09.01.2025

Curriculum at LAB University of Applied Sciences
2025-2026

Bachelor of Engineering, Mechanical Engineering (in Finnish) 25S, full-time studies, Lahti

Code	Name	1 y	2 y	3 y	4 y	ECTS total
TLTIKONE25S-1001	**CORE COMPETENCE**					**210**
TLTIKONE25S-1019	**Common Studies**					**3**
AY00BU56	Developing professional competence 1	1				1
AY00BU57	Developing professional competence 2		1			1
AY00BU58	Developing professional competence 3			1		1
TLTIKONE25S-1016	**Language and Communication Studies**					**15**
KS00DD59	Expert Communication Skills	2,5		2,5		5
KE00DD60	English for Engineering	5				5
KR00DD61	Swedish for Work, Written		2			2
KR00BU42	Swedish for Work, Spoken		1			1
KE00DD58	Intercultural Competence		2			2
TLTIKONE25S-1003	**Professional Core Competence**					**147**
TLTIKONE25S-1004	**Engineering Calculations**					**35**
AT00DC94	Basics of Algebra	3				3
AT00DF74	Engineering Calculation 1	20				20
AT00DF75	Engineering Calculation 2		12			12
TLTIKONE25S-1005	**Basics of Mechanical Engineering**					**13**
AT00BZ36	Basics of mechanical engineering	5				5
AT00CV78	Manufacturing Technologies 1	5				5
AT00CV82	Construction Materials	3				3
TLTIKONE25S-1006	**Engineering Drawing and Modelling**					**12**
AT00CV75	Technical Drawing and Modelling 1	8				8
AT00CV76	Technical Drawing and Modelling 2		4			4
TLTIKONE25S-1007	**Yearly Projects**					**10**
AT00CV80	Yearly Project 1	5				5
AT00CV81	Yearly Project 2		5			5
TLTIKONE25S-1008	**Machine Parts**					**14**
AT00CV77	Machine Parts		4			4
AT00CV79	Manufacturing Technologies 2		10			10
TLTIKONE25S-1009	**Automation**					**14**
AT00DE37	Basics of Electrical Engineering		3			3

AT00DF79	Machine Automation		7			7
AT00CV84	Basics of Hydraulics and Pneumatics		4			4
TLTIKONE25S-1010	**Industrial Projects and Team Learning**					**49**
AT00DF76	Industrial Projects and Team Learning 1			24		24
AT00DF77	Industrial Project and Team Learning 2			25		25
TLTIKONE25S-1011	**Practical Training**					**30**
HA00CD55	Practical Training		10			10
HA00BU60	Practical Training 2			10		10
HA00BU61	Practical Training 3				10	10
TLTIKONE25S-1012	**Thesis**					**15**
AO00BU62	Thesis Planning				5	5
AO00BU63	Thesis Project				5	5
AO00BU64	Thesis Report				5	5
TLTIKONE25S-1013	**COMPLEMENTARY COMPETENCE**					**30**
AT00DF78	Industrial Projects and Team Learning 2				30	30

TLTIKONE25S-1001 CORE COMPETENCE: 210 ECTS

TLTIKONE25S-1019 Common Studies: 3 ECTS

AY00BU56 Developing professional competence 1: 1 ECTS

Learning outcomes
The student is able to
- plan their own learning and cooperate in situations related to their own field of studies
- recognize their own competence and the needs to develop them further and to plan their careerpath observing them
- act as a group member
- operate in the learning environments of LAB University of Applied Sciences
- picture their own field of studies and its future skills- give feedback on tuition and services and thus participate in the development of education

AY00BU57 Developing professional competence 2: 1 ECTS

Learning outcomes
The student is able to
- utilize various learning opportunities in curriculum
- recognize and aim their own competences to be in level with the future career requirements
- create a study plan that supports the future career goal
- give feedback on tuition and services and thus participate in the development of education

AY00BU58 Developing professional competence 3: 1 ECTS

Learning outcomes
The student is able to
- identify themselves as a learner and develop their own learning skills
- evaluate innovative or alternative future competences required in their own field
- recognize and aim their own competences to be in level with the future career requirements
- masters the professional concepts of their own field and is able to point out their competenciesduring job recruitment processes
- give feedback on tuition and services and thus participate in the development of education

TLTIKONE25S-1016 Language and Communication Studies: 15 ECTS

KS00DD59 Expert Communication Skills: 5 ECTS

Learning outcomes
The student is able to
- identify and assess their communication skills and give, receive and use feedback to develop their communication skills
- act purposefully, appropriately and skilfully in communication and interaction situations in work life and in his/her professional field (text, presentation and group communication skills)
- take into account the requirements of the recipient/interaction partner, the situation and the field in which they are communicating
- communicate in a structured, understandable and convincing way
- develop their Finnish language and communication skills as part of their expertise and professional competence (willingness and motivation to continuously learn and develop communication skills).

KE00DD60 English for Engineering: 5 ECTS

Learning outcomes
The student is able to
-perform effectively and professionally when applying for a job
-read and process basic texts from their field
-use and find vocabulary from their field
-communicate successfully and professionally about basic topics from their field
-communicate and work in an international environment

KR00DD61 Swedish for Work, Written: 2 ECTS

Learning outcomes
The student is able to
- use vital field-specific vocabulary
- communicate essential matters about their education, work experience and tasks
- understand and produce various short texts related to studies and working life
- acquire information on their field in Swedish
-use online dictionaries.

The student completes the Public Administration Language Test in Swedish.

KR00BU42 Swedish for Work, Spoken: 1 ECTS

Learning outcomes
The student is able to
- convey and validate arguments
- use vital field-specific vocabulary
- communicate essential matters about their education, work experience and tasks
- present their field-specific operational environment
- communicate in various working life situations in Swedish.

The student completes the Public Administration Language Test in Swedish.

KE00DD58 Intercultural Competence: 2 ECTS

Learning outcomes
The student is able to
- understand cultural similarities and differences using theoretical frameworks
- has skills and competences to develop their intercultural sensitivity
- understand culture adaptation and adjustment.

TLTIKONE25S-1003 Professional Core Competence: 147 ECTS

TLTIKONE25S-1004 Engineering Calculations: 35 ECTS

AT00DC94 Basics of Algebra: 3 ECTS

Learning outcomes
The student is able to
- simplify and handle mathematical expressions
- solve basic equations and system of two linear equations
- basics of percentage calculation

AT00DF74 Engineering Calculation 1: 20 ECTS

Learning outcomes
The student is able to
- understand the natural science principles related to the module
- apply mathematics used in basic mechanics and physics
- create a free-body diagram, formulate equilibrium equations, and solve them
- use linear and rotational motion equations
- solve normal and shear forces as well as bending moments on beams subjected to point loads
- conduct physical measurements and prepare a proper report on the results

AT00DF75 Engineering Calculation 2: 12 ECTS

Learning outcomes
The student is able to

- understand the natural science principles related to the module, apply mathematics used in mechanics
- solve normal and shear forces as well as bending moments on beams subjected to distributed loads
- solve stresses and deformations
- solve internal forces, moments and torques for different structures (trusses, frames, beams, columns, mechanisms)
- identify stability phenomena and their effects

TLTIKONE25S-1005 Basics of Mechanical Engineering: 13 ECTS

AT00BZ36 Basics of mechanical engineering: 5 ECTS

Learning outcomes
The student is able to
- work safely in a metal workshop / laboratory
- identify and name the basic components and standard parts of mechanical engineering
- uses tools and measuring instruments
- includes basic terminology related to mechanical engineering.

AT00CV78 Manufacturing Technologies 1: 5 ECTS

Learning outcomes
The student is able to
- work safely in a metal workshop / laboratory
- identify and name the basic components and standard parts of mechanical engineering
- uses tools and measuring instruments
- includes basic terminology related to mechanical engineering.

AT00CV82 Construction Materials: 3 ECTS

Learning outcomes
The student understand
- properties of various materials used in mechanical engineering
- choose the right material for the required purpose.
- knows different methods for changing the properties of materials

TLTIKONE25S-1006 Engineering Drawing and Modelling: 12 ECTS

AT00CV75 Technical Drawing and Modelling 1: 8 ECTS

Learning outcomes
The student is able to
- create 3D models, parts and assemblies
- interpret drawings
- produces part and assembly drawings in accordance with the ISO standards with projections and sections

- dimension the drawings comprehensibly
- basics of tolerancing and other markings related to drawings

AT00CV76 Technical Drawing and Modelling 2: 4 ECTS

Learning outcomes
The student
- deepens modeling skills
- deepens drawing skills
- deepens knowledge of tolerances and special markings
- take into account the influence of manufacturing methods on the design

TLTIKONE25S-1007 Yearly Projects: 10 ECTS

AT00CV80 Yearly Project 1: 5 ECTS

Learning outcomes
The student is able to
- act as part of a team of experts

- the purpose of the team is to simulate real tasks that can be encountered in mechanical engineering
- the topic of the projects varies annually

AT00CV81 Yearly Project 2: 5 ECTS

Learning outcomes
The student is able to
- act as part of a team of experts

- the purpose of the team is to simulate real tasks that can be encountered in mechanical engineering
- the topic of the projects varies annually

TLTIKONE25S-1008 Machine Parts: 14 ECTS

AT00CV77 Machine Parts: 4 ECTS

Learning outcomes
The student
- understands the functions of basic machine parts and knows how to select ja calculate machine parts suitable for the planned purpose.
- knows terminology related to machine parts.
- identify the most relevant factors affecting fatigue damage.
- identify fatigue design methods.

AT00CV79 Manufacturing Technologies 2: 10 ECTS

Learning outcomes
The student
- understand the principles and methods of the most common welding methods
- can choose the most suitable welding method for the application
- understand the principles and execution methods of the most common plate work methods
- choose suitable plate work methods for the application
- uses concepts and terms related to welding and sheet metal work technology
- understand the principles of machining
- can choose the right cutting method for the piece in basic cases
- recognizes and can name different cutting methods and methods
- uses basic terminology and concepts related to machining.

TLTIKONE25S-1009 Automation: 14 ECTS

AT00DE37 Basics of Electrical Engineering: 3 ECTS

Learning outcomes
The student is able to
- recognize the fundamental electrical quantities and their interrelations
- solve simple DC and AC circuits
- explain the principle of a three-phase system and three-phase power
- describe the most common applications of electrical engineering

AT00DF79 Machine Automation: 7 ECTS

Learning outcomes
The student is able to
- basics of electrical and automation technology
- choose components used in machine automation
- basics of electric cabinet manufacturing
- programming automation controls

AT00CV84 Basics of Hydraulics and Pneumatics: 4 ECTS

Learning outcomes
The student
- understand the concepts and terminology of pneumatics and hydraulics.
- understand the laws of pneumatics and hydraulics.
- recognize pneumatics and hydraulics components and their operation.
- can design simple pneumatic and hydraulic systems.

TLTIKONE25S-1010 Industrial Projects and Team Learning: 49 ECTS

AT00DF76 Industrial Projects and Team Learning 1: 24 ECTS

Learning outcomes
The student
- is able to work as part of an independently functioning team
- is able to apply various methods for project planning and information collecting
- is proficient in various mechanical engineering calculation and design methods
- is able to apply knowledge provided in specific topic modules

AT00DF77 Industrial Project and Team Learning 2: 25 ECTS

Learning outcomes
The student
- is able to work as part of an independently functioning team
- is able to apply various methods for project planning and information collecting
- is proficient in various mechanical engineering calculation and design methods
- is able to apply knowledge provided in specific topic modules

TLTIKONE25S-1011 Practical Training: 30 ECTS

HA00CD55 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

HA00BU60 Practical Training 2: 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

HA00BU61 Practical Training 3: 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

TLTIKONE25S-1012 Thesis: 15 ECTS

AO00BU62 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

AO00BU63 Thesis Project: 5 ECTS

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

AO00BU64 Thesis Report: 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.

TLTIKONE25S-1013 COMPLEMENTARY COMPETENCE: 30 ECTS

AT00DF78 Industrial Projects and Team Learning 2: 30 ECTS

Learning outcomes
The student
- is able to work as part of an independently functioning team
- is able to apply various methods for project planning and information collecting
- is proficient in various mechanical engineering calculation and design methods
- is able to apply knowledge provided in specific topic modules