Curriculum at LAB University of Applied Sciences
2021-2022

Master of Engineering, Urban Climate and Sustainability (MurCS) 21S, Lahti

Code	Name	1 y	ECTS total
YMUR21SLTI-1001	**CORE COMPETENCE**		**60**
YMUR21SLTI-1002	**Advanced Professional Studies**		**30**
YMUR21SLTI-1003	**Professional Studies**		**20**
TE00BS48	Urban and Interactive Planning	8	8
TE00BS50	Urban Ecosystems	7	7
TE00BS51	Responsible Business	8	8
TE00BS57	Climatology	7	7
TE00BS58	Climate change in urban enviroment	8	8
YMUR21SLTI-1004	**Elective Studies**		**10**
TE00BS56	Societal Change and Future Foresight Methods	7	7
TE00BS54	Circular Economy	8	8
YT00CN70	Climate Change and Carbon Management		0
YT00CN71	Managing Change for Urban Sustainability		0
YT00CN72	Environmental Planning and Impact Assessment		0
YMUR21SLTI-1005	**Thesis**		**30**
YO00CF53	Thesis Planning		0
YO00CF54	Thesis Project and Reporting		0

YMUR21SLTI-1001 CORE COMPETENCE: 60 ECTS

YMUR21SLTI-1002 Advanced Professional Studies: 30 ECTS

YMUR21SLTI-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

TE00BS50 Urban Ecosystems: 7 ECTS

Learning outcomes
The student
- is able to describe ecosystem services and describe their functioning in urban areas
- is able to demonstrate the impacts of heavy land-use in urban settings considering both green and blue structures
- is able to adapt ecological principles from theory to practise and consider the effects and opportunities of planning green spaces, vegetation and storm water management in urban areas

TE00BS51 Responsible Business: 8 ECTS

Learning outcomes
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The student
- understands the role of economic, social and environmental responsibility as an integrated part of the corporate strategy and everyday business
- is able to evaluate and analyze environmental and social performance of companies
- is able to determine different standards, certificates and labels concerning CSR and their role in company communication
- is familiar with the basic idea of environmental management and knows how to use it in strategic decision making

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.

YMUR21SLTI-1004 Elective Studies: 10 ECTS

Courses included in the study module
GIS as a tool
Climate change and its environmental impacts

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

TE00BS54 Circular Economy: 8 ECTS

Learning outcomes
The student
- is able to describe the main principles of circular economy and identifyies 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

YT00CN70 Climate Change and Carbon Management: 8 ECTS

Learning outcomes
On completion of this module the student should have developed:
Understanding of global carbon cycle and climate change issues and be able to examine the sources, sinks and the human intervention in these,

Understanding of the link between energy policy and carbon cycle,
Conceptual skills to critically evaluate climate change impacts on the urban and built environment,
Understanding of the conceptual and methodological bases for conducting high-quality investigations in the context of carbon management,
Sympathy to the social, economic and environmental considerations relevant to carbon management especially in the built and urban environment context,
Ability to assess adaptation and mitigation policies at international, national and local level,
Knowledge and technical ability to assess and advise on carbon management.

YT00CN71 Managing Change for Urban Sustainability: 8 ECTS

Learning outcomes
On completion of this module the student should be able to:
• appreciate the role of policy in enabling change for urban sustainability
• demonstrate awareness of the policy development process and evaluate the role of the urban professional in promoting urban sustainability
• critically appraise the role of urban professionals as 'agents of change' in leading and managing change for urban sustainability
• evaluate the context for change and effectively design appropriate strategies to aid its management in practice
• display an ability to support the delivery of urban sustainability by drawing on relevant management techniques and skills
• demonstrate reflection on the emerging role of the urban professional as an 'agent of change' and their own personal development requirements

YT00CN72 Environmental Planning and Impact Assessment: 8 ECTS

YMUR21SLTI-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.