planning	8		8
YT00CQ73	Urban ecosystems and Nature-based solutions	7		7
TE00BS56	Societal Change and Future Foresight Methods	7		7
TE00BS57	Climatology	7		7
TE00BS58	Climate change in urban environment	8		8
TLTIYMUR24K-1004 Elective Studies				10
LA00BO74	Circular economy	5		5
LA00BO75	History and preservation of urban areas	5		5
TLTIYMUR24K-1005 Thesis				30
YO00CF53	Thesis Planning	10		10
YO00CF54	Thesis Project and Reporting		20	20

TLTIYMUR24K-1001 CORE COMPETENCE: 60 ECTS

TLTIYMUR24K-1002 Advanced Professional Studies: 30 ECTS

TLTIYMUR24K-1003 Professional Studies: 20 ECTS

TE00BS48 Urban and Interactive Planning: 8 ECTS

Learning outcomes

On completion of this module the student should be able to:

- Understand the main features of urban history and its impacts in contemporary environment as well as understand the key elements of local identity
- Critically analyze and discuss contemporary phenomena like urbanization and urban sprawl, transitions in urban areas and collaboration of professionals and stakeholders
- Evaluate recent urban development and planning processes and their management
- Discuss and apply key methodologies of public participation in the planning and development processes
- Develop applications from theoretical background into practical situations

YT00CQ73 Urban ecosystems and Nature-based solutions: 7 ECTS**Learning outcomes**

On completion of this module the student should be able to:

- Critically evaluate the key principles dealing with urban ecosystems thinking and ecosystem services
- Understand the need of urban ecosystem research and green infrastructure in cities
- Display a knowledge and understanding of advanced methodologies relating to ecosystems services, landscape planning and geoengineering
- Critically appraise adaptation of theoretical principles in practical situations in different circumstances
- Discuss and apply key management methodologies on landscape planning and green infrastructure in cities
- Analyse and discuss best practices for management of urban green and blue areas

TE00BS56 Societal Change and Future Foresight Methods: 7 ECTS**Learning outcomes**

On completion of this module the student should be able to:

- Critically evaluate the key principles dealing with the field of futures research
- Understand the need of analysis of societal changes and transition processes in political, economical, social, technological fields as the base for the futures research approach
- Display a knowledge and understanding of advanced methodologies relating to futures research
- Critically appraise the differences within the most common approaches in the field
- Discuss and apply key management methodologies on different case studies
- Analyse and discuss best practices for different research and development tasks

TE00BS57 Climatology: 7 ECTS**Learning outcomes**

On successful completion of this module the student should be able to:

- Understand how the interplay of solar radiation, Earth characteristics, and astronomical factors determines the surface-atmosphere energy balance and the Earth climate distribution.
- Understand how dry air thermodynamics explains the concept of atmospheric stability and its consequences.
- Understand water phase change phenomena and their implications in the atmospheric energy balance.
- Understand the forces that guide the direction and speed of winds in local and global scales.
- Understand the physical aspects that drive climate change

TE00BS58 Climate change in urban environment: 8 ECTS**Learning outcomes**

On successful completion of this module students should be able to:

- Demonstrate awareness and understanding of atmospheric physical, thermodynamics, dynamic processes and evolving weather in a climatic context.
- Critically appraise the coupling of urban environment to meteorological-climate, atmospheric stability.
- Demonstrate knowledge and understanding of model outputs and interpretation.
- Identify and critically evaluate the nature, causes and implications of extreme events.
- Identify and critically evaluate the effects of climate change in urban environments .
- Demonstrate technical ability in analytical methods in the evaluation of climate change mitigation/adaptation strategies.

TLTIYMUR24K-1004 Elective Studies: 10 ECTS

Courses included in the study module

GIS as a tool

Climate change and its environmental impacts

LA00BO74 Circular economy: 5 ECTS

Learning outcomes

The student

- is able to describe the main principles of circular economy and identifies the importance of resource efficiency as a part of the concept of circular economy
- is able to demonstrate the life cycle analysis and its principles
- is able to evaluate the environmental impacts of products and processes during their life cycle and develops opportunities to decrease them
- is able to analyse and identify means to improve material and energy efficiency in different environments and urban areas

LA00BO75 History and preservation of urban areas: 5 ECTS

Learning outcomes

The student is able to

- understand the main features about the history of the cities
- identify and define different values in urban built environment as well as means to preserve them
- understand important international treaties and national legislation protecting valuable environments as well as the meaning of international organisations in preservation
- present case examples to demonstrate the variability of built heritage and means to preserve it (for example town planning, local participation of civil society, renovation)

TLTIYMUR24K-1005 Thesis: 30 ECTS

YO00CF53 Thesis Planning: 10 ECTS

Learning outcomes

The student is able to

- describe the objectives and core contents of their thesis.
- plan and describe the stages of the thesis process.
- take into account the possible research permit and copyright issues.

YO00CF54 Thesis Project and Reporting: 20 ECTS

Learning outcomes

The student is able to

- implement the thesis on the basis of an approved thesis plan.
- present the results or output of their thesis.
- report on their thesis in writing in accordance with the thesis guidelines of LAB University of Applied Sciences.
- as a maturity test, write a blog post, a press release or an article.