



Bachelor of Science Degree Program  
Electrical Engineering Curriculum

## Introduction

The program aims to provide students with the general knowledge and skills of electrical engineering both focusing on natural science, technology and informatics as well as economy, humanity, languages and the relevant subjects. By BSc programme, students can cooperate in the designs of electrical and electronic devices, installations, complex systems, and projects. While producing and operating such systems students have the chance to monitor their calibration, quality, and testing. They can participate in their installation and operation while they are also able to do service-engineering, product engineering, and managing.

Being specialized within the faculty gives students the opportunity to be prepared to do creative engineering work.

## Main training areas (210 credits)

Natural science fundamentals	40-50 credits
Economics and humanities	14-30 credits
Professional core material	70-105 credits
Specific professional knowledge	min. 40 credits
Free electives	min. 10 credits

## BSc Electrical Engineering curriculum

1 <sup>st</sup> semester				
Credits	Course code	Course name	Contact hours L S Lab	Requirement
6	BMETE90AX00	Mathematics A1	4 2	exam
4	BMETE11AX21	Physics 1	3 1	exam
5	BMEVISZAA05	Foundation of computer science	2 2	exam
6	BMEVIII AA04	Digital design 1	3 1 1	exam
7	BMEVIHIAA01	Basics of programming 1	2 2 2	mid-semester mark
2	BME	English language	2	mid-semester mark
2 <sup>nd</sup> semester				
Credits	Course code	Course name	Contact hours L S Lab	Requirement
6	BMETE90AX26	Mathematics A2	4 2	mid-semester mark
4	BMETE11AX22	Physics 1	3 1	exam
6	BMEVIHVAA00	Signals and systems 1	3 2	exam
5	BMEVIII AA02	Digital design 2	3 1	exam
6	BMEVIAUAA01	Basics of programming 2	2 2	mid-semester mark
2	BMEGT****	Human & economic science elective	2	mid-semester mark
2	BMEGT****	Human & economic science elective	2	mid-semester mark
0	TE90AX16	Comprehensive Examination in Mathematics A2		exam

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<b>3<sup>rd</sup> semester</b>						
<b>Credits</b>	<b>Course code</b>	<b>Course name</b>	<b>Contact hours</b>		<b>Requirement</b>	
			<b>L</b>	<b>S</b>	<b>Lab</b>	
4	BMETE90AX0	Mathematics A3	2	1		exam
4	BMETE90AX51	Mathematics A4	2	2		exam
6	BMEVIETAB00	Electronics technology and materials	3		2	mid-semester mark
6	BMEVIHVAB01	Signals and systems 2	3	3		exam
5	BMEVIVEAB00	Electrotechnics	3		1	mid-semester mark
5	BMEVIHIAB02	Electronics 1	2	2		exam
<b>4<sup>th</sup> semester</b>						
<b>Credits</b>	<b>Course code</b>	<b>Course name</b>	<b>Contact hours</b>		<b>Requirement</b>	
			<b>L</b>	<b>S</b>	<b>Lab</b>	
4	BMEVIIIAB08	Informatics 1	4			mid-semester mark
5	BMEVIAUAB01	Informatics 2	3		1	exam
5	BMEVIMIAB01	Measurement technology	3	2		mid-semester mark
5	BMEVITMAB03	Infocommunication	2	2		exam
5	BMEVIIIAB05	Control engineering	2	1	1	exam
5	BMEVIVEAB01	Power engineering	2	1	1	exam
<b>5<sup>th</sup> semester</b>						
<b>Credits</b>	<b>Course code</b>	<b>Course name</b>	<b>Contact hours</b>		<b>Requirement</b>	
			<b>L</b>	<b>S</b>	<b>Lab</b>	
4	BMEVIHVAC03	Introduction to electromagnetic fields	2	1		exam
4	BMEVIMIAC12	Laboratory 1			3	mid-semester mark
5	BMEVIAUAC05	Electronics 2	4		1	mid-semester mark
4		specialization subject 1	3	1		exam
4		specialization subject 2	3	1		exam
4		specialization subject 3	3	1		exam
3	BMEVI**AL02	Training Project Laboratory			2	mid-semester mark
4	BMEGT20A001	Management and business economics	4			mid-semester mark
<b>6<sup>th</sup> semester</b>						
<b>Credits</b>	<b>Course code</b>	<b>Course name</b>	<b>Contact hours</b>		<b>Requirement</b>	
			<b>L</b>	<b>S</b>	<b>Lab</b>	
5	BMEVIEEAB00	Microelectronics	2		2	exam
5	BMEVIMIAC13	Laboratory 2			4	mid-semester mark
4		specialization subject 4	3	1		exam
4		specialization laboratory			3	mid-semester mark
5	BMEVI**AL03	Project laboratory			4	mid-semester mark pre-requisite: Training Project Laboratory
2	BMEVI*****	Free elective	2			mid-semester mark
2	BMEGT55A001	Business law	2			mid-semester mark
4	BMEGT30A001	Micro- and macroeconomics	4			exam

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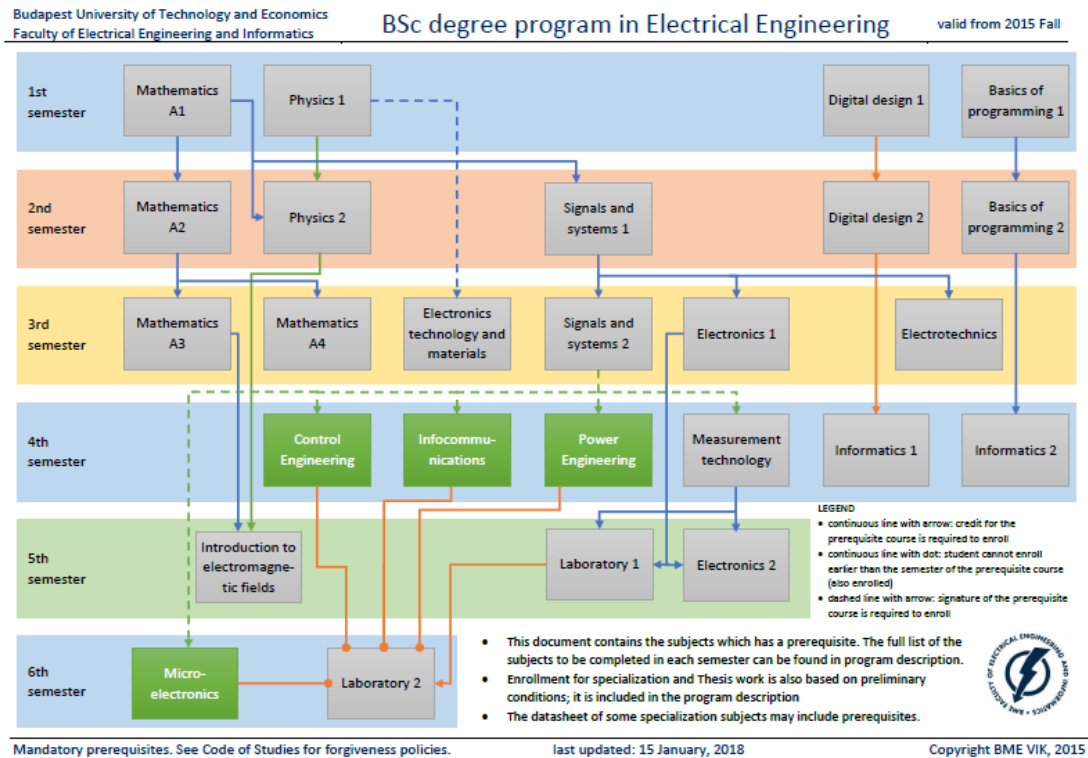
7 <sup>th</sup> semester				
Credits	Course code	Course name	Contact hours L S Lab	Requirement
2	BMEVI*****	Free elective	2	mid-semester mark
2	BMEVI*****	Free elective	2	mid-semester mark
2	BMEVI*****	Free elective	2	mid-semester mark
2	BMEVI*****	Free elective	2	mid-semester mark
2	BMEGT****	Human & economic science elective	2	mid-semester mark
2	BMEGT****	Human & economic science elective	2	mid-semester mark
15	BMEVI**AT01	BSc thesis project	10	mid-semester mark pre-requisites

### Specialization subjects

	Embedded and Control Systems	Infocommunication Systems	Sustainable Electric Energetics
<b>prerequisite course</b>	Control Engineering BMEVIIIAB05	Infocommunication, BMEVITMAB03	Power Engineering BMEVIVEAB01
<b>specialization subject 1</b>	Embedded and ambient systems BMEVIMIAC06	Space Technology BMEVIHVAC05	Electric power transmission BMEVIVEAC00
<b>specialization subject 2</b>	Industrial control BMEVIIIAC03	Network Technologies and Applications BMEVITMAC05	Electrical machines and applications BMEVIVEAC01
<b>specialization subject 3</b>	Microcontroller based systems BMEVIAUAC06	Mobile Communication Systems BMEVIHIAC04	Electrical equipment and insulations BMEVIVEAC02
<b>specialization subject 4</b>	Embedded operating systems and client BMEVIAUAC07	High Frequency System Techniques BMEVIHVAC04	Control of electric drives BMEVIVEAC04
<b>specialization laboratory</b>	Embedded and control systems laboratory BMEVIAUAC08	Radio Systems and Applications laboratory BMEVIHVAC06	Sustainable electric energetics laboratory BMEVIVEAC07
<b>Training Project Laboratory</b>	BMEVIAUAL02	BMEVIHVAL02	BMEVIVEAL02
<b>Project laboratory</b>	BMEVIAUAL03 BMEVIIIAL03 BMEVIMIAL03	BMEVIHVAL03 BMEVIHIAL03 BMEVITMAL03	BMEVIVEAL03
<b>BSc thesis project</b>	BMEVIAUAT01 BMEVIIIAT01 BMEVIMIAT01	BMEVIHVAT01 BMEVIHIAT01 BMEVITMAT01	BMEVIVEAT01

## 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.

Enrollment for specialization and Thesis project is also based on preliminary conditions (the so-called milestone requirement of the programme).

- Specialization enrollment conditions
  - at least 90 credits are completed
  - all courses of the first and second semesters are completed
  - at least 20 credits of the third semester are completed
  - Specialization prerequisite subject is completed
  - Mathematics comprehensive exam is completed
- Thesis project enrollment conditions
  - at least 174 credits are completed (up to 10 credits free electives)
  - all courses of the first four semesters are completed
  - all specialization courses are completed



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## 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.

## Mandatory human and economic science

The subject block of human and economic science consists of two parts:

- Obligatory subjects
  - Management and Business Economics (BMEGT20A001)
  - Micro- and Macroeconomics (BMEGT30A001)
  - Business Law (BMEGT55A001)
  - English language
- Four elective human and economic science elective subjects (8 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 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 lists can be found on the Faculty's website.