

**Curriculum at LAB University of Applied Sciences
2023-2024**

Bachelor of Engineering, Mechanical Engineering 23K, Double Degree, Lappeenranta

Code	Name	1 y	ECTS total
TLPRMECDD23K-1001 Professional Core Competences			60
TLPRMECDD23K-1002 Transferable competences			3
K200CE69	Finnish 1	3	3
K200CE70	Finnish 2	3	3
KM00CO04	Finnish Culture and Society	3	3
TLPRMECDD23K-1003 Engineering studies			60
AT00CH51	Basics of Mechanical Engineering	15	15
AT00CH52	Design and Manufacturing Project 1	12	12
AT00CH53	Design and Manufacturing	20	20
AT00CH54	Design and Manufacturing Project 2	10	10
AT00CH55	Basics of Automation	15	15
AT00CH56	Automation Project	15	15
KTE2110	Project (Robotics)	3	3
KTE2311	Project Related to Mechanical Engineering	8	8
TLPRMECDD23K-1004 Complementary Competences			0
TLPRMECDD23K-1005 LUT University Studies			0
TLPRMECDD23K-1006 Studies IIT / SSE Program			0
TLPRMECDD23K-1007 Practical Training			10
HA00CE82	Practical Training		0
TLPRMECDD23K-1008 Thesis			15
AO00CE85	Thesis Planning		0
AO00CE86	Thesis Research and Writing		0
AO00CE87	Thesis Publication		0

TLPRMECDD23K-1001 Professional Core Competences: 60 ECTS

Prerequisites

According to DD-agreement

TLPRMECDD23K-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

KM00CO04 Finnish Culture and Society: 3 ECTS

Learning outcomes

The student is able to

- work and live in Finland or with the Finns without major cultural conflicts.
- use the basic information on Finnish history, society, design, welfare state, identity and nature etc. to understand values, customs and habits in Finland.
- get deeper cultural experiences in Finland through functional and experiential activities and visits related to Finnish culture.

TLPRMECDD23K-1003 Engineering studies: 60 ECTS

Prerequisites

According to DD-agreement

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.

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

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)

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.

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.

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.

KTE2110 Project (Robotics): 3 ECTS

Learning outcomes

The students understand the basic knowledge of robotics and its limitations. They can also apply these skills to practical situations. The students can use a robot as a part of automation.

KTE2311 Project Related to Mechanical Engineering: 8 ECTS

Learning outcomes

Students will learn how to apply theoretical knowledge into real life engineering case. Target is that after the course student: understands better real life demands for mechanical engineering can work in multidisciplinary group can apply knowledge of different mechanical engineering areas into one specific project

TLPRMECDD23K-1004 Complementary Competences: 0 ECTS

TLPRMECDD23K-1005 LUT University Studies: 0 ECTS

TLPRMECDD23K-1006 Studies IIT / SSE Program: 0 ECTS

TLPRMECDD23K-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 into the work done in practical training

TLPRMECDD23K-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.