

Curriculum at LAB University of Applied Sciences 2022-2023

Master of Engineering, from IoT to AI 22S, online studies

Code	Name	1 y	2 y	ECTS total
TLTIYITT22SV-1001 Core competence				20
TE00BR03	IoT	5		5
YY00CC67	Machine Learning	5		5
YY00CB89	Data Analyzation and Visualization	5		5
YT00CF50	Introduction to artificial intelligence	5		5
TLTIYITT22SV-1002 Complementary competence				10
YT00CF51	Virtualization and servers as data pipeline tools	5		5
LA00BO58	Gamification	5		5
LA00BO49	Lean-Thinking in Developing Operations			0
LA00BQ04	Research-Based Development			0
TE00BC06	GIS as a Tool			0
TLTIYITT22SV-1003 Thesis				30
YO00BU70	Thesis Planning	10		10
YO00BU71	Thesis Project and Reporting	20		20

TLTIYITT22SV-1001 Core competence: 20 ECTS

TE00BR03 IoT: 5 ECTS

Learning outcomes

The student is able to

- understand the contribution of IoT to the significant increase in the amount of data, understand the nature of sensor data and know the basic principles of data processing at the sensor level
- understand the basic structure of IoT devices
- store measurement results in a database and understand the usability of time series databases
- transfer the measurement results to the cloud service using the standard IoT protocol
- describe the structures of different IoT network architectures and their integration into larger information systems
- take into account the specific security risks of IoT technologies

YY00CC67 Machine Learning: 5 ECTS

Learning outcomes

The student is able to

- take advantage of both supervised and unsupervised machine learning in a functional way

- implement the training of the machine learning model
- utilize data-driven decision making
- compare hardware, software and development environments with different applications utilizing machine learning

YY00CB89 Data Analyzation and Visualization: 5 ECTS

Learning outcomes

The student is able to

- examine the properties of the data in terms of further processing
- utilize mathematical methods in data analysis
- utilize a modern statistical tool
- visualize data and analysis in a way that utilizes further processing
- produce a reproducible research

YT00CF50 Introduction to artificial intelligence: 5 ECTS

Learning outcomes

The student is able to

- identify the key features of neural networks and deep learning
- study hyperparameters, activation functions, and neural network topology
- handle hidden layers as well as predict using existing data
- take into account usage of resources and the ethical aspects of artificial intelligence

TLTIYITT22SV-1002 Complementary competence: 10 ECTS

YT00CF51 Virtualization and servers as data pipeline tools: 5 ECTS

Learning outcomes

The student knows

- the basics of using the command line in the development and production environment of digital services
- how to compare and leverage virtualization as part of resource-efficient design and implementation of digital services
- how to design and implement a digital service using virtualization and cloud services on a selected platform
- how to discuss and justify the choice of virtualization and cloud services as a platform for digital services.

LA00BO58 Gamification: 5 ECTS

Learning outcomes

The student is able to

- recognise similar activities in games as well as the opportunities through games in digitally operating environments
- plan strategies and tactics which can be integrated into the game mechanics of digital services
- use the core concepts of games, planning models as well as applicable code examples

LA00BO49 Lean-Thinking in Developing Operations: 5 ECTS

Learning outcomes

The student is able to

- become familiar with continuous improvement principles
- become familiar with the key principles of quality and Lean management
- apply Lean's key tools in developing operations

LA00BQ04 Research-Based Development: 5 ECTS

Learning outcomes

The student is able to

- plan a workplace-oriented research-based development project
- use different methods of workplace development and use/utilize the research data in workplace development
- evaluate and report on the research-based development project

TE00BC06 GIS as a Tool: 5 ECTS

Learning outcomes

The student is able to

- seek information in GIS related topics and use the terms and concepts consistently
- explain principles behind production of GIS information and the role of satellite positioning in data collection
- seek connections using geographic information with a program connected to GIS use and production
- use and combine GIS-based information for different needs and situations
- evaluate on and discuss the development of his/her knowledge base and abilities to use GIS in working life

TLTIYITT22SV-1003 Thesis: 30 ECTS

YO00BU70 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.

YO00BU71 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.