

**Curriculum at LAB University of Applied Sciences
2017-2018**

**Bachelor of Engineering, Mechanical Engineering, full-time
studies, Lappeenranta**

Code	Name	ECTS total
KONE17	Bachelor of Engineering, Mechanical Engineering, full-time studies, Lappeenranta	240
KONE17-1001 BASIC STUDIES		123
KONE17-1002 COMMUNICATION		17
KSU0065	Finnish Communication at Work	4
KEN0076T	English Communication at Work	3
KRU0042T	Svenska i arbetslivet	3
KRU0054	Public Administration Swedish, Written Skills	0
KRU0055	Public Administration Swedish, Spoken Skills	0
KSU0064	Finnish Communication for Mechanical Engineering	4
KEN0087	English for Mechanical Engineering	3
KONE17-1003 MATHEMATICS AND NATURAL SCIENCES		12
KMA0121	Mathematical Tools in Technology	3
KMA0122	Basic Mathematics in Technology	3
KFK0078	Physics	3
KMA0129	Differential Mathematics	3
KONE17-1004 INTRODUCTION INTO ENGINEERING		14
KTE2066	Technology as Learning Environment	4
KTE2070	Technology in Practice	3
KTE2068	Materials' Structure and Properties	3
KTE2067	Technical Measurements	4
KONE17-1005 BASICS OF MECHANICAL ENGINEERING		12
KTE2069	Mechanics	3
KTE2071	Manufacturing Methods	3
KTE0027	Project Engineering	3
KTE2072	Materials in Mechanical Engineering	3
KONE17-1006 BASICS OF DESIGN		15
KTE2073	Structural Mechanics	3
KTE2074	Basics of Mechanical Device and Construction Design	3
KTE2075	Machine Drawing 1	6
KTE2076	Electricity Pneumatics	3

KONE17-1007 PRODUCTION		11
KTE2077	Maintenance	3
KTE2078	Machine Automation	4
KTE2079	Production Technology	4
KONE17-1008 MANUFACTURING		15
KTE2080	Welding and Metal Sheet Technology	5
KTE2081	Machining	3
KTE2082	Electrical Engineering	3
KTE2083	Manufacturing Project	4
KONE17-1009 MECHANICAL ENGINEERING		15
KTE2084	Machine Dynamics	3
KTE2085	Energy Technology	4
KTE2086	Laboratories in Mechanical Engineering	4
KTE2087	Hydraulics	4
KONE17-1010 DESIGN		12
KTE2088	Mechanical Device and Construction Design 1	4
KTE2089	Mechanical Device and Construction Design 2	3
KTE2090	Machine Drawing 2	5
KONE17-1011 PROFESSIONAL STUDIES		45
KONE17-1012 ADVANCED STUDIES IN MECHANICAL ENGINEERING		30
KTE1288	Mechanical Vibrations	3
KTE2091	Product Design and Material's Selection	4
KTE2092	Product Development	4
KTE0696	Maintenance Technology	3
KTE2093	Machine Elements 1	3
KTE2155	Occupational Safety and Labour Law	3
KTE2095	Machine Automation Project	3
KTE2096	Machine Elements 2	3
KTE2097	Industrial Engineering and Management	4
KONE17-1013 COMPLEMENTARY STUDIES		15
KTE1280	Fluid and Thermo Machinery	5
KTE2259	Simulations of Mechanical Engineering	5
KTE2260	Applications of Mechanical Engineering	5
KONE17-1014 SPECIALISATION OPTION/ADVANCED PROFESSIONAL STUDIES		20
KONE17-1015 ADVANCED PROFESSIONAL STUDIES IN PRODUCTION AND MAINTENANCE		20
KTE2102	Project Learning in Enterprises 1	10
KTE2103	Project Learning in Enterprises 2	10
KONE17-1016 ADVANCED PROFESSIONAL STUDIES IN PRODUCT AND MACHINE DESIGN		20

KTE2098	Finite Element Method 1	4
KTE2099	Finite Element Method 2	3
KTE2100	Vibration Mechanics	3
KTE2101	Machine Design	5
KTE1285	Steel Structures	5
KONE17-1017 ELECTIVE STUDIES		7
KMA0069	Introduction to Mathematics	3
KMA0133	Differential Mathematics (LUT)	4
KIVE0002	Russian 1	2
KIVE0004	Russian 2	2
KIRU0008	Swedish Prep Course	3
KONE17-1018 PLACEMENT		30
TEKUHARJ1	Placement 1	15
TEKUHARJ2	Placement 2	15
KONE17-1019 THESIS		15
KTE2382	Thesis Process	3
KTE2383	Thesis Seminars	2
KTE2384	Thesis Implementation and Report	10

KONE17 Bachelor of Engineering, Mechanical Engineering, full-time studies, Lappeenranta: 240 ECTS

KONE17-1001 BASIC STUDIES: 123 ECTS

KONE17-1002 COMMUNICATION: 17 ECTS

KSU0065 Finnish Communication at Work: 4 ECTS

Learning outcomes

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KEN0076T English Communication at Work: 3 ECTS

Learning outcomes

The student masters the basics of the industry-specific English language at work. Proficiency level B2.

KRU0042T Svenska i arbetslivet: 3 ECTS

Learning outcomes

The student can communicate in Swedish in the most usual situations in working life and at leisure. Proficiency level B1.

KRU0054 Public Administration Swedish, Written Skills: 0 ECTS

Learning outcomes

The written Swedish language test of public administration is completed during the Swedish Communication at Work course.

KRU0055 Public Administration Swedish, Spoken Skills: 0 ECTS

Learning outcomes

The spoken Swedish language test of public administration is completed during the Swedish Communication at Work course.

KSU0064 Finnish Communication for Mechanical Engineering: 4 ECTS

Learning outcomes

Proficiency level: C2

The student is able to fluently communicate Finnish texts related to their own field orally and in writing.

KEN0087 English for Mechanical Engineering: 3 ECTS

Learning outcomes

Perehtyä kone- ja tuotantotekniikan ammattikieleen, työpaikan hakumenettely ja opinnäytetyön englannin kielisen tiivistelmän laatiminen.

KONE17-1003 MATHEMATICS AND NATURAL SCIENCES: 12 ECTS

KMA0121 Mathematical Tools in Technology: 3 ECTS

Learning outcomes

After passing the course, a student knows geometry and vectors in plane, basics of trigonometry, recognises different polynomial functions and can sketch their graphs, knows methods for solving inequalities and special equations.

KMA0122 Basic Mathematics in Technology: 3 ECTS

Learning outcomes

After passing the course, a student knows solution method for system of equations and can solve them with mathematical programs, knows basics of geometry and vectors in space and can apply them in professional cases, recognise trigonometric, exponential and logarithmic functions and can solve equations including them, knows basics of derivation.

KFK0078 Physics: 3 ECTS

Learning outcomes

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KMA0129 Differential Mathematics: 3 ECTS

Learning outcomes

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KONE17-1004 INTRODUCTION INTO ENGINEERING: 14 ECTS

KTE2066 Technology as Learning Environment: 4 ECTS

Learning outcomes

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KTE2070 Technology in Practice: 3 ECTS

Learning outcomes

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KTE2068 Materials' Structure and Properties: 3 ECTS

Learning outcomes

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KTE2067 Technical Measurements: 4 ECTS

Learning outcomes

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KONE17-1005 BASICS OF MECHANICAL ENGINEERING: 12 ECTS

KTE2069 Mechanics: 3 ECTS

Learning outcomes

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KTE2071 Manufacturing Methods: 3 ECTS

Learning outcomes

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KTE0027 Project Engineering: 3 ECTS

Learning outcomes

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KTE2072 Materials in Mechanical Engineering: 3 ECTS

Learning outcomes

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KONE17-1006 BASICS OF DESIGN: 15 ECTS

KTE2073 Structural Mechanics: 3 ECTS

Learning outcomes

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KTE2074 Basics of Mechanical Device and Construction Design: 3 ECTS

Learning outcomes

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KTE2075 Machine Drawing 1: 6 ECTS

Learning outcomes

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KTE2076 Electricity Pneumatics: 3 ECTS

Learning outcomes

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KONE17-1007 PRODUCTION: 11 ECTS

KTE2077 Maintenance: 3 ECTS

Learning outcomes

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KTE2078 Machine Automation: 4 ECTS

Learning outcomes

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KTE2079 Production Technology: 4 ECTS

Learning outcomes

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KONE17-1008 MANUFACTURING: 15 ECTS

KTE2080 Welding and Metal Sheet Technology: 5 ECTS

Learning outcomes

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KTE2081 Machining: 3 ECTS

Learning outcomes

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KTE2082 Electrical Engineering: 3 ECTS

Learning outcomes

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KTE2083 Manufacturing Project: 4 ECTS

Learning outcomes

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KONE17-1009 MECHANICAL ENGINEERING: 15 ECTS

KTE2084 Machine Dynamics: 3 ECTS

Learning outcomes

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KTE2085 Energy Technology: 4 ECTS

Learning outcomes

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KTE2086 Laboratories in Mechanical Engineering: 4 ECTS

Learning outcomes

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KTE2087 Hydraulics: 4 ECTS

Learning outcomes

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KONE17-1010 DESIGN: 12 ECTS

KTE2088 Mechanical Device and Construction Design 1: 4 ECTS

Learning outcomes

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KTE2089 Mechanical Device and Construction Design 2: 3 ECTS

Learning outcomes

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KTE2090 Machine Drawing 2: 5 ECTS

Learning outcomes

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KONE17-1011 PROFESSIONAL STUDIES: 45 ECTS

KONE17-1012 ADVANCED STUDIES IN MECHANICAL ENGINEERING: 30 ECTS

KTE1288 Mechanical Vibrations: 3 ECTS

Learning outcomes

On completion of this course, students should understand oscillations and be able to calculate one-degree-of-freedom oscillations.

KTE2091 Product Design and Material's Selection: 4 ECTS

Learning outcomes

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KTE2092 Product Development: 4 ECTS

Learning outcomes

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KTE0696 Maintenance Technology: 3 ECTS

Learning outcomes

On completion of this course, students should be familiar with the reliability of production facilities and ways to improve it: have learned the most common condition monitoring methods: be familiar with the maintenance of the most important process equipment and their components.

KTE2093 Machine Elements 1: 3 ECTS

Learning outcomes

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KTE2155 Occupational Safety and Labour Law: 3 ECTS

Learning outcomes

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KTE2095 Machine Automation Project: 3 ECTS

Learning outcomes

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KTE2096 Machine Elements 2: 3 ECTS

Learning outcomes

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KTE2097 Industrial Engineering and Management: 4 ECTS

Learning outcomes

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KONE17-1013 COMPLEMENTARY STUDIES: 15 ECTS

KTE1280 Fluid and Thermo Machinery: 5 ECTS

Learning outcomes

On completion of this course, students should be familiar with the thermodynamics, functioning, components, characteristics and selection of hydraulic and heating power machines, have learned energy production methods, types of power plant and energy economics and be able to analyse and carry out measurements of machines using modern IT-based methods.

KTE2259 Simulations of Mechanical Engineering: 5 ECTS

KTE2260 Applications of Mechanical Engineering: 5 ECTS

**KONE17-1014 SPECIALISATION OPTION/ADVANCED PROFESSIONAL STUDIES:
20 ECTS**

**KONE17-1015 ADVANCED PROFESSIONAL STUDIES IN PRODUCTION AND
MAINTENANCE: 20 ECTS**

KTE2102 Project Learning in Enterprises 1: 10 ECTS

Learning outcomes

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KTE2103 Project Learning in Enterprises 2: 10 ECTS

Learning outcomes

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**KONE17-1016 ADVANCED PROFESSIONAL STUDIES IN PRODUCT AND
MACHINE DESIGN: 20 ECTS**

KTE2098 Finite Element Method 1: 4 ECTS

Learning outcomes

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KTE2099 Finite Element Method 2: 3 ECTS

Learning outcomes

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KTE2100 Vibration Mechanics: 3 ECTS

Learning outcomes

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KTE2101 Machine Design: 5 ECTS

Learning outcomes

After the course student:can use PDM-systemunderstands the meaning of tolerances and fits in
mechanical engineeringknows basic rules of designing products for manufacturing
(DFM)understands basic principles of Machinery Directive and safety

KTE1285 Steel Structures: 5 ECTS

Learning outcomes

On completion of this course, students should have learned the basic skills necessary in the design of the most common load-bearing structures.

KONE17-1017 ELECTIVE STUDIES: 7 ECTS

KMA0069 Introduction to Mathematics: 3 ECTS

Learning outcomes

On completion of this course, students who have completed only comprehensive school should have brushed up their mathematical skills.

KMA0133 Differential Mathematics (LUT): 4 ECTS

Learning outcomes

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KIVE0002 Russian 1: 2 ECTS

Learning outcomes

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KIVE0004 Russian 2: 2 ECTS

Learning outcomes

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KIRU0008 Swedish Prep Course: 3 ECTS

Learning outcomes

Proficiency level: B1

The student is able to speak and write grammatically and phonetically correct Swedish.

KONE17-1018 PLACEMENT: 30 ECTS

TEKUHARJ1 Placement 1: 15 ECTS

Learning outcomes

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TEKUHARJ2 Placement 2: 15 ECTS

Learning outcomes

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KONE17-1019 THESIS: 15 ECTS

KTE2382 Thesis Process: 3 ECTS

Learning outcomes

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KTE2383 Thesis Seminars: 2 ECTS

Learning outcomes

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KTE2384 Thesis Implementation and Report: 10 ECTS

Learning outcomes

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