

**Curriculum at LAB University of Applied Sciences  
2019-2020**

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

Code	Name	ECTS total
KONE19	Bachelor of Engineering, Mechanical Engineering, full-time studies, Lappeenranta	225
<b>KONE19-1001 BASIC STUDIES</b>		<b>123</b>
<b>KONE19-1021 COMMUNICATION</b>		<b>16</b>
KISU0008	Finnish for Professional Development (Technology)	3
KIEN0006	English for Professional Development (Technology)	4
KIRU0001	Swedish at Work (Technology)	2
KRU0054	Public Administration Swedish, Written Skills	0
KRU0055	Public Administration Swedish, Spoken Skills	0
KSU0064	Finnish Communication for Mechanical Engineering	4
KIEN0013	Meetings and Discussions	3
<b>KONE19-1003 MATHEMATICS AND NATURAL SCIENCES</b>		<b>12</b>
KMA0121	Mathematical Tools in Technology	3
KMA0122	Basic Mathematics in Technology	3
KFK0078	Physics	3
KMA0129	Differential Mathematics	3
<b>KONE19-1004 INTRODUCTION INTO ENGINEERING</b>		<b>15</b>
KTE2356	Technology as Learning Environment	5
KTE2070	Technology in Practice	3
KTE2068	Materials' Structure and Properties	3
KTE2067	Technical Measurements	4
<b>KONE19-1005 BASICS OF MECHANICAL ENGINEERING</b>		<b>12</b>
KTE2069	Mechanics	3
KTE2071	Manufacturing Methods	3
KTE0027	Project Engineering	3
KTE2072	Materials in Mechanical Engineering	3
<b>KONE19-1006 BASICS OF DESIGN</b>		<b>15</b>
KTE2073	Structural Mechanics	3
KTE2074	Basics of Mechanical Device and Construction Design	3
KTE2075	Machine Drawing 1	6
KTE2076	Electricity Pneumatics	3

<b>KONE19-1007 PRODUCTION</b>		<b>11</b>
KTE2077	Maintenance	3
KTE2078	Machine Automation	4
KTE2079	Production Technology	4
<b>KONE19-1008 MANUFACTURING</b>		<b>15</b>
KTE2080	Welding and Metal Sheet Technology	5
KTE2081	Machining	3
KTE2082	Electrical Engineering	3
KTE2083	Manufacturing Project	4
<b>KONE19-1009 MECHANICAL ENGINEERING</b>		<b>15</b>
KTE2084	Machine Dynamics	3
KTE2085	Energy Technology	4
KTE2086	Laboratories in Mechanical Engineering	4
KTE2087	Hydraulics	4
<b>KONE19-1010 DESIGN</b>		<b>12</b>
KTE2088	Mechanical Device and Construction Design 1	4
KTE2089	Mechanical Device and Construction Design 2	3
KTE2090	Machine Drawing 2	5
<b>KONE19-1011 PROFESSIONAL STUDIES</b>		<b>30</b>
<b>KONE19-1012 ADVANCED STUDIES IN MECHANICAL ENGINEERING</b>		<b>30</b>
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
<b>KONE19-1013 COMPLEMENTARY STUDIES</b>		<b>0</b>
<b>KONE19-1014 SPECIALISATION OPTION/ADVANCED PROFESSIONAL STUDIES</b>		<b>20</b>
<b>KONE19-1015 ADVANCED PROFESSIONAL STUDIES IN PRODUCTION AND MAINTENANCE</b>		<b>20</b>
KTE2102	Project Learning in Enterprises 1	10
KTE2103	Project Learning in Enterprises 2	10
<b>KONE19-1016 ADVANCED PROFESSIONAL STUDIES IN PRODUCT AND MACHINE DESIGN</b>		<b>20</b>
KTE2098	Finite Element Method 1	4
KTE2099	Finite Element Method 2	3
KTE2100	Vibration Mechanics	3

KTE2101	Machine Design	5
KTE1285	Steel Structures	5
<b>KONE19-1017 ELECTIVE STUDIES</b>		<b>7</b>
KMA0069	Introduction to Mathematics	3
KMA0133	Differential Mathematics (LUT)	4
KIVE0002	Russian 1	2
KIVE0004	Russian 2	2
KIRU0008	Swedish Prep Course	3
<b>KONE19-1018 PLACEMENT</b>		<b>30</b>
TEKUHARJ1	Placement 1	15
TEKUHARJ2	Placement 2	15
<b>KONE19-1019 THESIS</b>		<b>15</b>
KTE2382	Thesis Process	3
KTE2383	Thesis Seminars	2
KTE2384	Thesis Implementation and Report	10

**KONE19 Bachelor of Engineering, Mechanical Engineering, full-time studies, Lappeenranta: 225 ECTS**

**KONE19-1001 BASIC STUDIES: 123 ECTS**

**KONE19-1021 COMMUNICATION: 16 ECTS**

**KISU0008 Finnish for Professional Development (Technology): 3 ECTS**

**Learning outcomes**

Proficiency level: C2

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

**KIEN0006 English for Professional Development (Technology): 4 ECTS**

**Learning outcomes**

Students are able to communicate clearly and effectively in different generic and field-specific work place situations both orally and in writing: find, evaluate and use information effectively and function collaboratively in international working environments.

**KIRU0001 Swedish at Work (Technology): 2 ECTS**

**Learning outcomes**

Proficiency level: B1-B2.1

The student is able to read texts related to their own field, discuss the topics of the texts and communicate orally and in writing in various working life situation in Swedish.

The student completes the Public Administration Test in Swedish.

### **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.

### **KIEN0013 Meetings and Discussions: 3 ECTS**

#### **Learning outcomes**

Students are able to communicate fluently in meetings, negotiations and discussions and they are familiar with meeting documents and proceedings.

### **KONE19-1003 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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**KONE19-1004 INTRODUCTION INTO ENGINEERING: 15 ECTS**

**KTE2356 Technology as Learning Environment: 5 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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**KONE19-1005 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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**KONE19-1006 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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**KONE19-1007 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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**KONE19-1008 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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**KONE19-1009 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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**KONE19-1010 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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**KONE19-1011 PROFESSIONAL STUDIES: 30 ECTS**

**KONE19-1012 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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### **KONE19-1013 COMPLEMENTARY STUDIES: 0 ECTS**

### **KONE19-1014 SPECIALISATION OPTION/ADVANCED PROFESSIONAL STUDIES: 20 ECTS**

### **KONE19-1015 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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## **KONE19-1016 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-system understands the meaning of tolerances and fits in mechanical engineering knows 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.

### **KONE19-1017 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.

### **KONE19-1018 PLACEMENT: 30 ECTS**

### **TEKUCHARJ1 Placement 1: 15 ECTS**

#### **Learning outcomes**

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### **TEKUCHARJ2 Placement 2: 15 ECTS**

#### **Learning outcomes**

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### **KONE19-1019 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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