**Budapest University of Technology and Economics**
**Faculty of Transportation Engineering and Vehicle Engineering**

# LOGISTICS ENGINEER MASTER TRAINING PROGRAMME

**The training programme was adopted by the Senate by Decision № …/2024-2025. (VI.30.), in force for students starting as of Autumn for 2025/2026 academic year.**

# I.
# TRAINING AND OUTCOME REQUIREMENTS

The training and outcome requirements for the training programme as a whole are set out in the Ministerial Communication (hereinafter referred to as the "KKK" or "KKK Communication"). The training programme contains both the requirements of the KKK and the ***specific requirements of the curriculum of the training programme as actually implemented (where the KKK allows for deviations or sets limits) or supplemented by the curriculum of the training programme maintained by the Faculty of Transport Engineering and Vehicle Engineering***. (The numbering of each point and sub-point is the same as in the KKK.)

## 1. Basic characteristics of the training programme

1. The name of the master training programme: Logistics Engineering
2. Level of qualification obtained in the master training programme and indication of the qualification in the diploma:
- level of qualification: master, abbreviaton: MSc
- classificaion: Logistics Engineer
3. Field of study: engineering
4. Training programmes accepted as prerequisites for entry to the master programme
4.1. Full credit may be awarded for: the logistics engineer bachelor training programme.
4.2. In addition, the following training programmes may be taken into account upon completion of the credits specified in point 9.3: from the technical field of study, the bachelor degree in vehicle engineering, transportation engineering, mechanical engineering, mechatronic engineering, safety engineering, military and safety engineering, light industrial engineering and BProf vehicle engineering, from the field of study in informatics, the bachelor degree in computer engineering, from the field of study in agriculture, the bachelor degree in agricultural and food engineering.
5. Programme duration is terms: 4 terms
6. Number of credits required to obtain the master degree: 120 credits
- orientation of the training programme: balanced (40-60 percent) >> ***58%***[1]
- the number of credits allocated to the master thesis: 30 credits
- the minimum number of credits to be allocated to the optional subjects: 6 credits >> ***6 credits***
7. Classification of fields of study according to the uniform classification of fields of vocational education and training:
***European Qualification Frame level: 7***
***Hungarian Qualification Frame level: 7***
***ISCED-F 2013 classification***: 345/0413 ***Management and administration***
8. Training objectives and professional competences of the master training programme
The aim of the training programme is to train logistics engineers who, with their knowledge of natural sciences, specific technical, economic, management, IT, industrial and transport technologies, are capable of analysing, planning, organising and managing logistics processes and systems (goods transport, materials handling, warehousing, picking, loading, material supply, materials procurement, goods distribution, waste management) that implement the flow of materials within and between companies and the related flow of information. They are able to design, develop, contribute to the

[1] Az orientáció százalékos értéke: a tantervi tantárgyak együttes gyakorlati és laboratóriumi gyakorlati óraszámának, valamint az összóraszámnak a hányadosa. (lásd KKK 1. melléklet 5. bek. c) pontja)

production, quality control and operation of logistics machinery, tools and equipment that form part of logistics systems. They are prepared to pursue studies at doctoral level.

8.1. The professional competences to be acquired

8.1.1. The Logistics Engineer's

a) knowledge

He/she

- knows and understands the scientific and technical theory and practice associated with the logistics engineering profession.
- knows and understands the properties and applications of solutions in the field of logistics.
- knows and understands measurement and measurement theory procedures and practices related to the field of logistics.
- knows and understands of the application of information and communication technologies in the field of logistics.
- knows and understands computer modelling and simulation tools and methods related to the logistics domain.
- knows procedures for modelling, design, implementation and management of logistics systems and processes.
- knows of a wide range of problem-solving techniques for research or academic work.
- knows of organisational tools and methods related to management and the legislation required for professional practice.
- knows and understands methods and technologies specific to the chosen specialisation.

b) skills

He/She is able to

- apply the general and specific mathematical, natural and social science principles, rules, relationships and procedures acquired in solving problems in the field of engineering.
- investigate and analyse methods used in the field of logistics, to evaluate and document the results of investigations.
- process, organise, analyse and draw conclusions from information gathered in the implementation of logistics systems and processes.
- recognise the interrelationships and mechanisms of action of logistics systems and their constituent processes, and to evaluate and manage them from a systems perspective.
- participate creatively in the solution of research and development tasks in the field of logistics.
- apply integrated knowledge in the fields of logistics processes, vehicles and mobile machinery, process theory, industrial production processes and related electronics and information technology.
- apply creative problem-solving and flexibility to complex tasks in the field of logistics.
- globally designs complex systems based on systems thinking and process-oriented approaches.
- plan and manage the complex use of technical, economic, environmental, and human resources.
- act competently in applying and developing procedures, models, and information technologies used in the design, organization, and implementation of logistics systems and processes.
- conduct condition assessments, provide evaluations and recommendations based on them, and develop, plan at a high level, organize, and manage complex logistics and transport systems depending on the chosen specialization,
- ensure quality in logistics systems, technologies, and processes, and of solving measurement technology and process control tasks.

- handle problems creatively and solve complex tasks flexibly.
- fulfils managerial roles after gaining sufficient experience.
- engage in publication activities and conduct negotiations in their native language and at least one foreign language within their professional field.
- enrichs the knowledge base of their professional field with original ideas.

c) attitude

He/she

- is open and receptive to learning about, accepting, and credibly communicating professional and technological developments and innovations in the field of logistics.
- embraces the professional and ethical values associated with the engineering discipline.
- strives to contribute to the development of new methods and tools related to logistics.
- demonstrates a deep sense of professional commitment.
- aims to uphold and promote ethical principles of workplace and organizational culture, as well as quality standards.
- seeks to enforce the principles of sustainability, environmental awareness, health protection, and energy efficiency in the field of logistics.
- strives to carry out work with a complex approach based on systems thinking and process-oriented mindset.
- aims to continuously improve both personal and colleagues' knowledge through self-development and further training.
- strives to acquire broad, comprehensive general knowledge.
- is committed to diversity and value-based approaches.

d) autonomy and responsibility

He/she

- acts proactively in solving professional tasks and independently selects and applies relevant problem-solving methods.
- makes decisions independently and with full responsibility, consulting with representatives of other fields (primarily legal, economic, energy, and environmental) as needed.
- demonstrates responsibility in matters of sustainability, health protection, and environmental awareness.
- takes into account and applies the principles of environmental protection, quality assurance, consumer protection, product liability, equal access, workplace health and safety, as well as the basic regulations of engineering, economic, and legal frameworks, and engineering ethics in decision-making,
- takes responsibility for the activities and work of subordinates, as well as for the processes under their supervision.

9. Characteristics of the master training programme

9.1. Professional characteristics

9.1.1. The disciplines and specialisations leading to the qualification, from which the degree is drawn:

- natural science knowledge 20-35 credits; >> ***23 credits***
  - ***- mathematics and informatics 18 credits***
  - ***- other compulsory elective knowledge 5 credits***
- economic and social science knowledge 10-20 credits; >> ***18 credits***
  - ***- management and economics 12 credits***
  - ***- other economic and social science knowledge 6 credits***
- logistics engineering professional knowledge 20-40 credits, of which >> ***30 credits***
  - process engineering, logistics information system design 5-15 credits, >> ***6 credits***
  - warehousing, logistcs system design 5-15 credits, >> ***12 credits***

- specific professional fields of logistics 10-25 credits. >> ***12 credits***

9.1.2. Taking into account the elective specialisations, specific knowledge can be acquired in areas of specialisation appropriate to the needs of the profession of logistics engineer: >>

***- operation control***

***- freight forwarding management***

***- logitics automation***

The specialisation recommended by the training institution within the training as a whole including the master thesis be 40-60 credits. >> ***48 credits***

9.2. Requirements for the traineeship

The traineeship must last at least four weeks and must be organised in a work placement. The traineeship is a criterion requirement.

9.3. Minimum admission requirements to the master training programme for holders of degrees specified in Section 4.2

9.3.1. For applicants holding a degree as specified in Section 4.2 — except for those with a BProf degree in vehicle engineering as defined in Section 4.2 — admission to the master programme requires that the student has obtained at least 40 credits out of the 70 credits specified below during their undergraduate studies:

- natural sciences knowledge (mathematics, chemistry and materials science, mechanics, thermodynamics and fluid mechanics, electrical engineering): 20 credits
- economic and human sciences knowledge (economics and management, environmental protection, quality assurance, occupational safety, social sciences): 10 credits
- field-specific knowledge (structure, components, and operation of vehicles and logistics machinery; logistics knowledge, technologies, networks, processes; informatics; control engineering): 40 credits

Any missing credits from the above fields must be obtained in accordance with the study and examination regulations of the higher education institution during the master's programme.

9.3.2. For students with a BProf degree in vehicle engineering, the minimum number of credits required for admission to the master programme is 60 credits from the following fields:

- natural sciences knowledge (mathematics, physics, fluid mechanics): 10 credits
- economic and human sciences knowledge: 2 credits
- field-specific knowledge (structure, components, and operation of vehicles and logistics machinery; logistics knowledge, technologies, networks, processes; informatics; control engineering): 48 credits

In order to obtain the master degree, the student must acquire the full 60 credits in the specified fields concurrently with the master level education, within the duration of the training programme, and in accordance with the code of studies of the higher education institution.

## II.
## SPECIFIC CHARACTERISTICS OF THE TRAINING PROGRAMME

**1. The comprehensive organisational unit responsible for the training programme**
Faculty of Transportation Engineering and Vehicle Engineering

**2. The person responsible for the programme**
Dr. Krisztián BÓNA (lecturer ID: 72492991740)

**3. Curricular requirements and prerequisite system:**

**3.1. Prerequisite of subject registering:**
The system of prerequisites for the subjects expresses the interrelationship between the subjects. There is an indicative system of pre-requisites for the subjects, which characterises the depth of the links between the subjects.
In the absence of strong and weak prerequisites, the subject is not recommended for enrolment. In the case of co-requisite, a subject linked to a prerequisite may be taken concurrently with the subject it is building on in the same semester. The recommended prerequisite subject reflects a looser connection between the subjects, and the learning outcomes of the subsequent subject can be achieved with some additional time.

**3.2. General conditions for choosing specialisations and modules and for taking up specialisation subjects:**
There are no specific conditions for choosing specialisation and for taking up specialisation subjects.

**3.3. General conditions for admission to the subjects "Master thesis" in all specialisations:**
The prerequisite for enrollment in the Master thesis 1. course are the completion of compulsory courses covering all the basic natural scientific knowledge in the recommended curriculum and the collection of a minimum of 54 credits.
The prerequisite for enrollment in the Master thesis 2. course are the completion of compulsory courses covering all the basic natural scientific knowledge included in the recommended curriculum and the collection of a minimum of 84 credits. The Master thesis 1. course can be enrolled simultaneously as corequisite, in which case the above cumulative acquired credits must be achieved by completing another subjects according to the recommended curriculum. A further condition is the completion of the 4-week traineeship in case of full time master study.

**3.4. Evaluation and assessment**
The evaluation and assessment methods, procedures and rules are set out in the subject descriptions (subject datasheet) in force, in accordance with the current Code of Studies.

**3.5. Term designated for student mobility:**
The student has the possibility to participate in international student mobility in the term designated for this purpose in the recommended curriculum, provided that the conditions set out in the Code of Studies are met, the subjects completed in the framework of mobility will be recognised as being the subjects due for the term of the recommended curriculum which the student would have been entitled to take.

**3.6. Conditions for obtaining the leaving certificate and for entering the final examination:**

The conditions for obtaining a leaving certificate are set out in the Code of Studies, within the legal framework. Within this framework, it is necessary to fulfil all the following criteria:

Completion of all the subjects set out in the recommended curriculum, including the elective subjects (minimum 120 credits), all the curricular criteria (4 weeks of traineeship) and the submission of the master thesis.

**3.7. Choice of subjects for the final examination, order of the final examination:**

The final examination in front of the Final Examination Board consists of the defence of the bachelor thesis and an oral examination in three final examination subjects (or subject groups). The final examination subjects or subject groups shall be selected by the Department responsible for the specialisation. The subjects shall be chosen partly from the core professional curriculum and partly from the specialisation subject area, so that each subject is worth at least 3 credits and the total of the three subjects (groups) is worth at least 15 credits.

**3.8. Recommended curriculum, compulsory and elective subjects, curriculum code:**

The recommended curriculum is a distribution of the subjects and criteria requirements in the curriculum into terms that a student who wishes to progress at an average pace can follow by meeting the indicative prerequisites for the admission of all subjects, so that he/she can complete his/her study requirements within the programme duration specified in the training and outcome requirements; to be admitted and completed in the terms of training.

The compulsory elective subjects in economics and human sciences, the specialised compulsory elective subjects and the elective subjects set out in the curriculum and announced in the current term are available in the study system.

As part of the training programme, students must complete one major compulsory elective subjects. The student may choose the subjects at his/her discretion from among those announced in the current semester. The Faculty offers at least eight major compulsory elective subjects in the framework of the training programme. The current list of subjects is available on the Faculty website: https://transportation.bme.hu/

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The indicative subject prerequisites are displayed on the subject datasheets.

Code of the model curriculum in the study system: xxx

Recommended curriculum of the training programme (start in spring)

| 1./spring | 2./autumn | 3./spring | 4./autumn |
|---|---|---|---|
| Lean management<br>2 2 0 m 6 SZT ALRT | Logistics controlling<br>2 2 0 m 6 SZT KTKG | R&D in logistics<br>0 0 4 m 4 ÖP | Compulsory elective economics and human science course 1.<br>2 0 0 m 3 KV GTK |
| | | Compulsory elective natural science knowledge<br>4 0 0 m 5 KV TTK | Compulsory elective economics and human science course 2.<br>2 0 0 m 3 KV GTK |
| Planning of plant logistics systems<br>2 2 0 e 6 SZT ALRT | Planning of warehousing systems<br>2 2 0 e 6 SZT ALRT | | Major compulsory elective course<br>1 1 0 m 3 SZT |
| | | Elective course 1.<br>2 0 0 m 3 SZV | Elective course 2.<br>2 0 0 m 3 SZV |
| Process planning<br>2 2 0 m 6 SZT ALRT | Planning of logistics networks<br>2 2 0 m 6 SZT ALRT | Specialisation 3<br>2 0 2 e 6 SP | Master thesis 2.<br>0 10 0 m 18 ÖP |
| Planning of logistics information systems<br>1 0 3 m 6 SZT ALRT | Simulation planning<br>1 0 3 m 6 SZT ALRT | Master thesis 1.<br>0 6 0 m 12 ÖP | |
| Specialisation 1<br>2 0 2 e 6 SP | Specialisation 2<br>2 0 2 e 6 SP | | |
| | | Traineeship<br>4weeks 0 0 s 0 KR | |

| | |
|---|---|
| BK | basic knowledge |
| PK | professional knowledge |
| MA | major compulsory elective course |
| CE | compulsory elective economics and natural science course |
| EC | elective course |
| SP | specialization |
| MI | minor elective course |
| CR | criteria requirement |
| | term for student mobility |

Recommended curriculum of the training programme (start in autumn)

| | 1./autumn | 2./spring | 3./autumn | 4./spring |
|---|---|---|---|---|
| 1 | Logistics controlling | Lean management | R&D in logistics | Compulsory elective economics and human science course 1. |
| 2 | | | | |
| 3 | | | | 2 0 0 m 3 KV GTK |
| 4 | | | 0 0 4 m 4 ÖP | Compulsory elective economics and human science course 2. |
| 5 | | | Compulsory elective natural science knowledge | |
| 6 | 2 2 0 m 6 SZT KTKG | 2 2 0 m 6 SZT ALRT | | 2 0 0 m 3 KV GTK |
| 7 | Planning of warehousing systems | Planning of plant logistics systems | | Major compulsory elective course |
| 8 | | | | |
| 9 | | | 4 0 0 m 5 KV TTK | 1 1 0 m 3 SZT |
| 10 | | | Elective course 1. | Elective course 2. |
| 11 | | | | |
| 12 | 2 2 0 e 6 SZT ALRT | 2 2 0 e 6 SZT ALRT | 2 0 0 m 3 SZV | 2 0 0 m 3 SZV |
| 13 | Planning of logistics networks | Process planning | Specialisation 3 | Master thesis 2. |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | 2 2 0 m 6 SZT ALRT | 2 2 0 m 6 SZT ALRT | 2 0 2 e 6 SP | |
| 19 | Simulation planning | Planning of logistics information systems | Master thesis 1. | |
| 20 | | | | |
| 21 | | | | |
| 22 | | | | |
| 23 | | | | |
| 24 | 1 0 3 m 6 SZT ALRT | 1 0 3 m 6 SZT ALRT | | |
| 25 | Specialisation 2 | Specialisation 1 | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | 2 0 2 e 6 SP | 2 0 2 e 6 SP | 0 6 0 m 12 ÖP | 0 10 0 m 18 ÖP |
| 31 | | Traineeship 4weeks 0 0 s 0 KR | | |

| | |
|---|---|
| BK | basic knowledge |
| PK | professional knowledge |
| MA | major compulsory elective course |
| CE | compulsory elective economics and natural science course |
| EC | elective course |
| SP | specialization |
| MI | minor elective course |
| CR | criteria requirement |
| | term for student mobility |

Recommended curriculum of specialisations

**Operation control specialisation**

| | | |
|---|---|---|
| Demand planning and inventory management<br>2 0 2 e 6 SP ALRT | Production planning and control<br>2 0 2 e 6 SP ALRT | Freight transporting control<br>2 0 2 e 6 SP ALRT |

**Freight forwarding management specialisation**
**start in spring**

| | | |
|---|---|---|
| Freight forwarding management 1.<br>2 0 2 e 6 SP KTKG | Freight forwarding management 2.<br>2 0 2 e 6 SP KTKG | Freight forwarding marketing<br>1 0 1 m 3 SP KTKG<br>Trade, financial and accounting techniques<br>1 0 1 m 3 SP KTKG |

**start in autumn**

| | | |
|---|---|---|
| Freight forwarding management 1.<br>2 0 2 e 6 SP KTKG | Freight forwarding marketing<br>1 0 1 m 3 SP KTKG<br>Trade, financial and accounting techniques<br>1 0 1 m 3 SP KTKG | Freight forwarding management 2.<br>2 0 2 e 6 SP KTKG |

**Logistics automation specialisation**

| | | |
|---|---|---|
| Components of logistics automation<br>2 0 2 e 6 SP ALRT | Intelligent logistics applications<br>2 0 2 e 6 SP ALRT | Logistics automation design<br>2 0 2 e 6 SP ALRT |

## III.
## SUBJECT DATASHEETS

The currently valid subject catalogue is available on the faculty website: https://transportation.bme.hu/