07.02.2023

Curriculum at LAB University of Applied Sciences
2023-2024

Bachelor of Engineering, Industrial Mechanical Engineering 23S, Double Degree, Lappeenranta

Code	Name	1 y	ECTS total
TLPRMECDD23S-1001	**Professional Core Competences**		**60**
TLPRMECDD23S-1002	**Transferable competences**		**3**
K200CE69	Finnish 1	3	3
K200CE70	Finnish 2	3	3
TLPRMECDD23S-1003	**Engineering studies**		**60**
AT00CH56	Automation Project	15	15
AT00CH55	Basics of Automation	15	15
AT00CH51	Basics of Mechanical Engineering	15	15
AT00CH53	Design and Manufacturing	20	20
AT00CH52	Design and Manufacturing Project 1	12	12
AT00CH54	Design and Manufacturing Project 2	10	10
AT00CH76	Design and Manufacturing Project 3	12	12
TLPRMECDD23S-1004	**Complementary Competences**		**0**
TLPRMECDD23S-1005	**LUT University Studies**		**0**
TLPRMECDD23S-1006	**Studies IIT / SSE Program**		**0**
TLPRMECDD23S-1007	**Practical Training**		**10**
HA00CE82	Practical Training		0
TLPRMECDD23S-1008	**Thesis**		**15**
AO00CE85	Thesis Planning		0
AO00CE86	Thesis Research and Writing		0
AO00CE87	Thesis Publication		0

TLPRMECDD23S-1001 Professional Core Competences: 60 ECTS

Prerequisites
According to DD-agreement

TLPRMECDD23S-1002 Transferable competences: 3 ECTS

K200CE69 Finnish 1: 3 ECTS

Learning outcomes

The student is able to
- identify and use the course vocabulary and phrases for common everyday situations
- tell about oneself and understand basic questions
- read and write simple sentences related to the course topics.

Proficiency level: A1

K200CE70 Finnish 2: 3 ECTS

Learning outcomes
The student is able to
- communicate in most common everyday situations
- understand slowly and clearly spoken Finnish when the topic and the vocabulary are familiar
- understand and write a simple message or text
- use the basic vocabulary and some grammatical structures of Finnish.

Proficiency level: A1

TLPRMECDD23S-1003 Engineering studies: 60 ECTS

Prerequisites
According to DD-agreement

AT00CH56 Automation Project: 15 ECTS

Learning outcomes
The student
- is able to apply more deeply acquired theoretical knowledge in real working life projects.
- understands the role of technical documentation and is also able to create documents according to standards.
- is able to design a PLC-based automation system, simulate its operation and select suitable components for the system.

AT00CH55 Basics of Automation: 15 ECTS

Learning outcomes
The student
- knows the main application areas of automation and understands the overview of the industry.
- is able to name different components of hydraulic and pneumatic systems.
- is able to make and connect hydraulic and pneumatic connections and design hydraulic and pneumatic circuits.
- is able to build and simulate a simple PLC based automation system.
- know the differences between automation solutions in different application areas of automation (especially process and piece goods automation) and the structures and main functions of automation systems.

AT00CH51 Basics of Mechanical Engineering: 15 ECTS

Learning outcomes
The student
- understands the importance of the systematic product development process (including sustainability).
- recognizes the most common basic mechanical standard parts.
- understands the basic rules of technical drawing.
- understands the basic concepts of mechanics.
- knows the most common materials and manufacturing methods.

AT00CH53 Design and Manufacturing: 20 ECTS

Learning outcomes
The student
- understands the meaning of tolerances and fits in mechanical engineering.
- knows the basic rules of designing products for manufacturing.
- is able to apply statics and mechanics of materials in the design and analysis of shafts, beams and columns.
- understands the role of dynamics and vibrations in mechanical engineering.
- Is able to use simulation software (FEM, Working Model)

AT00CH52 Design and Manufacturing Project 1: 12 ECTS

Learning outcomes
The student
- is able to read and produce technical drawings.
- understands the main principles of 3D-modelling.
- Is able to use basic concepts related to mechanics of materials in the structural design process.
- knows some advanced manufacturing methods and modern materials.
- Is able to build scale model prototypes

AT00CH54 Design and Manufacturing Project 2: 10 ECTS

Learning outcomes
The student
- is able to apply more profoundly the acquired theoretical knowledge to real work life projects.
- understands the role of technical documentation and is also able to create documents according to standards.
- is able to design a load-carrying structure (including manufacturing), e.g. a Jib Crane.

AT00CH76 Design and Manufacturing Project 3: 12 ECTS

Learning outcomes
The student
- understands the holistic nature of a machine design project.
- is able to figure out and put into practice all the relevant information and knowledge needed to conduct a design project (e.g. a scissor lift).
- is able to use simulation software (e.g. FEM) when designing a load-carrying machine element or a

whole structure.
- is able to produce a written report of a design project (including technical drawings, technical calculations and a manufacturing plan)

TLPRMECDD23S-1004 Complementary Competences: 0 ECTS

TLPRMECDD23S-1005 LUT University Studies: 0 ECTS

TLPRMECDD23S-1006 Studies IIT / SSE Program: 0 ECTS

TLPRMECDD23S-1007 Practical Training: 10 ECTS

Prerequisites
Select such that sum of Training points from sending university and points gained in LAB is 30

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

TLPRMECDD23S-1008 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.