20.09.2024

Curriculum at LAB University of Applied Sciences 2025-2026

Bachelor of Engineering, Wood Technology 25K, part-time studies, Lahti

Code	Name	1 y	2 y	3 y	4 y	ECTS total
TLTIPUU25KM-1001	**CORE COMPETENCE**					**145**
TLTIPUU25KM-1025	**Common studies**					**15**
AY00BU56	Developing professional competence 1	1				1
AY00BU57	Developing professional competence 2		1			1
AY00BU58	Developing professional competence 3			1		1
A300CE13	Orientation to Sustainability Thinking	2				2
KE00BT61	English for Work	4				4
KR00BU42	Swedish for Work, Spoken		1			1
KR00BU43	Swedish for Work, Written		1			1
KS00BT59	Expert Communication Skills	4				4
TLTIPUU25KM-1003	**Professional Core Competence**					**85**
TLTIPUU25KM-1022	**Mathematics**					**15**
AT00DE22	Basics of engineering mathematics	5				5
AT00DE23	Advanced Engineering Mathematics	5				5
AT00DE24	Economic and statistical mathematics		5			5
TLTIPUU25KM-1023	**Physics and Chemistry**					**10**
AT00BT70	Basic studies in physics	3				3
AT00DE25	Wood technology physics		3			3
AT00DD02	Basic Chemistry	4				4
TLTIPUU25KM-1005	**Basic studies in Wood Engineering**					**15**
AT00BZ06	Wood Construction	5				5
AT00BZ04	Glueing	5				5
AT00BZ05	Surface Treatment	5				5
TLTIPUU25KM-1006	**Sawmill Industry**					**15**
AT00BZ02	Forest and Raw Materials	5				5
AT00DD38	Sawmill Industry and Further Processing		5			5
AT00DC80	Drying and Thermal Modification		5			5
TLTIPUU25KM-1007	**Panel Products and Engineered Wood Products**					**15**
AT00DC81	Plywood and LVL Industries			5		5
AT00DC82	Joinery Industry		5			5
AT00DC83	Other Engineered Wood Products			5		5
TLTIPUU25KM-1008	**Furniture Industry**					**15**

AT00DC85	Woodworking and Work Safety	5				5
AT00BZ15	Furniture Industry		5			5
AT00BZ16	Industrial Processes and Production		5			5
TLTIPUU25KM-1009	**Practical Training**					**30**
HA00CD55	Practical Training	5	5			10
HA00BU60	Practical Training 2		5	5		10
HA00BU61	Practical Training 3			5	5	10
TLTIPUU25KM-1010	**Thesis**					**15**
AO00BU62	Thesis Planning				5	5
AO00BU63	Thesis Project				5	5
AO00BU64	Thesis Report				5	5
TLTIPUU25KM-1011	**COMPLEMENTARY COMPETENCE**					**95**
TLTIPUU25KM-1012	**Environment and Circular Economy Solutions Engineering**					**20**
AT00CP51	Computer Aided design and modelling		5			5
AT00CP49	Circular economy business models and product design		5			5
AT00CP53	Life Cycle Analyses		5			5
AT00CP39	Ecosystems and Climate Change	5				5
TLTIPUU25KM-1013	**Basics of Automation**					**10**
AT00CW77	Basics of Electrical Engineering		5			5
AT00CG68	IoT principles in different sectors		5			5
TLTIPUU25KM-1014	**Business and Production Economy**					**15**
AT00DA77	Business Operations in the Technology Industry			15		15
TLTIPUU25KM-1015	**Basics of Mechanical Engineering**					**33**
AT00BZ36	Basics of mechanical engineering					0
AT00BV34	Digital Tools					0
AT00DB64	Technical Drawing and Modelling 1					0
AT00BV38	Pneumatics and Hydraulics					0
TLTIPUU25KM-1016	**Project Learning in Enterprises**					**15**
AT00DD69	Project Learning in Enterprises					0
AT00DD70	Project Learning in Enterprises 2					0
AT00DD71	Project Learning in Enterprises 3					0
TLTIPUU25KM-1017	**Biomaterials and Food Technology**					**0**
TLTIPUU25KM-1018	**Complementary Studies in Wood Technology**					**20**
AT00BZ23	Automation and Digitalisation					0
AT00DC86	Management and Leadership					0
AT00DC88	Lean and 5S					0
AT00BZ24	Wood products in building industry					0
TLTIPUU25KM-1019	**Elective Studies**					**30**

TLTIPUU25KM-1001 CORE COMPETENCE: 145 ECTS

TLTIPUU25KM-1025 Common studies: 15 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

A300CE13 Orientation to Sustainability Thinking: 2 ECTS

Learning outcomes
Identify and define central concepts and frameworks related to sustainability. Recognize the interconnectedness of economic, social and environmental sustainability issues. Understand and develop own individual role in driving sustainability.

Evaluation criterias
Level 1

Pass-Fail

KE00BT61 English for Work: 4 ECTS

Learning outcomes
Proficiency level: B2

The student is able to
- communicate clearly and effectively in different generic and field-specific workplace situations both orally and in writing
- find, evaluate and use information effectively
- function collaboratively in international working environments.

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.

KR00BU43 Swedish for Work, Written: 1 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.

KS00BT59 Expert Communication Skills: 4 ECTS

Learning outcomes
Proficiency level: C2

The student masters Finnish language as a mother tongue in all professional spoken and written communication situations.

TLTIPUU25KM-1003 Professional Core Competence: 85 ECTS

TLTIPUU25KM-1022 Mathematics: 15 ECTS

AT00DE22 Basics of engineering mathematics: 5 ECTS

Learning outcomes
Student is able to
-simplify and handle mathematical expressions
- solve basic equations and system of two linear equations

- solve geometric and trigonometric problems
- knows bacis of vectors in plane

AT00DE23 Advanced Engineering Mathematics: 5 ECTS

Learning outcomes
Student is able to
- recognise different functions
- solve exponential and logarithm equations
- solve inequalities
- solve simultaneous equations with the software
- basics of differential calculations

AT00DE24 Economic and statistical mathematics: 5 ECTS

Learning outcomes
Student is able to
- percentage and interest calculation
- fundamentals of profit and investment calculation
- basics of probability calculation and statistical mathematics
- use the software as a data analysis tool

TLTIPUU25KM-1023 Physics and Chemistry: 10 ECTS

AT00BT70 Basic studies in physics: 3 ECTS

Learning outcomes
Student is able to
- understand the purpose of the physics in technology
- describe and utilize the SI-unit system and implement
- solve mathematical problems in kinematics, mechanics and thermodynamics
- utilize vectors

AT00DE25 Wood technology physics: 3 ECTS

Learning outcomes
Student is able to:
- solve mathematical problems in electrical sciences and thermodynamics
- conduct physical measurements and draft a proper report on their findings
- apply digitalisation in the processing of results

AT00DD02 Basic Chemistry: 4 ECTS

Learning outcomes
The student is able to:
- to understand the meaning of the chemistry as an essential part of engineering
- to know the atomic structure and chemical bonds
- to describe and identify common inorganic compounds as well as the groups and structures of organic

compounds.
- to use the basic chemical equations and reactions
- use the electrochemical series of metals
- to compute acid and base calculations s and explain the basics related to acid-base titration

TLTIPUU25KM-1005 Basic studies in Wood Engineering: 15 ECTS

AT00BZ06 Wood Construction: 5 ECTS

Learning outcomes
Student is able to:
-describe the structure of wood at the level of cell wall
-describe specific features of the interaction between wood and moisture
-describe how the structure of wood affects its properties
-take special characteristics of the wood into consideration in its various uses
-manage the basics of the manufacturing processes of the most common wood products

AT00BZ04 Glueing: 5 ECTS

Learning outcomes
The student is able to:
- describe the basic phenomena (chemistry) affecting wood gluing
- define the factors influencing gluing
- compare the properties of the most common wood glues
- choose a suitable adhesive for different applications

AT00BZ05 Surface Treatment: 5 ECTS

Learning outcomes
The student is able to:
- describe basic phenomena related to wood surface treatment (chemistry)
- pre-treat the wood surface
- compare the properties of surface treatment agents and application and drying methods
- taking into account environmental and occupational safety aspects
- use film coating methods

TLTIPUU25KM-1006 Sawmill Industry: 15 ECTS

AT00BZ02 Forest and Raw Materials: 5 ECTS

Learning outcomes
The student is able to:
- basics related to tree growth and harvesting
- evaluate the use of wood as a renewable natural material
- evaluate the ecological impact of wood use
- Describe the basic structure of the tree
- describe the structure of a tree at the cellular level

AT00DD38 Sawmill Industry and Further Processing: 5 ECTS

Learning outcomes
The student is able to:
- understand the basics of the sawmill industry, Finland's forests, and forestry
- understand the basics of wood raw materials and procurement
- understand forest certification in trade (PEFC & FSC)
- understand the manufacturing and production planning processes of sawn timber
- understand value-added wood products
- understand the sales and marketing of wood products
- understand logistics and Incoterms clauses
- understand R&D - the development of wood products over the years
- understand the use of wood in construction.

AT00DC80 Drying and Thermal Modification: 5 ECTS

Learning outcomes
The student is able to:
- basics of wood drying
- Industrial wood drying and its processes
- firewood and its manufacturing process
- basic wood drying invoices
- targets for wood drying in different applications
- other methods of drying wood, drying defects

TLTIPUU25KM-1007 Panel Products and Engineered Wood Products: 15 ECTS

AT00DC81 Plywood and LVL Industries: 5 ECTS

Learning outcomes
The student is able to
- understand the manufacturing processes of plywood and LVL (Laminated Veneer Lumber) panel products
- understand the main applications of different panel types
- define the technical properties of various panel types
- understand the further processing possibilities of different panel types.
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AT00DC82 Joinery Industry: 5 ECTS

Learning outcomes
The student is able to:
- identify the main wood-based construction products and their manufacturing processes
- identify the main wood-based interior products and their manufacturing processes
- understand the principles of designing, using, installing, and maintaining wood-based products.

AT00DC83 Other Engineered Wood Products: 5 ECTS

Learning outcomes
The student is able to:
- understand the manufacturing processes of particleboard, MDF, OSB, and CLT panel products
- know the main applications of each panel type
- define the technical properties of different panel types
- know the further processing possibilities of various panel types.

TLTIPUU25KM-1008 Furniture Industry: 15 ECTS

AT00DC85 Woodworking and Work Safety: 5 ECTS

Learning outcomes
The student is able to:
- describe the basics related to woodworking
- describe the machines and equipment used for woodworking
- choose appropriate machining methods for different stages of product manufacturing
- operate laboratory machines in accordance with safety regulations
- follow the organization's safety instructions in laboratory environments.

AT00BZ15 Furniture Industry: 5 ECTS

Learning outcomes
Student is able to:
- describe the operating environment of the furniture industry
- evaluate the operational strategies of companies in the sector
- describe products and their production methods in the furniture industry
- name Finnish furniture designers and their products
- analyze the Finnish furniture industry and its future

AT00BZ16 Industrial Processes and Production: 5 ECTS

Learning outcomes
Student is able to:
- name the various production processes of the furniture industry
- describe production planning and control methods
- discuss the importance of different factors of production as part of layout design
- describe the principles of lean thinking and activities
- describe the principles of investment accounting and its significance for the company's profitability

TLTIPUU25KM-1009 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

TLTIPUU25KM-1010 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.

TLTIPUU25KM-1011 COMPLEMENTARY COMPETENCE: 95 ECTS

TLTIPUU25KM-1012 Environment and Circular Economy Solutions Engineering: 20 ECTS

AT00CP51 Computer Aided design and modelling: 5 ECTS

Learning outcomes
The student is able to:
- identify the potential of computer-aided design
- understand the basics of cad drawing and prepare simple drawings with the aid of the programme's basic functions
- explain the main principles of 3D- and data modelling of the built environment
- identify possible application of different modelling methods in the environmental field

AT00CP49 Circular economy business models and product design: 5 ECTS

Learning outcomes
The student is able to:
- explain circular economy business models
- describe the main principles of cost accounting
- understand the product development process according to circular economy and the impact of value chains on it

AT00CP53 Life Cycle Analyses: 5 ECTS

Learning outcomes
The student is able to:
- describe the stages of the life cycle of products, as well as the environmental factors related to them
- understand commonly used life cycle methods and their uses
- carry out a life cycle analysis for the selected product

AT00CP39 Ecosystems and Climate Change: 5 ECTS

Learning outcomes
The student is able to:
- explain the main principles of ecosystems and nutrient cycles
- identify human impacts on ecosystems, especially the reasons for and results of climate change
- identify ecosystem services and to reflect on their effects in society
carry out teamwork, applying reporting and information acquisition skills

TLTIPUU25KM-1013 Basics of Automation: 10 ECTS

AT00CW77 Basics of Electrical Engineering: 5 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

AT00CG68 IoT principles in different sectors: 5 ECTS

Learning outcomes
Student is able to
- descripe a structure of the IoT-system
- knowledge basics of sensors and data collection in IoT systems
- compare IoT cloud environments
- descripe requirements for IoT mobile software
- use IoT in business

TLTIPUU25KM-1014 Business and Production Economy: 15 ECTS

AT00DA77 Business Operations in the Technology Industry: 15 ECTS

Learning outcomes
The course is mainly intended for engineering students. The aim of the course is for the student to be able to
- the basics of cash flow in industrial companies
- examine the products and operations of industrial companies from a customer-oriented perspective
- evaluate different management methods and their impact on corporate culture
- evaluate and develop industrial companies' internal logistics and aspects related to the supply chain
- evaluate the significance of the development of different areas in order to achieve the goals of industrial companies.

TLTIPUU25KM-1015 Basics of Mechanical Engineering: 33 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.

AT00BV34 Digital Tools: 5 ECTS

Learning outcomes
Student is able to

- work in a virtual learning environment
- make reports and analyses with the help of wordprocessing and spreadheet calculation software
- use correct cloud environment individually and in a group
- carry out digital project presentation

AT00DB64 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
- interpret general tolerances and dimensional tolerancing

AT00BV38 Pneumatics and Hydraulics: 5 ECTS

Learning outcomes
Student is able to
- use basic components in pneumatics and hydraulics
- design pneumatic application
- design hydraulic application

TLTIPUU25KM-1016 Project Learning in Enterprises: 15 ECTS

AT00DD69 Project Learning in Enterprises: 5 ECTS

Learning outcomes
The student is able to:
- apply professional skills related to their degree in practical expert and supervisory tasks
- document and report the development of professional competence.

AT00DD70 Project Learning in Enterprises 2: 5 ECTS

Learning outcomes
The student is able to:
- apply professional skills related to their degree in practical expert and supervisory tasks
- document and report the development of professional competence.

AT00DD71 Project Learning in Enterprises 3: 5 ECTS

Learning outcomes
The student is able to:
- apply professional skills related to their degree in practical expert and supervisory tasks
- document and report the development of professional competence.

TLTIPUU25KM-1017 Biomaterials and Food Technology: 0 ECTS

TLTIPUU25KM-1018 Complementary Studies in Wood Technology: 20 ECTS

AT00BZ23 Automation and Digitalisation: 5 ECTS

Learning outcomes
The student is able to:
- definition of automatic production machine or line
- production recipe and recipe processing for automation
- automatic product change on the production line
- benefits and requirements of automation
- the opportunities for digitalisation now and in the future

AT00DC86 Management and Leadership: 5 ECTS

Learning outcomes
Students knows:
- key management & leadership models and methods.
- the characteristics of modern management & leadership and the importance of the organization of the work community.
- the diverse field of responsibilities of managers and their own role in it.
- basics of labor law

AT00DC88 Lean and 5S: 5 ECTS

AT00BZ24 Wood products in building industry: 5 ECTS

Learning outcomes
The student is able to:
- know the possibilities and limitations of LVL for building industry
- know the possibilities and limitations of plywood for building industry
- know the possibilities and limitations of CLT for building industry
- know the possibilities and limitations of gluelam for building industry
- overview of other Wood Products used in construction
- describe key production equipment and functions for different applications

TLTIPUU25KM-1019 Elective Studies: 30 ECTS