Introduction

The program aims to qualify engineers with solid scientific and technical knowledge related to the professional field of Information Technology who are competent in the design of IT systems and tools and the development and integration of IT systems. The MSc program is also designed to prepare students to carry out and coordinate IT-related research and innovation tasks as well as to continue to Ph.D. studies.

Main training areas (120 credits)

Natural science fundamentals Mathematics, Information Theory, Computer Science, Theory of Computing, System Theory	20-30 credits
Human and economic science Microeconomics, Management, Law and Business Fundamentals, Quality assurance, Ergonomics, Communication Theory, Cultural history of Technical Sciences, Environment protection	9-15 credits
Information Technology professional knowledge Comprehensive academic knowledge of the development and design of complex IT systems and related services, mainly in one of the fields of (depending on specialization): software design, network systems, mobile systems, computer graphics and image processing, critical systems, media informatics, data security, Thesis work (30 credits), special knowledge related to the demands of computer engineering profession	54-90 credits
Free Elective subjects	min. 6credits

The orientation of the program is balanced (the rate of theoretic and practical knowledge transfer is 40-60%)

Preliminary course schedule

According to Faculty regulations:

- The subject datasheet of some specialization subjects may include preliminary subject prerequisites. (Especially in the case of laboratories that are followed by and based on the knowledge of specialization subjects.)
- Project Laboratory 1., Project Laboratory 2., Thesis Work 1., Thesis Work 2.
    - Only MSc students of the given program can be admitted
    - The subjects can only be taken one after the other having completed the credits of the previous subject
- The prerequisite of the admission of Thesis Work 2
    - Completing 84 credits according to the study plan
    - Completing the credits of the following subjects
        - Applied algebra and mathematical logic (BMETE90MX57)
        - System optimization (BMEVISZMA02)
        - Languages and automata (BMEVISZMA04)
        - Information theory (BMEVISZMA03)
        - Formal methods (BMEVIMIMA07)
        - MSc thesis work 1 (Diploma Thesis Design 1)
- Further prerequisites may be included in the "Regulations of BME VIK MSc Project Work, final examination and certificate"

Specialization, changing specialization

During MSc studies, students are both on a main and secondary specialization. Students are requested to hand in their application for specialization (the order of their main and secondary specialization) before admittance, during their entrance exam.

Students may submit a request in Neptun Study Administration System in order to change their specialization within the first semester of specialization. In case the request is accepted the student is transferred to the other specialization in the next semester (provided that the specialization starts in the given semester).

Mandatory human and economic science elective

The Human and Economic Science subject block in Computer Engineering MSc Program consists of 2 parts:

- Engineering management (BMEVITMMB03)
- Three other subjects (6 credits altogether). The list of Human and Economic Science Elective subjects is available on the Faculty's website

Project subjects

Within the frames of specialization, students take so-called Project Subjects which are related to their selected main and secondary specialization. These subjects normally begin with Project Laboratory 1 in the 1st semester, Project Laboratory 2 in the 2nd semester, followed by Thesis work 1 in the 3rd semester and finally Thesis work 2 in the 4th semester. During classes, students solve more challenging technical problems (projects) either in groups or individually. A topic may cover different fields of science (in which the subtasks are specifically designed for each subject). Students can only take Project Subjects after being enrolled in one of the specializations.

Free elective subjects

Students take Free Elective Subjects for a minimum of 6 credits from the list of recommended and available subjects announced by the Faculty in order to widen their knowledge.
The list of Free Elective Subjects may vary from year to year. The updated lists can be found on the Faculty's website.

MSc Computer Engineering Curriculum

There are two versions of the curriculum so that students can begin their studies either in the spring or fall semesters. Subjects – with few exceptions – are only announced once a year, either in the spring or in the fall.

Starts: spring semester

1st semester (spring)						
Credits	**Course code**	**Course name**	**Contact hours**			**Requirement**
			L	**S**	**Lab**	
4	BMEVISZMA02	System optimization	4			exam
4	BMEVIMIMA07	Formal methods	3			mid-semester mark
4		Main specialization subject 1	2	1		exam
4		Main specialization subject 2	2	1		exam
4		Main specialization subject 3	2	1		exam
4		Secondary specialization subject 1	2	1		mid-semester mark
5	BMEVI**ML00	Project Laboratory 1			5	mid-semester mark

2nd semester (fall)						
Credits	**Course code**	**Course name**	**Contact hours**			**Requirement**
			L	**S**	**Lab**	
4	BMETE90MX57	Applied algebra and mathematical logic	4			exam
4	BMEVISZMA04	Languages and automata	3			mid-semester mark
4	BMEVISZMA03	Information theory	3			mid-semester mark
4		Main specialization subject 4	2	1		exam
4		Main specialization subject 5	2	1		exam
4		Main specialization laboratory 1			3	mid-semester mark
4		Secondary specialization subject 2	2	1		exam
5	BMEVI**ML01	Project laboratory 2			3	mid-semester mark pre-requisite: Project laboratory 1

3rd semester (spring)						
Credits	**Course code**	**Course name**	**Contact hours**			**Requirement**
			L	**S**	**Lab**	
4		Main specialization laboratory 2			3	mid-semester mark
4		Secondary specialization subject 3	2	1		exam
2 / 4		Secondary specialization laboratory			3	mid-semester mark
2	BMEVI******	Free elective course	2			mid-semester mark
2	BMEVI******	Free elective course	2			mid-semester mark
2	BMEVI******	Free elective course	2			mid-semester mark
2	BMEVI******	Free elective course	2			mid-semester mark *Smart City secondary specialization*
2	BMEGT*****	Mandatory human & economic science elective	2			mid-semester mark
10	BMEVI**MT00	(Diploma Thesis Design 1			5	mid-semester mark pre-requisite: Project laboratory 2

4th semester (fall)				
Credits	**Course code**	**Course name**	**Contact hours** **L S Lab**	**Requirement**
4	BMEVITMMB03	Engineering management	4	exam
2	BMEGT*****	Mandatory human & economic science elective	2	mid-semester mark
2	BMEGT*****	Mandatory human & economic science elective	2	mid-semester mark
20	BMEVI**MT01	Diploma Thesis Design 2	10	mid-semester mark pre-requisite: Diploma Thesis Design 1

Starts: fall semester

1st semester (fall)

Credits	Course code	Course name	Contact hours L	S	Lab	Requirement
4	BMETE90MX57	Applied algebra and mathematical logic	4			exam
4	BMEVISZMA04	Languages and automata	3			mid-semester mark
4	BMEVISZMA03	Information theory	3			mid-semester mark
4	BMEVITMMB03	Engineering management	4			exam
2	BMEVI******	Free elective course	2			mid-semester mark
2	BMEVI******	Free elective course	2			mid-semester mark
2	BMEVI******	Free elective course	2			mid-semester mark
5	BMEVI**ML00	Project Laboratory 1			5	mid-semester mark

2nd semester (spring)

Credits	Course code	Course name	Contact hours L	S	Lab	Requirement
4	BMEVISZMA02	System optimization	4			exam
4	BMEVIMIMA07	Formal methods	3			mid-semester mark
4		Main specialization subject 1	2	1		exam
4		Main specialization subject 2	2	1		exam
4		Main specialization subject 3	2	1		exam
4		Secondary specialization subject 1	2	1		mid-semester mark
2	BMEGT*****	Mandatory human & economic science elective	2			mid-semester mark
5	BMEVI**ML01	Project laboratory 2			3	mid-semester mark pre-requisite: Project laboratory 1

3rd semester (fall)

Credits	Course code	Course name	Contact hours L	S	Lab	Requirement
4		Main specialization subject 4	2	1		exam
4		Main specialization subject 5	2	1		exam
4		Main specialization laboratory 1			3	mid-semester mark
4		Secondary specialization subject 2	2	1		exam
2	BMEGT*****	Mandatory human & economic science elective	2			mid-semester mark
2	BMEGT*****	Mandatory human & economic science elective	2			mid-semester mark
10	BMEVI**MT00	Diploma Thesis Design 1		5		mid-semester mark pre-requisite: Project laboratory 2

4th semester (spring)				
Credits	**Course code**	**Course name**	**Contact hours L S Lab**	**Requirement**
4		Main specialization laboratory 2	3	mid-semester mark
4		Secondary specialization subject 3	2 1	exam
2 / 4		Secondary specialization laboratory	3	mid-semester mark
2	BMEVI******	Free elective course	2	mid-semester mark *Smart City secondary specialization*
20	BMEVI**MT01	Diploma Thesis Design 2	10	mid-semester mark pre-requisite: Diploma Thesis Design 1

Main Specialization Subjects

	Internet Architecture and Services	**Applied Informatics**
Main specialization subject 1	Internet ecosystem and its evolution BMEVITMMA00	SW development methods & paradigms BMEVIAUMA00
Main specialization subject 2	Agile network service development BMEVITMMA01	Distributed systems & domain-specific modeling BMEVIAUMA01
Main specialization subject 3	Cloud networking BMEVITMMA02	Service oriented system integration BMEVIIIMA04
Main specialization subject 4	Modeling seminar for engineers BMEVITMMA03	Business intelligence BMEVIAUMA02
Main specialization subject 5	Internet services and applications BMEVITMMA04	Software and systems verification BMEVIMIMA01
Main specialization laboratory 1	Infocommunication services laboratory 1 BMEVIHIMA04	Distributed systems laboratory BMEVIAUMA03
Main specialization laboratory 2	Infocommunication services laboratory 2 BMEVITMMB00	Business intelligence laboratory BMEVIAUMB00
Project laboratory 1	BMEVIHIML00 BMEVITMML00	BMEVIAUML00 BMEVIIIML00 BMEVIMIML00
Project laboratory 2	BMEVIHIML01 BMEVITMML01	BMEVIAUML01 BMEVIIIML01 BMEVIMIML01
Diploma Thesis Design 1	BMEVIHIMT00 BMEVITMMT00	BMEVIAUMT00 BMEVIIIMT00 BMEVIMIMT00
Diploma Thesis Design 2	BMEVIHIMT01 BMEVITMMT01	BMEVIAUMT01 BMEVIIIMT01 BMEVIMIMT01

Secondary Specialization Subjects

	Cloud and Parallel Systems	**Smart City**
Secondary specialization subject 1	Cloud computing BMEVIIIMA05	Sensor networks and applications BMEVITMMA09
Secondary specialization subject 2	High Performance Parallel Computing BMEVIIIMA06	Human-machine interface BMEVITMMA11
Secondary specialization subject 3	GPGPU applications BMEVIIIMB01	Intelligent Transportation Systems BMEVITMMA10
Secondary specialization laboratory	Parallel programming laboratory BMEVIIIMB02	Smart city laboratory BMEVITMMB04
Free electives	min. 6 credits	min. 8 credits