28.02.2022

**Curriculum at LAB University of Applied Sciences**
**2021-2022**

# Bachelor of Construction Management, part-time studies, Lahti

| Code | Name | 1 y | 2 y | 3 y | ECTS total |
|---|---|---|---|---|---|
| **RKMK21KMUMLTI-1001** | **BASIC STUDIES** | | | | **5** |
| **RKMK21KMUMLTI-1002** | **CORE STUDIES OF POLYTECHNIC** | | | | **5** |
| AY00BU56 | Developing professional competence 1 | 1 | | | 1 |
| AY00BU57 | Developing professional competence 2 | 0,5 | 0,5 | | 1 |
| AY00BU58 | Developing professional competence 3 | | 0,5 | 0,5 | 1 |
| A300CE13 | Orientation to Sustainability Thinking | 2 | | | 2 |
| **RKMK21KMUMLTI-1003** | **PROFESSIONAL STUDIES** | | | | **130** |
| **RKMK21KMUMLTI-1004** | **BASICS OF CONSTRUCTION** | | | | **30** |
| KTE2387 | Basics of Construction Economics | 5 | | | 5 |
| KTE2388 | Basics of Building Engineering | 5 | | | 5 |
| KTE2389 | Basics of Civil Engineering | 5 | | | 5 |
| KTE2391 | Concrete Building | 5 | | | 5 |
| KFK0087 | Basics of Physics | 5 | | | 5 |
| AT00CG41 | Basics of Surveying Technique and new 3D Technologies | 5 | | | 5 |
| **RKMK21KMUMLTI-1005** | **FUNDAMENTALS OF CONSTRUCTION PROJECTS** | | | | **30** |
| KTE2392 | Architectural Drawing, BIM and CAD | 5 | | | 5 |
| KTE2393 | Labour law and human resources management in the construction industry | 5 | | | 5 |
| KTE2394 | Manufacturing Technics on Construction Site | 5 | | | 5 |
| KTE2395 | Project Planning and Scheduling | 5 | | | 5 |
| KTE2396 | Quantities and Costs | 5 | | | 5 |
| KTE2397 | Follow-up and Quidance | 5 | | | 5 |
| **RKMK21KMUMLTI-1006** | **FUNDAMENTALS OF CONSTRUCTION TECHNOLOGY I** | | | | **15** |
| KTE2398 | Functionality of Primary Structures | 5 | | | 5 |
| KTE2399 | Structural Strenght | 5 | | | 5 |
| KFK0091 | Basics of Building Physics | | 5 | | 5 |
| **RKMK21KMUMLTI-1007** | **FUNDAMENTALS OF CONSTRUCTION TECHNOLOGY II** | | | | **15** |
| KTE2400 | Concrete Structures | | 5 | | 5 |
| KTE2403 | Basics of Foundation Engineering | | 5 | | 5 |

| | | | | | |
|---|---|---|---|---|---|
| KTE2285 | Steel and Wooden Structures | | 5 | | 5 |
| **RKMK21KMUMLTI-1008 PRODUCTION MANAGEMENT** | | | | | **20** |
| KTE2404 | Rock Excavation | | 5 | | 5 |
| KTE2405 | Earthwork engineering, transport routes and water supply | | 5 | | 5 |
| KTE2406 | HVAC and Electrical Systems | | 5 | | 5 |
| KTE2407 | Renovation | | 5 | | 5 |
| **RKMK21KMUMLTI-1009 BUILDING PROJECT** | | | | | **20** |
| KTE2409 | Production Planning | | 5 | | 5 |
| KTE2410 | Contracts in Construction Industry | | 5 | | 5 |
| KTE2411 | Purchasing and Subcontractor Coordination | | 5 | | 5 |
| KTE2412 | Responsibilities and Liabilities | | 5 | | 5 |
| **RKMK21KMUMLTI-1010 ADVANCED PROFESSIONAL STUDIES** | | | | | **0** |
| **RKMK21KMUMLTI-1011 ELECTIVE STUDIES** | | | | | **0** |
| **RKMK21KMUMLTI-1012 PLACEMENT** | | | | | **30** |
| KTE2416 | Site management internship I | 7,5 | 7,5 | | 15 |
| KTE2417 | Site management internship II | | 15 | | 15 |
| **RKMK21KMUMLTI-1013 THESIS** | | | | | **15** |
| AO00BU62 | Thesis Planning | | | 5 | 5 |
| AO00BU63 | Thesis Project | | | 5 | 5 |
| AO00BU64 | Thesis Report | | | 5 | 5 |

## RKMK21KMUMLTI-1001 BASIC STUDIES: 5 ECTS

## RKMK21KMUMLTI-1002 CORE STUDIES OF POLYTECHNIC: 5 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

## RKMK21KMUMLTI-1003 PROFESSIONAL STUDIES: 130 ECTS

## RKMK21KMUMLTI-1004 BASICS OF CONSTRUCTION: 30 ECTS

## KTE2387 Basics of Construction Economics: 5 ECTS

**Learning outcomes**
The student is able to describe the different stages and parties of a construction project and their tasks.
The student understands the significance of various tasks in the construction industry.
The student understands the construction industry and its significance as a part of society and identifies the technical, economic and legal dimensions of construction. The student understands the importance of applying the sustainable economy and environmental and life cycle issues in the construction industry.

## KTE2388 Basics of Building Engineering: 5 ECTS

**Learning outcomes**
The student understands the whole of the parts of a building and their main functions.
The student is familiar with the options for the outer shell, surfaces and non-load-bearing structures as well as the complementary building components. The student understands the most important

concepts of fire safety in buildings and the principles of moisture insulation. The student is familiar with the most common markings and permit practices in the construction industry.

## KTE2389 Basics of Civil Engineering: 5 ECTS

**Learning outcomes**
The student knows the aspects and most important structural parts of civil engineering.

## KTE2391 Concrete Building: 5 ECTS

**Learning outcomes**
The student understands the standard structural operation of concrete structures
and issues related to concrete production. The student gets an understanding of the material properties of concrete and working methods. The student understands the implementation of local casting and elemental work requirements and is able to choose the appropriate implementation method.

## KFK0087 Basics of Physics: 5 ECTS

**Learning outcomes**
The aim of the course is to develop a physical way of thinking. After the course the student masters the basics of physics required for professional studies (SI system and unit transformations, thermodynamics, sound theory and dynamics) and the use of Excel as a tool.

## AT00CG41 Basics of Surveying Technique and new 3D Technologies: 5 ECTS

**Learning outcomes**
The student knows the operating principles of conventional geodetic instruments
used in building measurements and their applications. He knows the coordinate and altitude systems currently in use and is familiar with performing the calculations needed to process the measurement observations of instruments. The student is able to measure the correct location for a building based on terrain data of a construction site and on the basis of the source material.
The student knows the techniques of laser scanning, the processing of scanning data and the opportunities they offer in the construction industry. The student becomes acquainted with the virtual and augmented reality tools used in the visualisation of plans.

## RKMK21KMUMLTI-1005 FUNDAMENTALS OF CONSTRUCTION PROJECTS: 30 ECTS

## KTE2392 Architectural Drawing, BIM and CAD: 5 ECTS

**Learning outcomes**
The student understands the principles and tools of CAD design. Knows the basics of Autocad and handling drawing files on site. Understands the rough basics of modelling (BIM) from both a project bank usage planner and site perspective and inspires students to use models and new tools on site. The student is able to read and understand building drawings (ARK, RAK, TATE).

## KTE2393 Labour law and human resources management in the construction industry: 5 ECTS

**Learning outcomes**
The student understands the rights and responsibilities of the employee and the employer. The student is able to draw up an employment contract and knows the significance of a collective agreement in an employment relationship. The student knows the main features of the Working Hours Act and the Annual Leave Act. The student is able to apply the law and the collective agreement in different employment situations.
The student is able to explain the key concepts of human resource management. The student is able to present the principles of business strategy and human resources strategy integration and human resource management processes. The student is able to evaluate the importance of management for an organisation's ability and its development. The student is able to describe the stages of staffing; personnel planning, recruitment and induction. The student is able to name measures by which the well-being of the organisation can be improved and they are able to assess the importance of the well-being of the organisation to the effectiveness of work and the comfort of the staff.

## KTE2394 Manufacturing Technics on Construction Site: 5 ECTS

**Learning outcomes**
The student knows the different work stages of a construction and demolition project by main type of work and the working methods used in different work stages,
as well as construction machinery and equipment, taking into account work safety. The student understands the requirements of the use of space in the construction area and is able to draw up a site plan for the construction site.
The student becomes acquainted with dust and humidity management as well as P1 purity class and indoor air conditions.

## KTE2395 Project Planning and Scheduling: 5 ECTS

**Learning outcomes**
The student knows the principles of the task plan and the basics of preparation. The student understands the basics of schedule planning. The student is able to draw up a task plan. The student is able to prepare a weekly schedule, a construction phase schedule and a general schedule using at least one schedule software.

## KTE2396 Quantities and Costs: 5 ECTS

**Learning outcomes**
The student masters the basics, tasks and factors affecting the cost calculation of a construction project.
The student understands the determination of the costs of their area of responsibility in relation to the total costs.
The student knows the basics of quantity and cost calculation and is able to prepare a cost calculation and offer for a building
or groundworks project.

## KTE2397 Follow-up and Quidance: 5 ECTS

**Learning outcomes**
The student understands the importance of monitoring and supervision during work in the planning and implementation of work. The student knows and understands the importance of tools and reporting as well as meeting practices as part of work flow and quality assurance.
The student is familiar with the procedures of schedule and cost tracking and post-calculation. The student becomes acquainted with the project, safety and quality plan of the project.

## RKMK21KMUMLTI-1006 FUNDAMENTALS OF CONSTRUCTION TECHNOLOGY I: 15 ECTS

## KTE2398 Functionality of Primary Structures: 5 ECTS

**Learning outcomes**
The student understands the basic concepts of statics, masters the balance examinations of structures and is able to solve stress distributions of simple bar structures.

## KTE2399 Structural Strenght: 5 ECTS

**Learning outcomes**
The student understands the basic phenomena related to the strength and stability of structures and is able to take them into account in construction production. The student is familiar with the main strength-technical dimensioning methods of load-bearing structures.

## KFK0091 Basics of Building Physics: 5 ECTS

**Learning outcomes**
The student understands the building physical function of the building’s external envelope and internal structures and is able to draw up a site moisture management plan. The student gets acquainted with the most common building physical measurement methods from the point of view of site quality assurance.

## RKMK21KMUMLTI-1007 FUNDAMENTALS OF CONSTRUCTION TECHNOLOGY II: 15 ECTS

## KTE2400 Concrete Structures: 5 ECTS

**Learning outcomes**
The student understands the standard structural operation of concrete structures and issues related to concrete work. The student gets an understanding of concrete work methods. The student understands the differences and requirements for the implementation of cast-in-place construction and element work.

## KTE2403 Basics of Foundation Engineering: 5 ECTS

**Learning outcomes**
The student knows the basics of building and infrastructure construction. The student identifies the most common risks in foundation and construction work and knows the basics of quality control.

## KTE2285 Steel and Wooden Structures: 5 ECTS

**Learning outcomes**
The student understands the structural function and differences of wood and steel structures. The student understands the manufacturing technology and protection methods of the materials in question, as well as the protection methods and installation technical issues related to the materials.

## RKMK21KMUMLTI-1008 PRODUCTION MANAGEMENT: 20 ECTS

## KTE2404 Rock Excavation: 5 ECTS

**Learning outcomes**
The student is able to plan the implementation of surface mining both outside the populated area and in the populated area. The student is familiar with mining-related legislation and safety instructions and is able to make safety-related plans. Knows the properties of explosives and igniters and is able to choose suitable substances and equipment for the intended site.

## KTE2405 Earthwork engineering, transport routes and water supply: 5 ECTS

**Learning outcomes**
The student knows the machines and methods used in construction work as well as the requirements for construction structures. The student is able to plan machine combinations for different work sites.
The student knows the special features, materials and working methods of municipal engineering construction.

## KTE2406 HVAC and Electrical Systems: 5 ECTS

**Learning outcomes**
The student becomes acquainted with the operating principles of HVAC technical systems, the design principles and the relevant laws and regulations, as well as the implementation principles of HVAC work in a building. The student becomes familiar with the basics of electrical and information systems in buildings as well as electrical equipment and electrical safety at the construction site, the usual work steps for installing these systems and key official regulations. In addition, the student is able to interpret drawings of these systems together with professionals in the field in order to plan the work and draw up contracts related to the performance of the work.

## KTE2407 Renovation: 5 ECTS

**Learning outcomes**
The student understands the differences between new construction and renovation and is familiar

with typical old structures and building materials. The student is familiar with indoor climate conditions as well as chemical and microbiological factors affecting the indoor environment.

## RKMK21KMUMLTI-1009 BUILDING PROJECT: 20 ECTS

## KTE2409 Production Planning: 5 ECTS

**Learning outcomes**
The student knows the production control methods of a construction project at the task level. The student is familiar with different schedule formats and understands the necessity of planning a schedule for a construction project.
The student understands the importance of both construction and operational quality, and is able to draw up a site quality plan. The student knows the methods of managing the quantities of a construction project, risk management, information, etc. and their significance for the construction project.

## KTE2410 Contracts in Construction Industry: 5 ECTS

**Learning outcomes**
The student knows the general principles of contract law, the parties to construction contracts, standard contracts in the construction industry, the most important contract risks and contractual responsibilities in the construction industry.

## KTE2411 Purchasing and Subcontractor Coordination: 5 ECTS

**Learning outcomes**
The student is familiar with the basics of a construction company's procurement, the principles of procurement contract practice and the use of materials, and is familiar with project-level procurement planning. The student masters procurement planning and site-level routines.
The student is familiar with subcontracting procedures and knows the principles of subcontract management and means of combating the shadow economy.

## KTE2412 Responsibilities and Liabilities: 5 ECTS

**Learning outcomes**
The student understands the importance of occupational safety in different areas of construction. The student is familiar with the concepts of occupational safety legislation and its subject areas. The student knows the responsibilities and tasks of different parties.

## RKMK21KMUMLTI-1010 ADVANCED PROFESSIONAL STUDIES: 0 ECTS

## RKMK21KMUMLTI-1011 ELECTIVE STUDIES: 0 ECTS

## RKMK21KMUMLTI-1012 PLACEMENT: 30 ECTS

## KTE2416 Site management internship I: 15 ECTS

**Learning outcomes**
The aim of the internship is that the student's competence will deepens throughout the course of their studies at the “interface” of their studies and workplace, i.e. taking theory competence to the workplace and bringing their workplace competence into the theory studies. The assimilation and learning of things, knowledge and skills at the working life interface will be described and evaluated in learning diaries and internship reports. The purpose of the internship is to reflect professional life experience at different stages of the studies. The student also sets own goals for the internship.
In the first internship, 15 ECTS, the student becomes familiar with the basic tasks of the foreman in a genuine work environment. In the first internship, the foreman’s tasks are examined from the perspective of project planning and scheduling, quantities and costs, follow-up and guidance, while taking into account quality and occupational safety.

## KTE2417 Site management internship II: 15 ECTS

**Learning outcomes**
The aim of the internship is that the student's competence will deepens throughout the course of their studies at the “interface” of their studies and workplace, i.e. taking theory competence to the workplace and bringing their workplace competence into the theory studies. The assimilation and learning of things, knowledge and skills at the working life interface will be described and evaluated in learning diaries and internship reports. The purpose of the internship is to reflect professional life experience at different stages of the studies. The student also sets own goals for the internship.

In the second internship, 15 ECTS, the student deepens his knowledge of job management positions in his work environment. In the second internship, the foreman’s tasks are examined from the point of view of contracts in construction industry, purchasing and subcontractor coordination, and responsibilities and liabilities, while considering also quality and occupational safety.

## RKMK21KMUMLTI-1013 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.