

Course information of Faculty of Civil Engineering, BME

Master of Science program in Construction Information Technology Engineering

1. Foreword

Civil Engineers have been educated at Budapest University of Technology and Economics (and in its predecessor institutions) since 1782.

The engineering education structure, the courses, and the specialization curriculum have changed a lot in the last two and a half centuries. However, it has always been a high priority of the institution to teach the most up-to-date knowledge.

The Faculty of Civil Engineering was at the forefront of introducing the two-stage education, already joined the Bologna process in 2005, typical of the European Higher Education Area. The undergraduate program is eight semesters, and the master's program is three semesters, which has not changed since the start.

However, fifteen years have passed, new disciplines and technologies have become more prominent. The digitization of the construction industry is in full swing, and meeting expectations is a massive challenge for professionals.

The Construction Information Technology Engineering program is intended to reflect on these challenges by teaching students with the specialized knowledge required by the industry. It provides the opportunity to acquire competencies that enable graduates to solve multidisciplinary problems in their field, to apply new software-oriented solutions and models to complex construction activities and to support profession-specific software development effectively. None of the current master's courses contains this complex knowledge, and none prepares the students to apply this knowledge at the level of skills.

We cannot predict how far digitization will reach in the future, and so, a curriculum cannot possibly cover all the technologies that will exist in five or ten years. Graduates of the master's program can deepen their professional knowledge in one sub-field and continue their studies in doctoral schools in several disciplines to become leaders and scientists in their field.

The program offers exciting training in which new teaching methods support acquiring new curriculum content, and students can work and learn in outstanding educational conditions.

According to László Kozma, a Kossuth Prize-winning engineer and university lecturer: 'A good engineer is a creative person, an independent personality whose activity can be accurately measured and calculated.'

That is the goal, and the new master's program of the Faculty of Civil Engineering gives the opportunity and ensures the conditions for becoming a creative engineer. It is worth embarking on this road. We wish everyone success during their university studies and also in their professional work after graduation!

Dr. László Dunai Course coordinator, Dean 2. Main characteristics and objectives of the Master of Science program in Construction Information Technology Engineering

The objective of the Master of Science program is to transmit the specialized knowledge and competences that are necessary for dealing with information technologies and civil engineering work. Under the three semesters of the master's program, the students become engineers with competences of general informatics and software development who meet the requirements of the digitalized construction industry and are capable to design, create and analyze the information system of complex and special engineering facilities.

The Master of Science program in Construction Information Technology Engineering is a 90credit program, to which students can apply with a BSc degree in Civil Engineering, Architectural Engineering, Mechanical Engineering, Energy Engineering, Mechatronics Engineering, Electrical Engineering or Computer Engineering.

The training is carried out in the cooperation of the Faculty of Civil Engineering, the Faculty of Architecture, the Faculty of Mechanical Engineering and the Faculty of Electrical Engineering and Informatics of BME, under the coordination of the Faculty of Civil Engineering. In the curriculum, the emphasis is placed on programming, interdisciplinary collaborations, communication, digitization software development, and BIM (Building Information Modeling). There is a significant demand for the Master of Science programs of the Faculty of Civil Engineering from many countries around the world, and an ever increasing proportion of master's programs are taught in English. All this encourages the Faculty to start the master's degree program in both Hungarian and English.

The Faculty is continuing negotiations with the Hungarian Chamber of Engineers on the integration of the acquired qualification into the licensure of professional work, especially by recognising that the competencies acquired in the master's increase the efficiency by which the engineer performs its design and construction work processes significantly.

3. Requirements and regulations

During the master's program, students have to complete 90 credits from subjects given in the curriculum, including the diploma project. The master's program does not have different specializations; however, some content of the curriculum branches into two. Establishing two groups of students accounts for the differences in their previous studies. The curriculum presented in Section 5 demonstrates clearly the different obligatory recommended elective subjects.

The credit system provides some flexibility for the students to schedule their work individually, although following the schedule according to the curriculum can be recommended for everyone. Indeed, following the order of the subjects laid out in the curriculum ensures the development and the comprehension of the necessary competences, thus learning is more efficient and successful.

To obtain a master's degree, a state-recognized intermediate level (B2), oral and written language exam, or equivalent graduation certificate or diploma in any living foreign language is required. If this language is different from English, the student must have at least a B1 level, oral and written state-recognized English language exam.

The rules related to studies can be found in the Code of Studies of BME in force. Payment obligations and allowances for students are set out in the Regulation on Student Fees and Benefits.

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FACULTY	DEPARTMENT	ADDRESS
Faculty of Civil	Department of Geodesy and	http://geod.bme.hu/?language=en
Engineering	Surveying	
Faculty of Civil	Department of Construction	http://em.bme.hu/?language=en
Engineering	Materials and Technologies	
Faculty of Civil	Department of	http://fmt.bme.hu/?language=en
Engineering	Photogrammetry and	
	Geoinformatics	
Faculty of Civil	Department of Engineering	http://gmt.bme.hu/?language=en
Engineering	Geology and Geotechnics	
Faculty of Civil	Department of Structural	http://hsz.bme.hu/?language=en
Engineering	Engineering	
Faculty of Civil	Department of Structural	http://me.bme.hu/?language=en
Engineering	Mechanics	
Faculty of Civil	Department of Highway and	http://uvt.bme.hu/?language=en
Engineering	Railway Engineering	
Faculty of Civil	Department of Hydraulic and	http://vit.bme.hu/?language=en
Engineering	Water Resources Engineering	
Faculty of Civil	Department of Sanitary and	http://vkkt.bme.hu/?language=en
Engineering	Environmental Engineering	
Faculty of	Department of Construction	http://www.ekt.bme.hu/index_en.shtml
Architecture	Technology and	
	Management	
Faculty of	Department of Building	http://www.epget.bme.hu/
Mechanical	Services and Process	
Engineering	Engineering	
Faculty of	Department of Electric Power	http://www.vet.bme.hu//?q=en
Electrical	Engineering	
Engineering and		
Informatics		
Faculty of	Department of Electron	http://eet.bme.hu
Electrical	Devices	
Engineering and		
Informatics		
Faculty of	Department of Stochastics	https://random.math.bme.hu/
Natural Sciences		?language=en

4. Faculties and departments involved in education

5. MSc in Construction Technology Engineering – Curriculum and Course Design

MSc program in Construction Information Technology Engineering

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	Numerical Methods	Numerikus módszerek	BMEEOAFMB51	4			2			Е	1	1
	Construction Information Technology Mathematics	Építmény-informatikai matematika	BMETE90MX 63	3	2					E	1	[
	Building Information Modelling	Építmény-információs modellezés	BMEEOFTMB51	3	2					M	1	1
	Decision Support Methods	Döntéstámogató módszerek	BMEEPEKMB51	2	2					M	1	[
	Construction Information Technology Engineering Project	Építmény-informatikai Projektfeladat	BMEEODHMB5P	6				2		M	1	[
	BIM Modelling and Design	BIM rendszerépítés	BMEEOFTMB52	5			4			E	2	BMEEOFTMB51
	Civil Engineering Automation, Modelling	Építőmérnöki automatizálás, modellezés	BMEEOHSMB51	5	1	2				E	2	[
	Construction Information Technology Programming	Építmény-informatikai programozás	BMEVIAUM B51	6	1	4				M	2	BMEVIEEM B-1
	Complex Construction IT project	Komplex építmény-informatikai projektfeladat	BMEEODHMB5K	6	-			2		M	2	BMEEODHMB5P
	Argumentation, Negotiation, Presentation	Érvelés, tárgvalás, előadás	BMEGT41M B51	3	2					M	3	
	Technology Assessment	A technológia hatáselemzése	BMEGT41M B52	2	2	Ť	-			M	3	
***	Diploma Project	Dinlomamunka	BMEEODHMB-D	20	-+			1		M	3	
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	1 st Recommended Elective Subject of Student Group II.*	Hallgatói csoport 1. kötelezően választható tárgya*		4	2	1				М	2	
	2 nd Recommended Elective Subject of Student Group II.*	Hallgatói csoport 2. kötelezően választható tárgya*		4	2	1				М	2	
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*The committee of the MSc program divides the students into groups according to their previous BSc studies

in order to unify the output competences that are acquired with the completion of the master's program

**Any subject from other MSc programs of the University can be chosen.
***Taking the Diploma project subject is only possible if the student accomplished 33 credits from the mutual Core Subjects, 12 credits from the subjects of their own Student Group and at least 51 credits as a sum of the above mentioned two types of subjects.

**** The listed numbers of the semesters present the suggested schedule according to the curriculum.

*****Midterm grade/ Exam