17.06.2024

Curriculum at LAB University of Applied Sciences 2025-2026

Master of Engineering, Urban Climate and Sustainability (MurCS) 25K, Lahti

Code	Name	1 y	2 y	ECTS total
TLTIYMUR25K-1001	**CORE COMPETENCE**			**60**
TLTIYMUR25K-1002	**Advanced Professional Studies**			**30**
TLTIYMUR25K-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 enviroment	8		8
TLTIYMUR25K-1004	**Elective Studies**			**10**
LA00BO74	Circular economy	5		5
LA00BO75	History and preservation of urban areas	5		5
TE00BS56	Societal Change and Future Foresight Methods	7		7
TLTIYMUR25K-1005	**Thesis**			**30**
YO00CF53	Thesis Planning	10		10
YO00CF54	Thesis Project and Reporting		20	20

TLTIYMUR25K-1001 CORE COMPETENCE: 60 ECTS

TLTIYMUR25K-1002 Advanced Professional Studies: 30 ECTS

TLTIYMUR25K-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 envi-ronment as well as understand the key elements of local identity
- Critically analyze and discuss contemporary phenomena like urbanization and ur-ban sprawl, transitions in urban areas and collaboration of professionals and stake-holders
- Evaluate recent urban development and planning processes and their management
- Discuss and apply key methodologies of public participation in the planning and de-velopment 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 differ-ent 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 po-litical, economical, social, technological fields as the base for the futures research approach
- Display a knowledge and understanding of advanced methodologies relating to fu-tures 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 enviroment: 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.

TLTIYMUR25K-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)

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 po-litical, economical, social, technological fields as the base for the futures research approach
- Display a knowledge and understanding of advanced methodologies relating to fu-tures 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

TLTIYMUR25K-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.