

Certificate Number: BME-1764/2018  
Institution Identification Number: FI23344  
HUQF Level: Level 6  
EQF Level: Level 6



# DEGREE CERTIFICATE

It is hereby certified that

## Richárd Krisztián Csáky

(born Richárd Krisztián Csáky, on 19 December 1995 in Budapest, Hungary) having completed an approved bachelor's degree programme and fulfilled the academic requirements of the

### Budapest University of Technology and Economics

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

#### Mechatronical Engineer.

The duration of the programme of study was 7 semesters.

Overall classification of the qualification: excellent with highest honours

Budapest, 23 January 2018

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Dean



# DIPLOMA SUPPLEMENT



Number of diploma: BME-1764/2018

## 1. HOLDER OF THE QUALIFICATION

1.1. Family name(s)

Csáky

1.2. Given name(s)

Richárd Krisztián

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

Hungary, Budapest, 19.12.1995

1.4. Student identification number or code (if available)

75724423428

1.5. Registration number

T050513/FI23344/2N-AM0-2014

## 2. INFORMATION ON THE QUALIFICATION

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

Mechatronics Engineer

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

Mechatronics 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 2014/9/VIII/1.

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

Bachelor (first cycle), Level 6

3.2. Official length of program

7 semesters

3.3. Access requirements

Secondary school leaving certificate (after 12 years of study), entrance procedure

## **4. INFORMATION ON THE CONTENTS AND RESULTS GAINED**

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### **4.1. PROGRAM REQUIREMENTS**

#### **4.1.1. Program requirements act number**

Degree 15/2006 (IV.3.) OM from the study and graduation requirements of the Majors in Bachelor's and Master's Programs.

#### **4.1.2. Aim of study**

Education of mechatronics engineers

#### **4.1.3. Required number of credit points**

210

#### **4.1.4. System of knowledge assessment**

Examinations, 2 comprehensive examinations, BSc thesis and its defending at public final examination

#### **4.1.5. Required professional practice, credit value**

6-week practice, 0 credit

### **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
Applications of One-Variable Functions in Engineer Working	BMETE90AX41	W: 0/2/0	Mid-term mark	3	Excellent	2014/15/1
Physical Education 1/B	BMEGT70BS1B	W: 0/2/0	Signature	0	Signed	2014/15/1
Physical Education 2/B	BMEGT70BS2B	W: 0/2/0	Signature	0	Signed	2014/15/1
Presentation Technology	BMEGEGFOAMT1	W: 1/0/1	Mid-term mark	2	Excellent	2014/15/1
Elements of Intelligent Products	BMEGEGFOAT04	W: 2/0/0	Mid-term mark	3	Excellent	2014/15/1
Statics	BMEGEMMAGM1	W: 1/1/0	Mid-term mark	3	Satisfactory	2014/15/1
Basics of Mechatronics	BMEGEGFOAMMO	W: 2/1/0	Mid-term mark	3	Good	2014/15/1
Mathematics A1a - Calculus	BMETE90AX00	W: 4/2/0	Exam	6	Excellent	2014/15/1
Business Law	BMEGT55A001	W: 2/0/0	Mid-term mark	2	Good	2014/15/1
Micro- and Macroeconomics	BMEGT30A001	W: 4/0/0	Exam	4	Good	2014/15/1
Informatics I	BMEGEMIAMI01	W: 2/1/0	Exam	3	Good	2014/15/1
Materials Engineering	BMEGEMTAMT2	W: 3/0/2	Exam	5	Good	2014/15/1
Measurement Technology	BMEGEMIAMI01	W: 2/0/1	Mid-term mark	3	Excellent	2015/16/2
Theory of Complex Functions with Applications	BMETE91AX20	W: 2/0/0	Mid-term mark	2	Excellent	2015/16/2
Optomechatronics I	BMEGEGFOAMO1	W: 2/0/0	Mid-term mark	2	Excellent	2015/16/2
Vibrations	BMEGEMMAGM4	W: 2/1/0	Mid-term mark	3	Good	2015/16/2
Automatics	BMEGEGFOAMA2	W: 2/0/2	Mid-term mark	5	Good	2015/16/2
Informatics II	BMEGERIAM4I	W: 1/2/0	Mid-term mark	3	Good	2015/16/2
Systems Engineering	BMEGEMIAMI03	W: 2/0/0	Mid-term mark	2	Excellent	2015/16/2
TQM	BMEGT20AT02	W: 2/0/0	Mid-term mark	3	Satisfactory	2015/16/2
Digital Electronics	BMEVIAUA010	W: 3/0/1	Exam	4	Excellent	2015/16/2
Machine elements II	BMEGEGEAMG2	W: 3/1/0	Exam	4	Good	2015/16/2
Production Engineering	BMEGEGTAM01	W: 2/0/1	Exam	3	Satisfactory	2015/16/2

Subject	Subject code	Lessons	Requirement	Credit	Grade	Term
Communication	BMEGT43A001	W: 2/0/0	Mid-term mark	2	Excellent	2015/16/1
English for Engineers - B2	BMEGT63A051	W: 0/2/0	Mid-term mark	2	Excellent	2015/16/1
Machine elements I	BMEGEGEAM1G	W: 2/1/0	Mid-term mark	3	Satisfactory	2015/16/1
Software Engineering II	BMEGEMIAM02	W: 0/2/0	Mid-term mark	2	Excellent	2015/16/1
Applications of Differential Equations and Vector Analysis in Engineer Working 1	BMETE90AX43	W: 0/2/0	Mid-term mark	3	Satisfactory	2015/16/1
Mathematics A3 for Mechanical Engineers	BMETE90AX10	W: 2/2/0	Mid-term mark	4	Excellent	2015/16/1
Basics of Electrical Engineering	BMEVIAUA007	W: 2/0/1	Mid-term mark	3	Excellent	2015/16/1
Analysis of Technical and Economical Data	BMEGEVGAG14	W: 2/1/0	Mid-term mark	3	Excellent	2015/16/1
Comprehensive Examination in Mathematics A3	BMETE90AX23	S:	Comprehensive exam	0	Excellent	2015/16/1
Dynamics	BMEGEMMAGM3	W: 2/2/0	Exam	5	Excellent	2015/16/1
Geometry of Curves, Surfaces and Transformations for Engineers	BMETE94AX11	W: 2/0/0	Exam	2	Excellent	2015/16/1
Polymer engineering	BMEGEP TAMT0	W: 3/0/1	Exam	4	Good	2015/16/1
Optics and Vision Systems	BMEGEOFAMG3	W: 2/0/1	Exam	3	Pass	2015/16/1
Fluid Mechanics I	BMEGEÁTAM21	W: 2/0/0	Mid-term mark	3	Excellent	2016/17/1
Fundamentals of FEM	BMEGEMMAGM5	W: 1/1/1	Mid-term mark	3	Good	2016/17/1
Microcontrollers	BMEGEOFAMV1	W: 1/0/1	Mid-term mark	3	Good	2016/17/1
Production Management	BMEKOKGA901	W: 3/1/0	Mid-term mark	4	Good	2016/17/1
Programmable Circuits	BMEVIAUA047	W: 2/0/0	Mid-term mark	3	Excellent	2016/17/1
Elements of Precision Engineering	BMEGEOFAMF1	W: 2/0/1	Mid-term mark	3	Good	2016/17/1
Power Electronics	BMEVIAUA017	W: 2/1/1	Mid-term mark	4	Satisfactory	2016/17/1
Control Engineering	BMEGEMIAM04	W: 2/2/0	Exam	4	Satisfactory	2016/17/1
Electromechanics	BMEVIAUA008	W: 2/1/1	Exam	4	Satisfactory	2016/17/1
Sensors	BMEGEOFAM S1	W: 2/0/1	Exam	3	Good	2016/17/1
Electrical Engineering Comprehensive Examination	BMEVIAUA011	S:	Comprehensive exam	0	Excellent	2016/17/1
Applied Heat Transfer	BMEGEENATMH	W: 2/1/0	Exam	3	Excellent	2016/17/1
Industrial Safety	BMEGEMTA411	S:	Signature	0	Signed	2014/15/2
Film, Experience, Manipulation	BMEGT43A067	W: 2/0/0	Mid-term mark	2	Excellent	2014/15/2
Management and Business Economics	BMEGT20A001	W: 4/0/0	Mid-term mark	4	Good	2014/15/2
Applications of Multi-Variable Functions in Engineer Working	BMETE90AX42	W: 0/2/0	Mid-term mark	3	Good	2014/15/2
Processes and Equipment in Environmental Protection	BMEGEVÉAM01	W: 2/0/0	Mid-term mark	2	Satisfactory	2014/15/2
Fundamentals of Machine Design	BMEGEGEAGM1	W: 2/2/0	Mid-term mark	4	Excellent	2014/15/2
Fundamentals of CAD	BMEGEGEA3CD	W: 1/0/2	Mid-term mark	4	Excellent	2014/15/2
Conflict Prevention-Management-Mediation-Negotiation	BMEGT439348	W: 2/0/0	Mid-term mark	2	Good	2014/15/2
Mathematics A2a - Vector Functions	BMETE90AX02	W: 4/2/0	Exam	6	Good	2014/15/2
Physics A2	BMETE15AX02	W: 2/0/0	Exam	2	Good	2014/15/2
Software Engineering I	BMEGERIAM1P	W: 1/2/0	Exam	3	Satisfactory	2014/15/2
Strength of Materials	BMEGEMMAGM2	W: 2/2/0	Exam	5	Good	2014/15/2

Subject	Subject code	Lessons	Requirement	Credit	Grade	Term
Internet Laboratory	BMEVIAUA048	W: 0/0/2	Mid-term mark	3	Excellent	2016/17/2
Numerical Modelling of Fluid Flows	BMEGEÁTAM05	W: 2/1/1	Mid-term mark	4	Excellent	2016/17/2
Computer Controlled Systems	BMEGERIAM6S	W: 2/0/0	Mid-term mark	2	Excellent	2016/17/2
Laboratory	BMEGEÁTAM06	W: 0/0/4	Mid-term mark	5	Excellent	2016/17/2
Analog Electronics	BMEVIAUA009	W: 2/0/1	Mid-term mark	3	Excellent	2016/17/2
Data Mining Techniques	BMEVISZM185	W: 3/1/0	Mid-term mark	5	Excellent	2016/17/2
Machine Vision	BMEKOAL8502	W: 2/0/2	Exam	4	Excellent	2016/17/2
Actuators	BMEGEOFAMA1	W: 2/0/1	Exam	3	Satisfactory	2016/17/2
Mechatronics I.	BMEGEMIAMM1	W: 3/0/0	Exam	3	Good	2016/17/2
Internship	BMEVIAUA059	S:	Signature	0	Signed	2017/18/1
Final Project	BMEVIAUA019	W: 0/10/0	Mid-term mark	15	Excellent	2017/18/1
Signal Processing	BMEGERIAM6J	W: 2/0/0	Mid-term mark	2	Good	2017/18/1
Motion Control	BMEVIAUA016	W: 2/0/1	Mid-term mark	3	Excellent	2017/18/1
Mechatronics II	BMEGEOFAMM2	W: 2/0/1	Mid-term mark	3	Good	2017/18/1

\*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: 233

#### 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

Number of credits: 0

#### 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

Marks 1 to 5 for subjects ending with mid-semester mark or exam mark, accomplishment requires at least a pass (2) grade. Accomplishment of subjects with a signature requires the attainment of the signature.

#### 4.4. Overall classification of the qualification

excellent with highest honours ( 4,79 )

## 5. INFORMATION ON THE ENTITLEMENT OF THE QUALIFICATION

### 5.1. Access to further study

To pursue MSc studies, to participate in specialized postgraduate studies

### 5.2. Professional status (if applicable)

## 6 ADDITIONAL INFORMATION

### 6.1. Information concerning the holder of the diploma

Csáky Richárd Krisztián has been awarded by 2 place with the research work entitled by "The study of dipole-dipole coupled protein-based circuits using self-developed simulation software" at the Student's Scientific Conference organized by the Budapest University of Technology and Economics in 17. November 2016 in session entitled Modelling and simulation Section Csáky Richárd Krisztián has been awarded by 1 place with the research work entitled by "Deep Learning Based Chatbot Models" at the Student's Scientific Conference organized by the Budapest University of Technology and Economics in 16. November 2017 in session entitled Intelligent Systems Section

### 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. The faculties: Civil Engineering, Mechanical Engineering, Architecture, Chemical Technology and Biotechnology, Electrical Engineering and Informatics, Transportation Engineering and Vehicle Engineering, Natural Sciences, Economic and Social Sciences. In 2015 at the BME 21 Bachelor's degree program, 60 Master's degree program and 75 postgraduate specialist training course started. Presently, there are about 17000 full-time, (including 1200 foreign) students, 1600 corresponding students, and 1500 students participate in distance learning. There are 460 PhD/DLA students. The university has about 1050 staff members, including 120 full professors. The courses are offered in Hungarian, English, German and French. Home page: [www.bme.hu/](http://www.bme.hu/)

### 6.3. Further information sources

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

## 7. CERTIFICATION OF THE SUPPLEMENT

### 7.1. Date

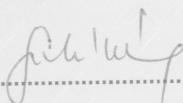
12. 02. 2018

### 7.4. Official stamp or seal



### 7.2. Name and signature

Dr. Mihály Szabó



### 7.3. Capacity

Director of Central Academic Office

## 8. INFORMATION ON THE HUNGARIAN HIGHER EDUCATION SYSTEM

(modified in May 2015)

### 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) institutions. The list of recognized institutions is indicated in Annex 1 of the National Higher Education Act. Higher education studies are offered at two types of higher education institutions, egyetem (university) and főiskola (college). Universities and colleges may offer courses in all three training cycles. The programmes are identical at both 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.

#### 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, a 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, since the Hungarian Accreditation Committee and the Educational Authority have no competence over the quality assurance in this field. In the case of religious studies 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

From 1 September 2013 higher-level vocational training has been replaced by vocational higher education programmes. This type of training no longer forms part of the National Register of Vocational Qualifications.

The diploma obtained after the 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 120 to 150 credits; generally the length of the programme is 4-5 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

Based on a Master degree the doktori képzés (Doctoral course) requires the completion of at least 180 credits. The length of the programme is 36 months. Following the Doctoral course, or within the framework of the Doctoral course through a separate degree obtaining procedure, the scientific degree "Doctor of Philosophy" (abbreviation: PhD), or in the field of art "Doctor of Liberal Arts" (abbreviation: DLA) may be obtained. The maximum length 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 the 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/NARIC<sup>1</sup>, Ministry of Human Resources<sup>2</sup>, Educational Authority<sup>3</sup>, Hungarian Accreditation Committee<sup>4</sup>, Educatio<sup>5</sup>.

<sup>1</sup> Web site: [www.naric.hu](http://www.naric.hu)

<sup>2</sup> Web site: [www.kormany.hu/hu/emberi-eroforrasok-miniszteriuma](http://www.kormany.hu/hu/emberi-eroforrasok-miniszteriuma)

<sup>3</sup> Web site: [www.oktatas.hu](http://www.oktatas.hu)

<sup>4</sup> Web site: [www.mab.hu](http://www.mab.hu)

<sup>5</sup> Web site: [www.felvi.hu](http://www.felvi.hu)