

E038414

Certificate Number: BME-1747/2024
Institution Identification Number: FI23344
HUQF Level: 7.
EQF Level: 7.



DEGREE CERTIFICATE

It is hereby certified that

Dominik Frey

(born: Dominik Frey, born on 11 August 1998 in Budapest, Hungary) having completed an approved master's degree programme and fulfilled the academic requirements of the

Budapest University of Technology and Economics

was duly admitted to the degree of Master of Science in Computer Science Engineering and has qualified as a(n)

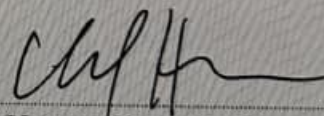
Computer Science Engineer

The duration of the programme of study was 4 semesters.

Overall classification of the qualification: excellent with highest honours

Budapest, 25 January 2024




Hassan Charaf PhD
Dean

Clause: The bearer of this certificate fulfilled the requirements of the **Intelligent Systems, Critical Systems** specialisation.

DIPLOMA SUPPLEMENT



Number of diploma: BME-1747/2024

1. HOLDER OF THE QUALIFICATION

1.1. Family name(s)

Frey

1.2. Given name(s)

Dominik

1.3. Country and place of birth, Date of birth (day/month/year)

Hungary, Budapest, 11.08.1998

1.4. Student identification number or code (if available)

[REDACTED]

1.5. Registration number

[REDACTED]

2. INFORMATION ON THE QUALIFICATION

2.1. Name of qualification and (if applicable) inherent title

Computer Science Engineer

2.2. Main field(s) of study for the qualification

Computer Science Engineering

2.3. Name, status and identification number of awarding institution

Budapest University of Technology and Economics, FI23344, state university, accredited by the Hungarian Accreditation Committee with its resolution 2023/6/IX.

2.4. Name and status of institution (if different from 2.3) administering studies

2.5. Language(s) of instruction/examination

Hungarian

3. INFORMATION ON THE LEVEL OF THE QUALIFICATION

3.1. Level of qualification, EQF level

Master (second cycle), Level 7.

3.2. Official length of program

4 semesters

3.3. Access requirements

Diploma with college degree or diploma with university degree.

4. INFORMATION ON THE CONTENTS AND RESULTS GAINED

4.1. PROGRAM REQUIREMENTS

4.1.1. Program requirements act number

The training and outcome requirements for higher education vocational training, bachelor's and master's programmes except for teacher training are determined in the Ministerial Notice issued according to Article 16/A of Act CCIV of 2011 on National Higher Education available at: <https://kormany.hu/dokumentumtar/kepzesi-es-kimeneti-kovetelmenyek-1> or <https://kormany.hu/dokumentumtar/kepzesi-es-kimeneti-kovetelmenyek-2>. The training and outcome requirements for teacher training courses are determined in EMMI Decree No 8/2013 (I. 30.) on common requirements for teacher training and on training and outcome requirements for certain teacher training courses and ITM Decree No 63/2021 (XII. 29.) on training and outcome requirements for certain teacher training courses.

4.1.2. Aim of study

Education of computer engineers

4.1.3. Required number of credit points

120

4.1.4. System of knowledge assessment

Examinations, midterm control, thesis and its defending at public final examination.

4.1.5. Required professional practice, credit value

4.2. PROGRAM DETAILS AND THE INDIVIDUAL GRADES / MARKS / CREDITS OBTAINED

4.2.1. Knowledge acquired during the program of study (requirement designation, credit points, grades)

Subject	Subject code	Lessons	Requirement	Credit	Grade	Term
Project Laboratory 1	BMEVIAUML00	W: 0/0/5	Mid-term mark	5	Excellent	2021/22/2
Formal Methods	BMEVIMIMA07	W: 3/0/0	Mid-term mark	4	Excellent	2021/22/2
Service Oriented System Integration	BMEVIMIMA04	W: 2/1/0	Exam	4	Excellent	2021/22/2
Model-based Systems Design	BMEVIMIMA00	W: 2/1/0	Exam	4	Excellent	2021/22/2
Multiplatform Software Development	BMEVIAUMA04	W: 2/1/0	Exam	4	Excellent	2021/22/2
Probabilistic Inference and Decision Support Systems	BMEVIMIMA06	W: 2/1/0	Mid-term mark	4	Excellent	2021/22/2
Advanced Mathematics for Informatics - System Optimisation	BMEVISZMA02	W: 4/0/0	Exam	4	Pass	2021/22/2
Languages and Automata	BMEVISZMA04	W: 3/0/0	Mid-term mark	4	Satisfactory	2022/23/1
Information Theory	BMEVISZMA03	W: 3/0/0	Mid-term mark	4	Excellent	2022/23/1
Cyber-Physical Systems	BMEVIMIMA02	W: 2/1/0	Exam	4	Excellent	2022/23/1
Critical Systems Integration Laboratory	BMEVIMIMA03	W: 0/0/3	Mid-term mark	4	Excellent	2022/23/1
Project Laboratory 2	BMEVIMIML01	W: 0/0/5	Mid-term mark	5	Excellent	2022/23/1
Machine Learning	BMEVIMIMA05	W: 2/1/0	Exam	4	Satisfactory	2022/23/1
Deep Learning in Practice with Python and LUA	BMEVITMAV45	W: 2/2/0	Exam	4	Excellent	2022/23/1
Advanced Mathematics for Informaticians - Applied Algebra and Mathematical Logic	BMETE90MX57	W: 4/0/0	Exam	4	Satisfactory	2022/23/1
Engineering Management	BMEVITMMB03	W: 4/0/0	Exam	4	Good	2022/23/1
Software and Systems Verification	BMEVIMIMA01	W: 2/1/0	Exam	4	Good	2022/23/1



Subject	Subject code	Lessons	Requirement	Credit	Grade	Term
Security in Machine Learning	BMEVIHIAV45	W: 2/0/0	Mid-term mark	2	Good	2022/23/2
Artificial Intelligence and Ethics	BMEGT41V105	W: 2/0/0	Mid-term mark	2	Excellent	2022/23/2
Ethics for Engineers	BMEGT41M004	W: 2/0/0	Mid-term mark	2	Excellent	2022/23/2
Cooperation and Machine Learning Laboratory	BMEVIMIMB02	W: 0/0/3	Mid-term mark	4	Excellent	2022/23/2
Complex AI Applications	BMEVIMIMB01	W: 2/1/0	Exam	4	Excellent	2022/23/2
Critical Architectures Laboratory	BMEVIMIMB00	W: 0/0/3	Mid-term mark	4	Excellent	2022/23/2
Diploma Thesis Design 1	BMEVIMIMT00	W: 0/5/0	Mid-term mark	10	Excellent	2022/23/2
Internship	BMEVIAUMS00	S:	Signature	0	Signed	2023/24/1
Artificial Intelligence and Law	BMEGT55V106	W: 2/0/0	Mid-term mark	2	Excellent	2023/24/1
Project Management	BMEGT20M400	W: 2/0/0	Mid-term mark	3	Excellent	2023/24/1
Diploma Thesis Design 2	BMEVIMIMT01	W: 0/10/0	Mid-term mark	20	Excellent	2023/24/1

*Lessons per week (W) / semester (S) *If the number of lessons contains / marks, like in le/p/ly, its meaning is: number of lectures/class practices/laboratories

Number of credits: 123

4.2.2. Knowledge acquired earlier and during parallel or exchange programmes of study (requirement designation, credit points, grades)

Subject name	Subject code	Recognised	Requirement	Credit	Grade	Date
Free Elective Subject Studied Abroad	BMEVIDHKT03	Foreign accreditation	Exam	3	Excellent	04.03.2023

Number of credits: 3

4.2.3. Recognised knowledge acquired informally or during work and other experience (requirement designation, credit points, grades)

Subject name	Subject code	Recognised	Requirement	Credit	Grade	Date

Number of credits: 0

4.3. Grading scheme and, if available, grade distribution guidance All grades at least pass (2).

4.4. Overall classification of the qualification excellent with highest honours (4,82)

5. INFORMATION ON THE ENTITLEMENT OF THE QUALIFICATION

5.1. Access to further study Access to doctoral (PhD) studies

5.2. Professional status (if applicable)

6 ADDITIONAL INFORMATION

6.1. Information concerning the holder of the diploma

Frey Dominik has been awarded by 2nd place with the research work entitled by "Testing Context Dependent Behaviours with Design-Space Exploration" at the Student's Scientific Conference organized by the Budapest University of Technology and Economics in 16 November 2023 in session entitled Intelligent systems Section

The student completed the requisite learning outcomes of the Human-Centered Artificial Intelligence Master's (HCAIM) programme, defined by the INEA/CEF/ICT/A2020/2267304 EU project.

6.2. Information on the Institution

The predecessor in title of the Budapest University of Technology and Economics (BME) was founded in 1782. It is a state university, presently the largest technical university in Hungary. . Faculties in order of their foundation: Faculty of Civil Engineering (ÉMK) – 1782, Faculty of Mechanical Engineering (GPK) – 1871, Faculty of Architecture (ÉPK) – 1873, Faculty of Chemical Engineering and Bioengineering (VBK) – 1873, Faculty of Electrical Engineering and Informatics (VIK) – 1949, Faculty of Transportation Engineering and Vehicle Engineering (KJK) – 1951, Faculty of natural Sciences (TTK) – 1998, Faculty of Economic and Social Sciences (GTK) – 1998.. Home page: www.bme.hu/

6.3. Further information sources

<http://www.vik.bme.hu>

7. CERTIFICATION OF THE SUPPLEMENT

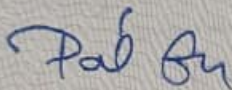
7.1. Date

08. 02. 2024.

7.4. Official stamp or seal

7.2. Name and signature

Erika Pál



7.3. Capacity

Director of Central Academic Office

8. INFORMATION ON THE HUNGARIAN HIGHER EDUCATION SYSTEM

8.1. Types of Institutions and Institutional Control

The establishment and operation of higher education institutions are regulated by Act No. 204 of 2011 (National Higher Education Act). Operating within the legal framework of the National Higher Education Act, Hungarian higher education institutions are recognized state (public) or non-state (church or private) higher education institutions. The list of recognized higher education institutions is indicated in Annex 1 of the National Higher Education Act. Higher education studies are offered at three types of higher education institutions, *egyetem* (university), *alkalmazott tudományok egyeteme* (university of applied sciences) and *főiskola* (college). Universities, universities of applied sciences and colleges may offer courses in all three training cycles. The programmes are identical at all types of institutions.

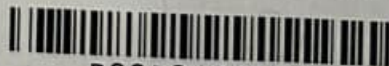
8.2. Types of Programmes and Degrees Awarded

The consecutive training cycles of higher education leading to a higher education degree are *alapképzés* (Bachelor course), *mesterképzés* (Master course) and *doktori képzés* (Doctoral course). In cases set by government decree or legislation, Master degrees can also be awarded after the completion of integrated, one-tier training.

In addition to the aforementioned, higher education institutions may conduct non-degree vocational higher education programmes and postgraduate specialist trainings and may offer adult education within the framework of lifelong learning as well.

Higher education institutions apply a credit system based on the European Credit Transfer and Accumulation System. Accordingly, one credit stands for an average of 30 hours of student workload.

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8.3. Approval/Accreditation of Programmes and Degrees

In the case of each vocational higher education programme, Bachelor and Master course, the programme and outcome requirements are set in legal regulations, i.e. the level of the training, the professional qualification that can be obtained and all the competencies the acquisition of which are the preconditions for obtaining the diploma in the given programme.

Upon request of the higher education institution, the Educational Authority – after having obtained the expert opinion of the Hungarian Accreditation Committee – licenses and registers the launching of all vocational higher education programmes, Bachelor or Master courses or Doctoral schools. Also, the operating licenses of higher education institutions are revised by the Educational Authority in every 5 years, taking into account the expert opinion of the Hungarian Accreditation Committee. The above mentioned procedures apply for all recognized, state or non-state higher education institutions, except for religious studies, where only the requirements in respect of infrastructure can be examined.

8.4. Organisation of Studies

Students studying in vocational higher education programmes, Bachelor and Master courses, as well as postgraduate specialist trainings complete their studies by passing a final examination. The final examination may consist of the defense of the degree thesis or diploma project, and additional oral, written or practical examinations.

8.4.1. Vocational Higher Education Programmes

The diploma obtained on completion of a vocational higher education programme testifies a vocational higher education qualification, but it is not per se an academic degree. A vocational higher education programme requires the completion of at least 120 credits, and the duration of the programme is a minimum of 4 semesters.

8.4.2. First/Second Cycle Degree Programmes

The first higher education degree is the *alapfokozat* (Bachelor degree) ending in a professional qualification. A Bachelor course requires the completion of 180 to 240 credits. The length of the programme is 6-8 semesters.

The second higher education degree is the *mesterfokozat* (Master degree) ending in a professional qualification. Based on a Bachelor course, Master courses require the completion of 60 to 120 credits. The length of the programme is 2-4 semesters.

8.4.3. Integrated Programmes

The integrated, one-tier programmes, which are based on the secondary school leaving examination (*érettségi vizsga*), lead to *mesterfokozat* (Master degree), have the length of 10-12 semesters and require the completion of 300 to 360 credits. Besides teacher education, religious studies and some programmes of arts, e. g. the following programmes are offered as integrated programmes: veterinary medicine, architecture, dentistry, pharmaceuticals, law and medicine.

8.4.4. Specialised Graduate Studies

Higher education institutions may also offer *szakirányú továbbképzés* (postgraduate specialist training) for Bachelor and Master degree holders in this type of a training. Through the completion of 60 to 120 credits a specialised qualification can be obtained. The length of the programme is 2-4 semesters.

8.4.5. Doctoral Programmes

Doctoral courses that began before 1 September 2016 require the completion of at least 180 credits. The duration of the programme is 36 months.

Doctoral courses beginning after 1 September 2016 require the completion of at least 240 credits. The duration of the programme is 8 semesters. During the programme, at the end of the fourth semester a complex examination must be completed. The doctoral thesis must be submitted within three years after the completion of the examination.

Regardless the date of entering a doctoral course, either within the framework of the doctoral course or following it, through a separate degree obtaining procedure, the scientific degree "Doctor of Philosophy" (abbreviated as PhD), or in the field of art "Doctor of Liberal Arts" (abbreviated as DLA) may be obtained. The maximum duration of the degree obtaining procedure is 2 years.

8.5. Grading Scheme

The performance of students is generally assessed following a five-grade scale: excellent (5), good (4), satisfactory (3), pass (2), and fail (1) or a three-grade scale: pass with merit (5), pass (3), and unsatisfactory (1). Nevertheless, higher education institutions may also use other systems for assessment if they are comparable to those mentioned above.

8.6. Access to Higher Education Programmes

The ranking of students applying for higher education programmes is primarily based on their secondary school grades and their *érettségi vizsga* (secondary school leaving examination) results or based solely on the latter. The requirement for admission to vocational higher education programmes, Bachelor and integrated Master courses is the secondary school leaving examination taken – as a rule – after the completion of the 12th grade of a secondary school, certified by *érettségi bizonyítvány* (secondary school leaving certificate). The admission to certain programmes may also be based on health or professional requirements or aptitude tests. To Master courses students holding a Bachelor degree can be admitted. To postgraduate specialist trainings students holding a Bachelor or a Master degree may be admitted. To Doctoral courses only applicants holding a Master degree can be admitted. Higher education institutions may set additional requirements for admission to Master, postgraduate specialist and Doctoral courses.

8.7. Additional Sources of Information

Hungarian ENIC/NARIC¹, Ministry for Culture and Innovation², Educational Authority³, Hungarian Accreditation Committee⁴.

¹ Web site: www.naric.hu

² Web site: www.kormany.hu/hu/innovacios-es-technologiai-miniszterium

³ Web site: www.oktatas.hu, Web site: www.felvi.hu

⁴ Web site: www.mab.hu

