Introduction

The program aims to qualify computer science engineers with solid engineering skills who are competent to install and operate technical IT and information infrastructure systems and services, and also to design and develop data and program systems. This means that graduates are expected to use both software development methods and development tools, involving modelling, simulation, performance, and reliability of systems. Students will be able to do programming in an object-oriented and visual programming environment.

Main training areas (210 credit):

Natural science fundamentals	40-45 credits
Human and economic subjects	15-25 credits
Professional core material and specific professional knowledge	100-150 credits
Fee Elective subjects	min. 10 credits

BSc Computer Engineering curriculum

1st semester						
Credits	**Course code**	**Course name**	**Contact hours**			**Requirement**
			L	**S**	**Lab**	
6	BMETE90AX21	Calculus 1 for informaticians	4	2		exam
4	BMETE11AX23	Physics 1i	2	1		exam
5	BMEVISZAA03	Introduction to the theory of computing 1	2	2		exam
6	BMEVIMIAA02	Digital design	2	1	2	exam
7	BMEVIEEAA00	Basics of programming 1	2	2	2	mid-semester mark
3	BMEGT63EEI1*	English for Electrical Engineering and Informatics 1.		4		mid-semester mark

2nd semester						
Credits	**Course code**	**Course name**	**Contact hours**			**Requirement**
			L	**S**	**Lab**	
6	BMETE90AX22	Calculus 2 for informaticians	4	2		mid-semester mark
4	BMETE11AX24	Physics 2i	2	1		exam
5	BMEVISZAA04	Introduction to the theory of computing 2	2	2		exam
4	BMEVIMIAA00	System modeling	2	1		mid-semester mark
6	BMEVIIIAA03	Programming 2	2		2	mid-semester mark
4	BMEVIHIAA02	Computer architectures	2	1		exam
3	BMEGT63EEI2*	English for Electrical Engineering and Informatics 2.		4		mid-semester mark
	TE90AX20	Comprehensive Examination in Calculus				exam

3rd semester						
Credits	**Course code**	**Course name**	**Contact hours**			**Requirement**
			L	**S**	**Lab**	
5	BMEVISZAB02	Probability theory	2	2		exam
4	BMEVIHIAB00	Coding technology	3			exam
5	BMEVITMAB04	Databases	2	1	1	exam
4	BMEVIHIAB01	Communication networks 1	2		1	mid-semester mark
5	BMEVIIIAB00	Programming 3	2		2	mid-semester mark
4	BMEVIIIAB01	Software engineering	3			exam
4	BMEVIHVAB00	System theory	2	2		mid-semester mark

4th semester

Credits	Course code	Course name	Contact hours L S Lab			Requirement
5	BMEVISZAB03	Theory of algorithms	2	2		exam
5	BMEVIMIAB00	Operating systems	3		1	exam
3	BMEVIIIAB07	Computer graphics	3			mid-semester mark
4	BMEVITMAB01	Communication networks 2	2		1	exam
5	BMEVIAUAB00	Software techniques	2	2		exam
3	BMEVIIIAB06	Software project laboratory			2	mid-semester mark
4	BMEGT20A001	Management and business economics	4			exam

5th semester

Credits	Course code	Course name	Contact hours L S Lab			Requirement
4	BMEVIEEAC00	Technology of IT devices	2		1	mid-semester mark
5	BMEVIAUAC00	Mobile- and web-based software	2	2		exam
3	BMEVIMIAC10	Artificial intelligence	3			mid-semester mark
4		specialization subject 1	2	1		exam
4		specialization subject 2	2	1		exam
3	BMEVI**AL00	Training Project Laboratory			3	mid-semester mark
4	BMEGT30A001	Micro- and macroeconomics	4			exam
2	BMEGT55A001	Business law	4			mid-semester mark

6th semester

Credits	Course code	Course name	Contact hours L S Lab			Requirement
3	BMEVIHIAC01	IT security	3			mid-semester mark
4	BMEVITMAC02	Management of information systems	2		1	mid-semester mark
4		specialization subject 3	2	1		exam
4		specialization subject 4	2	1		exam
3		specialization laboratory 1			2	mid-semester mark
5	MEVI**AL01	Project laboratory			4	mid-semester mark
4	BMEVI****	Free elective	4			exam
2	BMEGT****	Human & economic science elective	2			mid-semester mark

7th semester

Credits	Course code	Course name	Contact hours L S Lab			Requirement
3	BMEVIMIAD00	Embedded information systems	2	1		mid-semester mark
3		specialization laboratory 2			2	mid-semester mark
2	BMEVI****	Free elective	2			mid-semester mark
2	BMEVI****	Free elective	2			mid-semester mark
2	BMEVI****	Free elective	2			mid-semester mark
2	BMEGT****	Human & economic science elective	2			mid-semester mark
15	BMEVI**AT00	BSc thesis project		10		mid-semester mark

* Students, who started the program before 2019 or have a certificate of adequate English knowledge issued by BME GTK Centre for Modern Languages can substitute the English for Electrical Engineering and Informatics 1. - 2. subjects (BMEGT63EEI1 and BMEGT63EEI2) by elective Human & economic science subjects (min. 6 credits altogether).
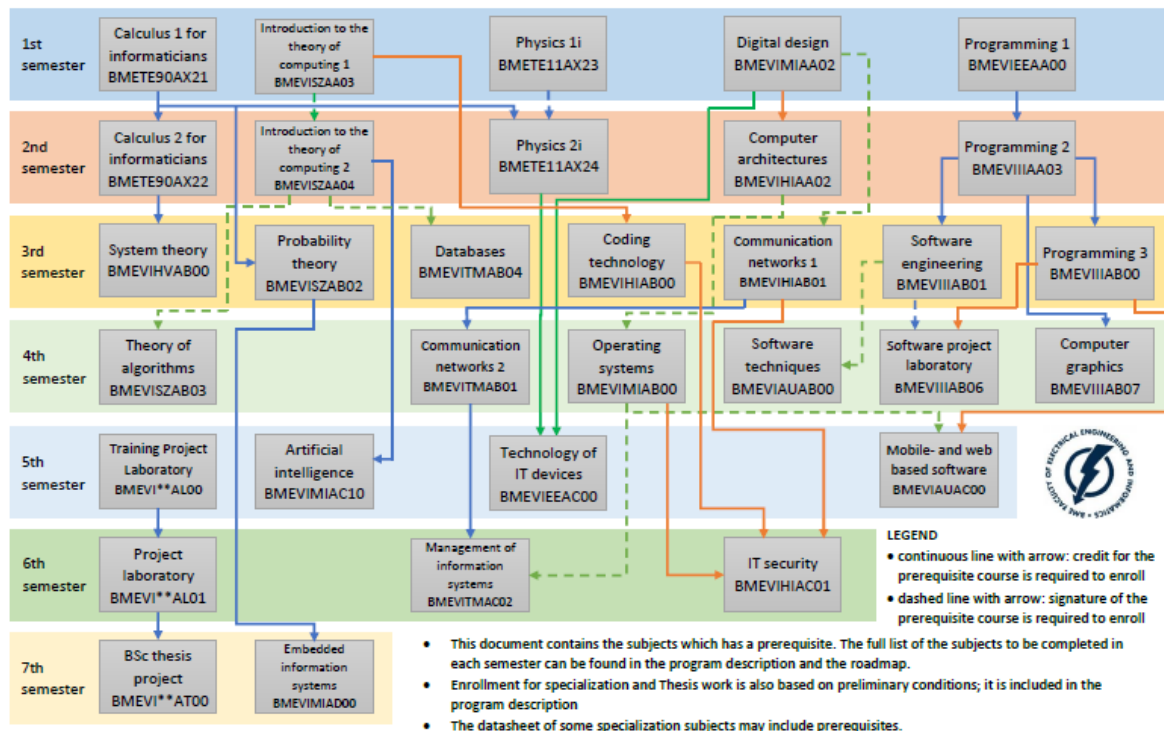
Specializations subjects

	Infocommunications	Software Engineering
specialization subject 1	Mobile communication networks BMEVIHIAC00	Data-driven systems BMEVIAUAC01
specialization subject 2	Building and operation of networks BMEVITMAC00	Object-oriented software design BMEVIIIAC00
specialization subject 3	Media applications & networks in practice BMEVIHIAC02	Integration & verification techniques BMEVIMIAC04
specialization subject 4	Networked Resource Platforms and Applications BMEVITMAC03	Client side technologies BMEVIAUAC02
specialization laboratory 1	Infocommunication laboratory 1 BMEVITMAC08	Software development laboratory 1 BMEVIAUAC09
specialization laboratory 2	Infocommunication laboratory 2 BMEVIHIAD02	Software development laboratory 2 BMEVIAUAD01
Training Project Laboratory	BMEVITMAL00	BMEVIAUAL00
Project laboratory	BMEVIHIAL01 BMEVITMAL01	BMEVIAUAL01 BMEVIIIAL01 BMEVIMIAL01
BSc thesis project	BMEVIHIAT00 BMEVITMAT00	BMEVIAUAT00 BMEVIIIAT00 BMEVIMIAT00

Preliminary course schedule

The following diagram shows the structure of mandatory subjects of the programme. Those subjects of the study plan are not presented below that have no mandatory preliminary conditions for enrollment.

Due to the fixed structure of the subjects of specializations, further preliminary conditions may be requested in the Neptun Study Administration System.

Project subjects can only be taken in a fixed order of semesters, which means that Training laboratory can only be followed by Project Laboratory and then BSc Thesis project. These subject can be both taken in spring and fall semesters.

Certificate of adequate English knowledge, enrollment for specialization and Thesis project is also based on preliminary conditions (the so-called milestone requirement of the programme).

- Certificate of adequate English knowledge issued by BME GTK Centre for Modern Languages
  - o It is a requirement to obtain the certificate by the end of the second semester and is also a condition of further studies
- Specialization enrollment conditions
  - o at least 90 credits are completed
  - o all courses of the first and second semesters are completed
  - o at least 20 credits of the third semester are completed
  - o Mathematics comprehensive exam is completed
- Thesis project enrollment conditions
  - o at least 174 credits are completed (up to 10 credits free electives)
  - o all courses of the first four semesters are completed
  - o all specialization courses are completed

Human and economic science

The subject block of human and economic science consists of two parts:
- mandatory subjects
    - Management and Business Economics (BMEGT20A001)
    - Micro- and Macroeconomics (BMEGT30A001)
    - Business Law (BMEGT55A001)
    - English for Electrical Engineering and Informatics 1. (BMEGT63EEI1)
    - English for Electrical Engineering and Informatics 2. (BMEGT63EEI2)
      Students, who started the program before 2019 can substitute the English for Electrical Engineering and Informatics 1. - 2. subjects (BMEGT63EEI1 and BMEGT63EEI2) by elective Human & economic science subjects (min. 6 credits altogether).
- Two elective human and economic science subjects (min. 4 credits altogether).
  The list of human and economic science elective subjects is available on the Faculty's website

Mandatory English language subjects

Two mandatory language courses have been introduced in the first and second semesters in order to reinforce effective learning (BMEGT63EEI1 English for Electrical Engineering and Informatics 1. and BMEGT63EEI2 English for Electrical Engineering and Informatics 2.)

Students are assigned and registered for courses centrally by the language institute, so it is unnecessary to register in Neptun while deregistration of such courses is not allowed. The fulfilment of the English course is a must in the first two semesters of the BSc programme to students who do not have a certificate of adequate English knowledge issued by BME GTK Centre for Modern Languages. Please note that no other language certificates are accepted. It is a requirement to obtain the certificate by the end of the first year and is also a condition of further studies. To obtain the language certificate, you need to:
- Fulfil the requirements of the pre-engineering English course at an adequate level
- Fulfil the requirements of the BSc English course in the first semester at an adequate level
- Fulfil the requirements of the BSc English course in the second semester at an adequate level

Students obtaining the English language certificate by the beginning of the given semester must select elective economic and human subject instead (3 or 6 credits altogether).

Specialization

Specializations start every fall semester, and the selection of specialization is always at the end of the 4th semester. At the end of the spring semester (after the end of the exam period) the students who have met all criteria for the enrollment to specializations forward their preferred order of specialization to the Faculty. The decision on the type of specialization and the placement of students depends on the number and the results of applying students, and the faculty teaching capacity.

Project subjects

Within the frames of specialization students take so-called project subjects from the 5th semester beginning with Training laboratory, then Project laboratory in the next semester and finally BSc Thesis project. As each subject is based on the other one, this is the strict order of enrollment. However, they can be both taken in spring and fall semesters.

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 10 credits to widen their knowledge from the list of available courses announced by the Faculty. The ten credit criteria can either be achieved by any 2-credit or 4-credit subject combinations.

The list of free elective courses may vary from year to year. The updated list can be found on the Faculty's website.

The transition of BSc curriculum from September 2017

The curriculum of BSc programme of electrical engineering and informatics have been slightly modified from September 2017, which means that the number of credits as well as the codes of certain subjects had to be changed.

It is the modified curricula, introduced in September 2017, where you will find all the subjects of the given semester. Students having their signatures from previous semesters should register for the exam course under the previous subject code.

The only exception is 'Databases Laboratory' (VITMAB02) of Computer Engineering curricula that was cancelled due to contracting it with another subject. The 'Databases Laboratory' (VITMAB02) and Databases subject (VITMAB00) is substituted by the new Databases subject under the new code (VITMAB04).

- Students having their signatures from 'Databases' (VITMAB00) from previous semesters should register for the exam course under the previous subject code (VITMAB00).
- Students having completed or having signatures of the previous Databases subject (VITMAB00) should not register for the new Databases subject under the new code (VITMAB04). They have to register and fulfil the 'Databases Laboratory' (VITMAB02) subject.
- 'Databases Laboratory' (VITMAB02) will still be announced in the spring semesters depending on the number of students enrolling for this subject. If the number of student registration is very limited, the announcement of the previous subject will be unnecessary.

Due to the modifications of the number of credits mentioned above, students may have less or more credits of certain subjects based on the previous curriculum. In this case, the amount of credits should be added up, and the difference should be adjusted by selecting Free Elective courses. In other words, students having less credits should register for more Free Elective courses, students having more credits should select courses from the list of Free Electives that are worthless credits. The goal is to fulfil the minimum 210-credit criteria of the curriculum by the end of the programme.