Curriculum at LAB University of Applied Sciences 2022-2023

Bachelor of Engineering, Information and Communications Technology 22S, Double Degree, Lahti

Code	Name	1 y	ECTS total
TLTIICTDD22S-1001 Professional Core Competences			**35**
AT00CR65	User Interfaces and usability	5	5
AT00CR66	Modelling	5	5
AT00CR67	Game design basics	5	5
AT00CR68	Audiovisual technologies	5	5
AT00CR69	Game modelling	5	5
AT00CR70	Advanced game programming	5	5
AM00CM59	XR/AR Studio	20	20
AT00CR71	IoT development environments and systems	15	15
AT00CR72	Hybrid mobile programming	5	5
AT00CR73	Software maintenance and testing	5	5
AT00CR74	Frameworks	3	3
AT00CR75	Cloud computing	4	4
AT00CR76	Virtualization and Cloud services	5	5
AT00CR59	Project Work	5	5
AT00CR77	Web and Game technologies basics	5	5
AT00CR78	Web and Game design	5	5
AT00CR79	Application of web and game technologies	5	5
TLTIICTDD22S-1002 Complementary Competences			**0**
TLTIICTDD22S-1003 Practical Training			**10**
HA00CE82	Practical Training		0
TLTIICTDD22S-1004 Thesis			**15**
AO00CE85	Thesis Planning	5	5
AO00CE86	Thesis Research and Writing	5	5
AO00CE87	Thesis Publication	5	5

TLTIICTDD22S-1001 Professional Core Competences: 35 ECTS

AT00CR65 User Interfaces and usability: 5 ECTS

Learning outcomes

The student knows how
- explain the meaning of the user experience
- design visual content for the web environment
- create user-friendly interfaces

AT00CR66 Modelling: 5 ECTS

Learning outcomes
The student knows how
- explain the basic structure of 3D models
- preferably 3D models for different uses
- Create and edit 3D models with different techniques
- create and edit 3D model materials
- use the basic features of the 3D modeling program
- create digital visualizations

AT00CR67 Game design basics: 5 ECTS

Learning outcomes
The student knows how
- explain the basic principles of game design
- make use of playfulness in different contexts
- describe the importance of game testing in game development
- design a game design work process

AT00CR68 Audiovisual technologies: 5 ECTS

Learning outcomes
The student knows how
- produce and edit videos
- produce and edit audio
- produces post-production of audiovisual output
- analyze and categorize media distribution

AT00CR69 Game modelling: 5 ECTS

Learning outcomes
The student knows how
- utilizes modelling in different environments
- take advantage of the advanced features of game engines
- Use new technologies in gaming and augmented reality applications

AT00CR70 Advanced game programming: 5 ECTS

Learning outcomes
The student knows how
- design and implement 2D and 3D games for different game platforms

- take advantage of the physics of game engines
- make use of mathematics and physics to implement game dynamics

AM00CM59 XR/AR Studio: 20 ECTS

Learning outcomes
The student is able to
- define the concepts of XR (extended reality) and AR (augmented reality) and discuss the possibilities of these and related technologies
- design concepts where XR/AR technologies support user experience, learning, marketing or other client needs and requirements
- produce prototypes that allow the evaluation and further development of XR/AR concepts
- function in their professional role in a multidisciplinary design and production team.

AT00CR71 IoT development environments and systems: 5 ECTS

Learning outcomes
The student is able to
- explain IoT development environments and systems
- develop IoT systems
- analyze IoT development environments and systems

AT00CR72 Hybrid mobile programming: 5 ECTS

Learning outcomes
The student is able to
- Act as a leading software expert in multidisciplinary game and mobile development projects
- Design and implement a hybrid mobile application
- design and implement responsive Mobile first and SPA applications

AT00CR73 Software maintenance and testing: 5 ECTS

Learning outcomes
The student is able to
- design and use basic software testing methods
- use software maintenance systems
- design the software to be maintained

AT00CR74 Frameworks: 3 ECTS

Learning outcomes
Student is able to
- design and implement a modern web-application
- implement an asynchronous web-application
- use modern frameworks in implementing the web-application

AT00CR75 Cloud computing: 4 ECTS

Learning outcomes
Student is able to
- design and use document databases
- design and implement API interfaces using a programming language
- design and implement a scaleable microservice

AT00CR76 Virtualization and Cloud services: 5 ECTS

Learning outcomes
The student is able to
- describe and recognize the benefits of virtualization and cloud computing when it comes to improving the efficiency of ICT services
- plan and execute a digital service using virtualization and cloud computing in a chosen platform
- discuss and justify the choice of virtualization environment or cloud computing service as a platform for digital services

AT00CR59 Project Work: 5 ECTS

Learning outcomes
The student is able to:
- use the concepts related to the project in a coherent and justify their actions on the basis of the knowledge base
- find starting points, needs and criteria for project activities
- to act purposefully, to assess the activity and make suggestions for improvement
- applied to the project a variety of different techniques, methods and ways of working
- operate safely, ethically and customer-oriented
- to act responsibly and in a target group and as otherwise required by the project in interactive situations

AT00CR77 Web and Game technologies basics: 5 ECTS

Learning outcomes
The student is able to
- evaluate the impact of network topology and technology on data transmission performance
- utilize LAN services in their own work (DHCP, VLAN, ARP)
- master the basics and maintaining of operating systems (Linux / Windows)
- explain the basic structures of a web application

AT00CR78 Web and Game design: 5 ECTS

Learning outcomes
The student is able to
- describe the importance of the visual user experience in applications
- Design and implement a simple modern web application
- apply image processing methods in the design of user interfaces
- Design and program a simple game

AT00CR79 Application of web and game technologies: 5 ECTS

Learning outcomes
The student is able to
- act as an expert in a small group and solve tasks together
- act as part of a project using agile project methods
- design web and game interfaces
- design and implement game environments

TLTIICTDD22S-1002 Complementary Competences: 0 ECTS

TLTIICTDD22S-1003 Practical Training: 10 ECTS

HA00CE82 Practical Training: 10 ECTS

Learning outcomes
The student is able to
- describe work-related phenomena and use related concepts
- act in a productive way, following the practices of the workplace and the ethical principles of the profession
- use the techniques, work methods, models and processes that they have learnt
- act in a customer-oriented way in interactive situations in the workplace and in the cooperation network
- evaluate and develop their own competence int the work done in practical training

TLTIICTDD22S-1004 Thesis: 15 ECTS

AO00CE85 Thesis Planning: 5 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.

AO00CE86 Thesis Research and Writing: 5 ECTS

Learning outcomes
The student is able to:
- implement the thesis on the basis of an approved thesis plan.

AO00CE87 Thesis Publication: 5 ECTS

Learning outcomes

The student is able to:
- 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
- write a maturity test.