Budapest University of Technology and Economics

BULLETIN
2013-2014

Entering Budapest University of Technology and Economics - Study in the European Union

MŰEGYETEM 1782

Budapest

BULLETIN

Budapest University of Technology and Economics

2013–2014

An ECTS Guide

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Engineering Programs in English
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Bulletin of the Budapest University of Technology and Economics
Engineering Programs in English

Dear Student,

You are reading the Bulletin of the **Budapest University of Technology and Economics.** Its direct predecessor, the Institutum Geometricum, was established in 1782 by Emperor Joseph II, as part of the Faculty of Liberal Arts at the University of Buda. During the past 231 years the professors of the university have striven to provide an outstanding quality of education. This has earned the university an international reputation, attracting students and also professors from all over the world.

Our university has eight faculties. They are, in order of foundation: Civil Engineering, Mechanical Engineering, Architecture, Chemical Technology and Biotechnology, Electrical Engineering and Informatics, Transportation Engineering and Vehicle Engineering, Natural Sciences, Economic and Social Sciences.

"Live as if you were to die tomorrow. Learn as if you were to live forever."
This is a quotation from Mahatma Gandhi. I fully agree with him. Learning should be – and it really **can be** – enjoyable. Doing homework can be like solving a puzzle. Those who enjoy learning are also likely to enjoy working. I am a workaholic person, and spend on average 14 hours a day fulfilling my duties. My relatives and friends say that **this is not work** – because I like it. I agree with this opinion and I am also satisfied with it. You can become engineers or experts in business and management; you may also be able to enjoy your work as professionals. This is the difference between a **job** and a **profession**. Engineers have the power to create a better world. Sustainable energy, clean water, safe transport on roads and bridges producing less pollution, buildings for comfortable living and working, machines and robots for work and for amusement, fast and reliable communications, medical equipment that assure a good quality of life for the individual and can be financed by society, and healthy food for us all. All of these goals need engineering solutions to make the world a safer, better and more exciting place to be. **This is also your responsibility.** You can acquire the necessary knowledge and skills to make your own contribution. As a graduate you will certainly do your best for your colleagues, company and society.

Hungary is a member of the European Union. As a student in Budapest you will find general European as well as particular Hungarian cultural customs: food, fashion, folk art, music and dance.
Use this bulletin to help you consider our programs. Come to visit our campus. Better yet, come to study with us for one or two semesters or for an entire degree program. Should you decide to stay for only one semester, this bulletin will also help you choose from among the different semester programs.

The Budapest University of Technology and Economics extends a special welcome to students from abroad.

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The Faculty of Architecture at the Budapest University of Technology and Economics focuses on training highly professional experts in architectural engineering who are aware of the social and cultural implications of their profession. Versatility is emphasised so that students will gain fundamental knowledge and abilities in every possible field of architecture and be able to find work in a highly competitive job market, and in any building- or design-related area of consulting, construction, and management. The 5-year program in English leads directly to an MSc degree in Architecture and Architectural Engineering (Dipl. Ing. Arch.), but it is also possible to graduate as a Bachelor of Science in Architecture.

Graduates of the Faculty of Architecture are qualified for a broad spectrum of architectural occupations:

- Design, construction and maintenance of residential, public, industrial and agricultural buildings;
- Reconstruction and the preservation of historical monuments;
- Urban design and settlement planning; and
- Administration of all these activities.

The curricula were organised on Swiss and German models. The Faculty has maintained these traditions for the last 40 years but provides additional European and international dimensions through guest lecturers from abroad, topical short courses, workshop seminars and exchange programs.

The five year program of the Faculty of Architecture taught in English is in full conformity with the five-year program provided in Hungarian, which after two years practice and experience is accepted for access to EUR-ING title.

General course – Preparatory Course

The year program in English, called the General Course preceides the Degree Program. It is designed to develop the skills of students from abroad so they will be at no disadvantage in meeting the Faculty's exacting educational standards. Students are introduced to various aspects of the profession they have selected, and they concentrate on studying English and basic technical subjects such as mathematics and freehand drawing. Students who show enough skills at the Placement Test can automatically (immediately) start the Degree Program.

Academic Program of the Faculty of Architecture: BSc/MSc Studies

The two-level B.Sc, M.Sc training in the English speaking section of the Faculty of Architecture is realized in a split-up system, in full comformity with the Hungarian speaking section. For B.Sc degree students has to accumulate min 240 credit points, for M.Sc degree min 300 credit points by accomplishing the obligatory subjects and gathening the remaining credit points by accomplishing elective subjects too. B.Sc degree can be obtained in a minimum of four years, M.Sc degree in a minimum of five years of study.

Students, both international and Hungarian, who have a command of both languages can choose from either program. The participation of Hungarian students in the program given in English has obvious advantages. It eases the integration of international students into the society, which surrounds them during the years of their studies. It also attracts students from European, American and other universities worldwide to study in Budapest within the the framework of the International Student Exchange Program and otheragreements.

Hungarian students likewise gain the opportunity to study at schools of architecture abroad. These exchanges will become a powerful factor in achieving real convertibility among educational systemworldwise and, eventually, mutual international recognition of degrees.

Master's Program

Students who have earned BSc degrees in other schools of architecture can join the Master's Program. Programs will be tailored to their previous education and special needs. In general they are admitted to the last two years of the five years program, and they have to collect minimum 120 credits. These studies encompass a wide range of complex design topics and elective subjects grouped in three directions:

- Structural Design - buildings and other structures.
- Architectural Design - buildings with different functions, their interiors and sorroundings; the preservation of historical buildings.
- Town Planning - urban design, settlement planning and management.

Note: The Faculty of Architecture reserves the right of changing the Curricula.

Graduation

Graduation from the University is based on the successful completion of examinations in all subjects and on the successful defence of a diploma project before a Final Examination Board. The examinations are public and the Board consists of professors and eminent specialists in the profession. Diploma projects are prepared in the last semester under departmental guidance and can be submitted only by students with an "absolutorium" (university leaving certificate). The diploma project is expected to reflect its author's familiarity with technical and aesthetic knowledge fundamental to architectural practice, and his/her creativity in applying it. Currently, international agreements make it possible for certain Hungarian students to prepare and defend their diploma projects in the university of another country. Students from abroad can correspondingly prepare and defend their thesis projects under the guidance of the Faculty of Architecture at the Budapest University of Technology and Economics.

Departments

Department of Construction Technology and Management
Department of Architectural Representation
Department for History of Architecture and of Monuments
Department of Building Energetics and Building Services
  Laboratory of Thermal Physics
Department of Building Constructions
  Laboratory of Building Acoustics
Department of Industrial and Agricultural Building Design
Department of Public Building Design
Department of Residential Buildings
Department of Design
Department of Mechanics, Materials and Structures
Department of Urban Studies

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General (Preparatory) Courses in Architecture

Subject			hours/week		
Name	Code	Credits	1	2	Requisities
Basic Mathematics 1	BMETETOPB22	-	4		
Computer Literacy 1	BMEEPAGG101	-	4		
Engineering Sciences	BMETETOP117	-	4		
Geometrical Construction 1	BMEEPAGG111	-	5		
Freehand Drawing 1	BMEEPRAG101	-	6		
Design Skills 1	BMEEPRAG111	-	2		
Basic Mathematics 2	BMETETOPB23	-		5	Basic Mathematics 1a
Computer Literacy 2	BMEEPAGG201	-		2	Computer Literacy 1a
Geometrical Constructions 2	BMEEPAGG211	-		3	Geometrical Constructions 1a
Freehand Drawing 2	BMEEPRAG201	-		6	Freehand Drawing 1a
Fundamental of Structures	BMEEPSTG201	-		4	
Basic Tools of Building Constructions	BMEEPESG201	-		2	
Design Skills 2	BMEEPRAG211	-		2	Freehand Drawing 1a
Fundamental of Architectural Design	BMEEPRAG221	-		2	
Compulsory English for Pre-Eng. Students I.	BMEGT63A201	-	0/6/0p		
Compulsory English for Pre-Eng. Students II.	BMEGT63A202	-		0/6/0p	BMEGT63A201a

a) can be taken parallelly in the same semester. For students of BME Faculty of Architecture only criteria subjects (no credit points)

Students can enter the BSc/MSc degree program only after completing all the subjects of the General Course in Architecture.

Curriculum of BSc/MSc Subjects

Subject			lectures/practical lectures/laboratory							
Name	Code	Cre-dits	1	2	3	4	5	6	7	Requisities
Mathematics 1	BMETE90AX33	4	2/2/0e							-
Philosophy	BMEGT411099	2	2/0/0p							-
Descriptive Geometry 1	BMEEPAGA102	5	3/2/0e							-
Introduction to Building con-struction	BMEEPESA101	2	2/0/0p							-
History of Architecture I. (The Beginnings)	BMEEPETA101	3	2/1/0e							-
Introduction to Structural Design	BMEEPSTA101	2	2/0/0e							-
Drawing 1	BMEEPRAA101	5	0/5/0p							-
Introduction to Architecture	BMEEPUIA101	2	2/0/0p							-
Space Composition	BMEEPKOA101	5	0/5/0p							-
Mathematics 2	BMETE90AX34	2		0/2/0p						BMETE90AX33
Descriptive Geometry 2	BMEEPAGA202	5		3/2/0e						BMEEPAGA102
Building Constructions 1	BMEEPESA201	4		2/2/0e						BMEEPESA101, BMEEPSTA101
Statics	BMEEPSTA201	4		2/2/0e						BMEEPSTA101
History of Architechture 2 (Antiquity)	BMEEPETA201	3		2/1/0p						BMEEPRAA101
Drawing 2	BMEEPRAA201	4		0/4/0p						BMEEPRAA101
Residential Building Design 1	BMEEPLAA201	2		2/0/0e						BMEEPUIA101
Basics of Architecture	BMEEPLAA202	6		0/6/0p						BMEEPUIA101, BMEE-PRAA101, BMEEPKOA101
Building Materials	BMEEOEMA301	3			2/1/0p					-
Architectural Informatics 1 - IT Applications	BMEEPAGA301	2			1/1/0p					-
Building Physics	BMEEPEGA301	2			2/0/0p					BMEEPESA101
Strength of Materials 1	BMEEPSTA301	4			2/2/0e					BMEEPSTA201, BMETE90AX33
History of Architecture 3 (Medieval)	BMEEPETA301	3			2/1/0e					BMEEPETA201
Drawing 3	BMEEPRAA301	4			0/4/0p					BMEEPRAA201
Public Building Design 1	BMEEPK0A301	2			2/0/0e					BMEEPLAA201, BMEEPLAA202
Residential Building Design 2	BMEEPLAA301	6			0/6/0p					BMEEPLAA202, BMEEPA-GA102 (signature) BMEEPLAA201
Building Constructions 2	BMEEPESA301	4			2/2/0e					BMEEPSTA101, BMEEPA-GA102, BMEEPESA101
Sociology for Architects	BMEGT43A044	2			2/0/0e					-
Architectural Inf. 2 - Digital Representation	BMEEPAGA401	3				1/2/0p				BMEEPAGA202, BMEEPA-GA301

Subject			lectures/practical lectures/laboratory							
Name	Code	Cre-dits	1	2	3	4	5	6	7	Requisities
Building Constructions 3	BMEEPESA401	4				2/2/0e				BMEEPESA201
Strength of Materials 2	BMEEPSTA401	6				4/2/0p				BMETE90AX34, BMEEPSTA301
Strength of Materials Global	BMEEPSTA499									BMEEPSTA401a, BMEEP-STA201, BMEEPSTA301
History of Architecture 4	BMEEPETA401	3				2/1/0e				BMEEPETA301
Drawing 4	BMEEPRAA401	2				0/2/0p				BMEEPRAA301
Design Methodology	BMEEPKOA402	2				2/0/0e				BMEEPLAA301, BMEEPKOA301
Architecture of Workplaces 1	BMEEPIPA401	2				2/0/0e				BMEEPLAA301, BMEEPK0A301
Public Building Design 2	BMEEPKOA401	6				0/6/0p				BMEEPLAA301, BMEEPE-TA301, BMEEPK0A301
Architectural Inf.3 - CAAD for Architects	BMEEPAGA501	3					1/2/0p			BMEEPAGA401, BMEEP-LAA301, BMEEPESA301
Construction Man. 1 - Basics of Construction	BMEEPEKA501	2					2/0/0p			BMEEPESA301
Building Service Engineering 1	BMEEPEGA501	2					2/0/0p			BMEEPESA201
Building Constructions 4	BMEEPESA501	4					2/2/0p			BMEEPESA301
Global of Building Constructions Basic	BMEEPESA599									BMEEPESA401a, BMEEPESA501a
Design of Load-Bearing Structures	BMEEPSTA501	6					4/2/0e			BMEEPAGA202, BMEEPSTA499
History of Architeture 5 (19th century)	BMEEPETA501	3					2/1/0e			BMEEPETA401, BMEEPETA101
Drawing 5	BMEEPRAA501	2					0/2/0p			BMEEPRAA401
Urban Design 1	BMEEPUIA501	2					2/0/0e			BMEEPIPA401, BMEEPKOA401
Architecture of Workplaces 2	BMEEPIPA501	6					0/6/0p			BMEEPKOA401, BMEEPIPA401
Design Global Basic	BMEEPKOA599									BMEEPIPA501, BMEEPRAA401, BMEEPK0A402
Economics 1. (Microeconomics)	BMEGT301004	2					2/0/0p			-
Construction Management.2 * (Building Project Management)	BMEEPEKT601	2						2/0/0e		BMEEPEKA501
Construction Management.2 ** (Building Project Management)	BMEEPEKK601	4						2/2/0e		BMEEPEKA501
Building Service Engineering 2	BMEEPEGA601	2						2/0/0e		BMEEPEGA301
Building Constructions 5	BMEEPESA601	4						2/2/0e		BMEEPESA401
Preservation of Historic Monuments *	BMEEPETT611	2						2/0/0p		BMEEPKOA599, BMEEPE-TA501
History of Achitecture 6 *	BMEEPETO601	3						2/1/0p		BMEEPETA401
Drawing 6	BMEEPRAA601	2						0/2/0p		BMEEPRAA501
Department's Design 1 *	BMEEPUIT601	3						0/3/0p		BMEEPKOA599
Urban Design 2	BMEEPUIA601	6						0/6/0p		BMEEPUIA501, BMEEPIPA501
Special Load-Bearing Structures *	BMEEPSTT601	4						2/2/0e		BMEEPSTA501
Building Materials 2 **	BMEEOEMK601	3						2/1/0e		BMEEOEMA301
History of Architecture Global* (basic)	BMEEPETO699									BMEEPETA501
Reinforced Concrete Structures I.**	BMEEPSTK601	6						4/2/0e		BMEEPSTA501
Economics 2. (Macroeconomics)	BMEGT301924	2						0/2/0/p		-
Construction Management 3 (Planning of Construction Technology)	BMEEPEKA701	4							2/2/0e	BMEEPEKA501
Building Constructions 6	BMEEPEST701	4							2/2/0p	BMEEPESA599
Steel and Timber Structures **	BMEEPSTB701	4							4/0/0e	BMEEPSTA501
History of Art 1 *	BMEEPETT721	2							2/0/0e	BMEEPKOA599
Drawing 7 *	BMEEPRAO702	2							0/2/0p	BMEEPRAA501
Department's Design 2 *	BMEEPRAT701	3							0/3/0p	BMEEPKOA599
Department design 3. Small Complex Design*	BMEPExxT711	8							0/8/0p	BMEEPKOA599, BMEEPUIA601
Global In Structures *	BMEEPSTT799									BMEEPSTT601a
History of Hungarian Architecture **	BMEEPETB701	2							2/0/0p	BMEEPETA501
BSc Complex (Small Complex) **	BMEEPxxB711	3							0/3/0p	BMEEPKOA599, BMEEPUIA601
Soil Mechanics **	BMEEOGTK701	3							2/1/0e	BMEPESA301
BSc Diploma Studio 1 **	BMEEPxxB721	3							0/3/0p	BMEGT43A044, BMEEPAGA501, BMEEPEGA501, BMEGT301004, BMEEOMK601, BMEEOEMK601, BMEEPAGA601, BMEEPSTK601, BMEEPRAA601

Curriculum of BSc/MSc Subjects (contd.)

Subject			hours/week			Requisities
Name	Code	Credits	8	9	10	
Building and Architectural Economics	BMEEPEKA801	2	2/0/0p			-
Facility Management *	BMEEPEK0633	2	2/060e			
History of Hungarian Achitecture 1. *	BMEEPETO801	2	2/0/0p			BMEEPKOA599
Drawing 8 *	BMEEPRAO801	2	0/2/0p			BMEEPRAA501
Urbanism *	BMEEPUI0805	2	2/0/0p			-
Contemporary Arch. Offices *	BMEEPIP0893	2	0/2/0p			-
Res.Design and Cont.Competitions	BMEEPLA0897	2	2/0/0e			BMEEPLAA301
Complex Design 1 *	BMEEPxxT811	10	0/10/0p			BMEEPxxT711
Building Construction Global *	BMEEPEST899					BMEEPESA599, BMEEPESA601a, BMEEPEST701a
Construction Management 4. ** (Controlling of Construction technology)	BMEEPEKK801	4	2/2/0e			BMEEPEKA501, BMEEPESA501, BMEEPESA501
Building Constructions 7 **	BMEEPESK801	4	2/2/0e			BMEEPESA601, BMEEPESA599
BSc Diploma 2**	BMEEPxxBD01	12	0/12/0p			BMEGT301924, BMEEOGTK701, BMEEPEKA701, BMEEPEST701, BMEEPSTB701, BMEEPETB701, BMEEPxxB711, BMEEPxxP721, BMEEPEKA801a, BMEEPEKB801a, BMEEPEKK801a, BMEEPESK801a
Construction Law *, **	BMEEPEKO901*	2		2/0/0p		-
	BMEEPEKB801 **	2	2/0/0p			
Design of Reinforced Concrete structures*	BMEEPST0655	2		2/0/0e		-
Drawing 9 *	BMEEPRAT901	2		0/2/0p		BMEEPKOA599
Architecture of Interior spaces*	BMEEPKO0905	2		0/2/0p		BMEEPKOA401
Architectural Form *	BMEEPRA0404	2		0/2/0p		-
History of Theory of Architecture 1.*	BMEEPET0407	2		2/0/0e		-
Complex Design 2 *	BMEEPxxT911	10		0/10/0p		BMEEPxxT811
Theory of Design *	BMEEPIPO901	2		2/0/0e		BMEEPKOA599
History of Hungarian Architecture 2. *	BMEEPETO901	2		2/0/0p		BMEEPETO801
History of Architecture Global *	BMEEPETT999					BMEEPETO601, BMEEPETO801
Diploma project studio * Min 270 credits all subjects and globals	BMEEPxxTD01	30			0/30/0e	

a) can be taken parallelly in the same semester
*: Obligatory for MSc / Elective for B. Sc. Degree
**: Obligatory for B. Sc. / Elective for M. Sc. Degree

Minimum number of credits for B. Sc. Degree: 240
Minimum number of credits for M. Sc. Degree: 300

FACULTY OF CHEMICAL TECHNOLOGY
AND BIOTECHNOLOGY

The education of chemical engineers and chemists has a long-standing tradition in Hungary. Hungary's earliest chemistry department was established in 1763 at the Selmecbánya Mining School, the first school to offer practical instruction in the chemical laboratory. In 1769, a common department for chemistry and botany was founded at the University of Nagyszombat, which was resettled to Buda in 1777 and later to Pest. In 1846, the Department of General and Technical Chemistry was founded at Joseph II Industrial School, one of the Budapest University of Technology and Economics's predecessor institutions. Education of chemical engineers, separate from that of mechanical and civil engineers, reaches back to the 1863/64 academic year.

Royal Joseph Polytechnic became a technical university in 1871. The academic freedom introduced by this university-level status allowed students to freely select the subjects they wished to study. However, the need for an interrelated, logical sequence of subjects soon became evident, so in 1892 a compulsory curriculum and timetable was introduced. From the foundation of the Faculty until 1948, only a four-year-term of studies, without specialisations, was offered. Following the educational reforms of 1948, the departments of Inorganic Chemical Technology, Organic Chemical Technology, and Agricultural and Food Chemistry were established. The Inorganic Chemical Technology Department is no longer a part of the Faculty because in 1952 its tasks were taken over by the University of Chemical Industry in Veszprém. Further reforms in the 1960s extended chemical engineering studies to the MSc level and introduced the range of specialised studies identified below. A PhD program has also been established. Studies in English at the Faculty of Chemical Engineering began in the 1985/86 academic year.

Students in the BSc program receive a thorough introduction to areas basic to chemical engineering before they begin their specialisations in the fifth semester. Courses of the following branches are available to students depending on the number of applicants (at least 3 applicants)

both at the BSc (7 semesters) and MSc (4 semesters) levels:
- Analytical and Structural Chemistry
- Chemical and Process Engineering
- Industrial Pharmaceutics
- Polymer Technology
- Textile Technology

The Faculty of Chemical Technology and Biotechnology aims for its students to acquire a profound theoretical knowledge in mathematics, physics and physical chemistry. It also aims to have its students experience, during their studies, all the types of tasks that chemical engineers encounter in their practical everyday work. Students will acquire up-to-date laboratory skills, get acquainted with the machines and apparati used in the chemical industry, know the principles needed for their optimal operation, and develop expertise in a more specific technology within the chemical, food and light industries.

Graduates of this Faculty will be versed in:
- The operations and personnel involved in chemical processes on an industrial scale,
- The development of the technology and products of industrial chemical processes,
- The design of industrial chemical processes,
- How a chemical product or application is introduced into the national economy, and
- The elaboration of new chemical processes, operations and technologies.

A three-year PhD program is also available in all majors offered by the Faculty.

Departments

Department of Inorganic and Analytical Chemistry
Department of Physical Chemistry and Materials Science
Department of Organic Chemistry and Technology
Department of Chemical and Environmental Process Engineering
Department of Applied Biotechnology and Food Science

Budapest University of Technology and Economics
Faculty of Chemical Technology and
Biotechnology
Faculty Office: *Dean of the Faculty: Dr. György Pokol*
Building R, 1st Floor, Room No. 105.   *Course Director: Dr. Zoltán Hell*
Mailing Address: Műegyetem rkp. 7-9.   *Program Co-ordinator: Ms. Edit Szalai*
H-1111 Budapest, Hungary
Phone: (+36-1) 463-4140
Fax: (+36-1) 463-2550

Curriculum of BSc Subjects
General Subjects

Subject			lectures/practical lectures/laboratory							
Name	Code	Cre-dits	1	2	3	4	5	6	7	Requisities
Compulsory English I.	BMEGT63A301	2	0/4/0p							
Compulsory English II.	BMEGT63A302	2		0/4/0p						
English for Engineers	BMEGT63A051	2			0/2/0p					
Communication Skills - English OR	BMEGT63A061	2				0/2/0p				
Manager Communication - English OR	BMEGT63A071	2				0/2/0p				
Intercultural Comm. - English	BMEGT63A091	2				0/2/0p				
Mathematics A1a - Calculus	BMETE90AX00	6	4/2/0e							
General Chemistry	BMEVESAA101	5	4/0/0e							
General Chemistry Calculations for Chemical Engineers	BMEVESAA104	4	0/3/0p							
General Chemistry Laboratory Practice	BMEVESAA209	5		0/0/6p						BMEVESAA101, BMEVESAA104, BMEVESZA101
Computing	BMEVESAA103	2	0/2/0p							
Chemical Eng. Fundamentals	BMEGEVGAV03	2		2/0/0e						
Chemical Engineering Practice	BMEGEVGAV04	3		0/1/2p						
Micro- and Macroeconomics	BMEGT30A001	4	4/0/0e							
Mathematics A2c	BMETE90AX17	6		4/2/0e						BMETE90AX00
Mathematics A3 for Chemical Engineers and Bioengineers	BMETE90AX18	4			2/2/0e					
Physics 1 - Mechanics	BMETE14AX15	4		2/2/0e						BMETE90AX00
Inorganic Chemistry	BMEVESAA208	3		3/0/0p						BMEVESAA101, BMEVESAA104
Inorganic Chemistry Laboratory Practice	BMEVESAA301	3			0/0/4p					BMEVESAA209
Organic Chemistry I.	BMEVESZA301	5			3/2/0e					BMEVESAA101
Chemical Technology	BMEVEKFA203	3		2/0/0p						BMEVESAA101
Physics 1 Electrodynamics	BMETE14AX04	2			2/0/0e					BMETE14AX15, BMETE90AX17
Physics Laboratory	BMETE14AX05	2			0/0/3p					BMETE14AX15
Organic Chemistry II.	BMEVESZA401	4				3/0/0e				BMEVESZA301
Analytical Chemistry I.	BMEVESAA302	5			4/0/0p					BMEVESAA101, BMEVESAA104
Physical Chemistry I	BMEVEFKA304	5		3/1/0e						BMEVESAA101, BMETE90AX00
Polymers	BMEVEFAA306	5		2/0/2p						BMEVESAA101
Organic Synthesis Laboratory Practice	BMEVESZA402	4				0/0/5p				BMEVESAA104, BMEVESAA209, BMEVESZA301
Analytical Chemistry Labora-tory Practice	BMEVESAA403	4				1/0/4p				BMEVESAA209, BMEVESAA302
Physical Chemistry II	BMEVEFAA405	4		2/1/0e						BMEVEFKA304
Medicines	BMEVESTA403	3				2/0/0e				
Colloid chemical approach to nanotechnology	BMEVEFAA409	3				3/0/0p				BMEVEFKA304
Environmental Chemistry and Technology	BMEVEKFA403	4					3/0/0e			BMEVESAA208, BMEVESZA401, BMEVEKFA203
Organic Chemical Technology	BMEVESTA411	3				2/0/0e				BMEVESZA301
Organic Chemical Technology Laboratory Practice	BMEVESZA412	3				0/0/4p				BMEVESZA301, BMEGEVGAV03
Chemical Unit Operations I	BMEVEKFA410	6				3/2/0p				BMEGEVGAV03, BMETE90AX17
Business Law	BMEGT55A001	2					2/0/0p			
Design of Experiments	BMEVEVMA606	3					2/1/1p			BMETE90AX18
Hydrocarbon technology	BMEVEKFA506	3					2/0/1e			BMEVEKFA203, BMEVEFKA304, BMEVESZA401
Biochemistry	BMEVEBEA301	4				3/0/0e				BMEVESZA401
Physical Chemistry Lab. Prac.	BMEVEFAA506	3				0/0/4p				BMEVEFAA405, BMETE14AX05
Chemical Process Control	BMEVEVMA504	5						2/1/1p		BMEVEKFA410
Chemical Unit Operations II	BMEVEKFA512	6					2/1/4e			BMEVEKFA410
Managem. and Business Econ.	BMEGT20A001	4						4/0/0p		
Industrial Safety	BMEVESZA101	2	2/0/0p							
Quality Management	BMEVEKFA615	4							3/0/0p	
Chemical Unit Op. Practice	BMEVEKFA613	3						0/0/4p		BMEVEKFA512
Electives (humanities)		2						4/0/0e		
Projeck work	BMEVE..A777								0/1/0p	
Branch		26								
Thesis	BMEVE..A999	15							0/0/14p	
Summer Practice	BMEVE..A888	0								6 weeks/s
Electives		8								
BSctotal:		210								

Curriculum of BSc Branch Subjects

Subject			working hours / week			
Name	Code	Cre-dits	5	6	7	Requisities
Branch of Analytical and Structural Chemistry		**26**				
Analytical and Structure Determination Laboratory	BMEVESAA604	5		1/0/4p		BMEVESAA512, BMEVESAA403
Elemental Analysis	BMEVESAA701	3			2/0/0e	BMEVESAA403
Chemical and Biosensors	BMEVEAAA708	3	2/0/0e			BMEVESAA403
Chromatography	BMEVEAAA611	3	2/0/0e			BMEVESAA403
Organic Structure Analysis	BMEVESAA512	3	3/0/0p			BMEVESZA401
Theory of Testing Methods in Material Sciences	BMEVEFAA708	4			3/0/0e	BMEVESAA208
Organic Chemistry III	BMEVESKA504	2		2/0/0e		BMEVESZA401
Design Project	BMEVESAA777	3			0/1/0p	
Branch of Chemical and Process Engineering		**26**				
Hydrocarbon technology and catalysis	BMEVEKFA503	5	2/0/3p			BMEVESZA401, BMEVEKFA203, BMEVEKFA410
Process Engineering	BMEVEVMA605	5		3/0/2e		BMEVEKFA512
Environmental Benign Chemical Process	BMEVEVMA607	4		3/0/0e		
Computer Process Control	BMEVEKFA709	3			2/0/1e	BMEVEVMA504
Chemical Production Control	BMEVEKTA707	3			2/0/1p	BMEVEKFA203, BMEVEKFA512
Radiochemistry and Nuclear Energetics	BMEVEKFA502	3	2/0/1p			BMEVESAA101
Project work	BMEVEKFA777	3			0/1/0p	
Branch of Industrial Pharmaceutics		**26**				
Organic Structure Analysis	BMEVESAA512	3	3/0/0p			BMEVESZA401
Organic Chemistry III	BMEVESKA504	2		2/0/0e		BMEVESZA401
Organic Chemistry Laboratory Practice II	BMEVESKA605	5	0/0/6p			BMEVESZA401, BMEVESZA402
Pharmaceutical Technology	BMEVESTA704	2			2/0/0e	BMEVESTA606
Unit processes in Industrial Drug Synthesis Laboratory Practice	BMEVESTA705	4			0/0/5p	
Unit processes in Industrial Drug Synthesis	BMEVESTA606	2		2/0/0e		
Technology of Pharmaceutical Materials	BMEVESTA607	3		2/0/1e		
Unit Processes of Organic Chemistry	BMEVESTA508	2	2/0/0e			BMEVESTA411
Project work	BMEVESZA777	3			0/1/0p	
Branch of Material Science		**26**				
Physical Chemistry of Surfaces	BMEVEFKA603	3		2/0/0e		BMEVEFAA409
Experimental Methods in Materials Science	BMEVEFAA708	4	3/0/0e			BMEVESAA208
Methods in Material Sciences Lab. Practice	BMEVEMGA502	3	0/0/4p			
Material Science Laboratory Practice	BMEVEMGA603	3		0/0/4p		BMEVEFAA708
Polymer Physics	BMEVEMGA511	3	2/0/0e			BMEVEFAA306
Metals and metal matrix composites	BMEVEFAA602	2		2/0/0e		
Nonconventional Materials	BMEVEFAA707	3			2/0/1p	BMEVEFAA405
Modern engineering ceramics	BMEVEFAA601	2		2/0/0e		
Project work	BMEVEFAA777	3			0/1/0p	
Branch of Polymer Technology		**26**				
Experimental Methods in Materials Science	BMEVEFAA708	4	3/0/0p			BMEVESAA208
Machines and Tools for Polymer Processing	BMEVEFAA705	4			2/0/1e	BMEVEMGA608
Polymer Processing	BMEVEMGA608	7		4/0/5e		BMEVEMGA511
Polymer Physics Laboratory Practice	BMEVEMGA509	3	0/0/4p			BMEVEFAA306
Polymer Additives	BMEVEMGA610	2		2/0/0e		BMEVEFAA306
Polymer Physics	BMEVEMGA511	3	2/0/0e			BMEVEFAA306
Project work	BMEVEFAA777	3			0/1/0p	
Branch of Textil Technology		**26**				
Experimental Methods in Materials Science	BMEVEFAA708	4	3/0/0p			BMEVESAA208
Fibre Forming Polymers	BMEVEMGA512	2	2/0/0p			BMEVESZA401
Chemistry of Dyes and Surfactants	BMEVESTA510	2	2/0/0p			BMEVESZA401
Colorimetry, Color Measurement	BMEVEMGA515	2	2/0/0p			
Chemical Technology of Textiles I.	BMEVEMGA617	7		3/0/4e		BMEVEMGA512
Chemical technology of textiles II.	BMEVEFAA718	4			2/0/2p	BMEVEMGA617
Textile Mechanical Technology	BMEGEPTAKV1	2		2/0/0p		
Project work	BMEVEFAA777	3			0/1/0p	

Curriculum of MSc Subjects

Name	Code	Credits	1	2	3	4
General Subjects						
Mathematics M1c - Differential Equations	BMETE90MX44	3	2/1/0e			
Complex and Organometallic Chemistry	BMEVESAM101	2	2/0/0p			
Organic Chemistry	BMEVESZM101	4	3/0/0e			
Analytical Chemistry and Instrumentation	BMEVESAM102	4	2/0/2p			
Materials science: traditional structural materials and polymers	BMEVEFAM101	4	2/0/2e			
Chemical Process Design and Control	BMEVEKFM101	4	2/0/2p			
Economic Analysis of Technology	BMEGT30MS07	2	2/0/0e			
Project Work I	BMEVE..M100	3	0/0/4p			
Design of experiments	BMEVEKFM203	3		2/1/0p		
Modern Physics for Chemical Engineers	BMETE14MX00	3		3/0/0e		
Physical chemistry and structural chemistry	BMEVEFAM201	5		5/0/0e		
Technologies in Organic Chemical Industry	BMEVESZM201	5		2/0/2p		
Environmentally Benign and Catalytic Processes	BMEVEKFM204	5		3/0/2e		
Project Work II	BMEVE..M200	3		0/0/4p		
Biology, biotechnology	BMEVEMBM301	3			2/0/0p	
Computational Chemistry	BMEVESAM301	3			2/0/1e	
Social and Visual Commucation	BMEGT43MS07	2			2/0/0p	
Thesis project I.	BMEVE..M300	15			0/0/11p	
Summer Practice 4 weeks/s	BMEVE..M888					
Elective subjects		6				
Thesis project II.	BMEVE..M400	15				0/0/11p
Branch		26				
M.Sc total:		120				
Branch of Analytical and Structural Chemistry						
Analytical Chemistry III.	BMEVESAM201	5		1/0/4p		
Sample Preparation and Sampling	BMEVESAM204	3		2/0/0p		
Structure Elucidation of Organic Substances II.	BMEVESAM303	5			3/1/0e	
Modern Methods in Analytical Separation	BMEVESAM106	4	2/0/2e			
Bioanalytics in Metabolite Research	BMEVESAM304	3			2/0/0e	
Technology Management	BMEGT20M005	2				2/0/0e
Intellectual Property Management	BMEVEFAM103	2	2/0/0e			
Quality Controll	BMEVESAM206	2				2/0/0p
Branch of Chemical and Process Engineering						
Process Engineering	BMEVEKFM205	4		2/0/1e		
Conventional and New Technologies of Energy Production	BMEVEKFM302	4			2/0/1p	
Modern Separation Technologies	BMEVEKFM104	3	2/0/1p			
Unit Processes of Organic Chemistry	BMEVESZM204	3			0/2/1p	
Petrochemistry	BMEVEKFM402	6				2/0/3e
Technology Management	BMEGT20M005	2				2/0/0p
Chemical Production Control	BMEVEKFM303	2			2/0/0e	
Quality Controll	BMEVESAM206	2				2/0/0p
Branch of Industerial Pharmaceutics						
Pesticide chemistry	BMEVESZM403	3				2/0/0e
Pharmaceutical Technology II	BMEVESZM302	4		2/1/0e		
Formulation of Biologically Active Materials	BMEVESZM304	4		0/2/2e		
Unit Processes of Organic Chemistry II	BMEVESZM102	3	2/0/0p			
Pharmaceutical chemistry	BMEVESZM404	6				3/2/0e
Technology Management	BMEGT20M005	2		2/0/0p		
Protecting industrial laws	BMEVESZM401	2				2/0/0e
Quality assurance in the manufacture of active pharmaceutical ingredients	BMEVESZM402	2				2/0/0p
Branch of Polymer Technology						
Application of Plastics	BMEVEFAM403	5				3/0/1e
Machines and Technologies in Polymer Processing	BMEVEFAM305	5			3/0/1p	
Polymer Physics	BMEVEFAM202	4		3/0/0e		
Polyreactions	BMEVEFAM102	3	2/0/0p			
Plastics and Composites	BMEVEFAM301	3			2/0/0e	
Intellectual Property Management	BMEVEFAM103	2	2/0/0e			
Quality Controll	BMEVESAM206	2				2/0/0p
Technology Management	BMEGT20M005	2		2/0/0e		

Curriculum of MSc Subjects (contd.)

Subject			hours/week			
Name	Code	Credits	1	2	3	4
Branch of Textile Technology						
Polyreactions	BMEVEFAM102	3	2/0/0p			
Plastics and Composites	BMEVEFAM301	3			2/0/0e	
New Application and Technologies of Fibres	BMEVEFAM302	5			3/0/1e	
Basic Processes in Textile Chemical Technology	BMEVEFAM401	5				3/0/1p
Polymer Physics	BMEVEFAM202	4		3/0/0e		
Technology Management	BMEGT20M005	2		2/0/0p		
Intellectual Property Management	BMEVEFAM103	2	2/0/0e			
Quality Controll	BMEVESAM206	2				2/0/0p

ENVIRONMENTAL ENGINEERING

A MSc degree granted by the Budapest University of Technology and Economics.
The program will not start in the 2013-14 academic year.

One of the biggest and most reputed institutions of this kind in Europe, the Budapest University of Technology and Economics has educated generations of engineers since its foundation in 1782.

Its eight faculties of different engineering disciplines, sciences, economics and humanities actively participate in environmental education granting among others postgraduate degrees from 1974 onwards.

The aim of the course is to provide:
• Knowledge to identify and describe negative environmental and ecological changes and provide technological solution for the remediation
• Give solutions to manage natural resources and prevent pollution to help sustainable industrial and social development.

Due to a well selected set of fundamental and general science subjects a wide variety of BSc engineering and science degrees can serve as prerequisite for the admission to the MSc course.

The Budapest University of Technology and Economics disposes of highly developed training facilities: laboratories, pilot plants, computer network and a wide system of international relations.

During the (at least) 4 semesters of the education period, actually an MSc degree is to be granted in the specialisation branch of:
• Environmental technology
with special focus on applied environmental science and technology aspects.

The curricula are conceived carefully to meet the needs and challenges of the actual career opportunities in both developed and developing countries.

The curriculum (see tables) is of modular structure consisting of the following modules:

• science; economics and humanities 30%
• specialised core subjects 59%
• differentiated professional knowledge 11%

The program is organised in the credit system (of English and US traditions) providing a relatively high degree of free subject selection.

The condition of obtaining an MSc degree is the fulfilment of the total of 120 credit points including:

• comprehensive final exams and
• defence of an individual MSc thesis

Curriculum of MSc Subjects

Subject			hours/week			
Name	Code	Credits	1	2	3	4
Probability Theory and Statistics M1		4	2/2/0			
Physics K3M		4	3/0/0			
Applied Chemistry		4	2/2/0			
Environmental Microbiology and Biotechnology	3		2/0/0			
Engineering Ecology		3	2/0/0			
Economics		2	2/0/0			
Environmental Law		2	2/0/0			
Communication		2	2/0/0			
Risk Assessment, Recovery of Industrial and Environm. Disasters	3		2/0/0			
Transport Equations M11		4		3/1/0		
Technology Management		2		2/0/0		
Environmental Management		2		2/0/0		
Environmental Analytical Chemistry		3		2/0/1		
Design of Experiment		3		2/1/0		
Green Chemistry and Catalysis		3		2/0/0		
Biochemical Engineering Processes and Unit Operations	3		2/0/2			
Sustainable Environmental and Natural Resource Management	3		2/0/0			
Numerical Modelling of Fluid Flow in Environmental Technology	3			1/1/0		
Case Studies in Environmental Impact Assessment and Auditing	3			1/1/0		
Modelling of Environmental Systems		3			2/1/0	
Modern Environment-friendly Transportation Systems	3				2/0/0	
Environmental Toxicology		3				2/0/1
Compulsory optional subjects		6			6/0/0	
Thesis Project		25				0/0/25

Curriculum of MSc Branch Subjects

Subject		
Name	Code	Credits
Branch of Environmental Management		
Local Sustainability Programs		3
Environmental Marketing		3
Waste Management		3
Environment Management Systems		3
Environmental Performance Evaluation		3
Environmental Strategic Planning		3
Environmental Valuation and Risk Assessment		3
Spatial Development		3
Branch of Environmental Technology		
Basics of Control Engineering		3
Sustainable Environmental Processes		3
Renewable Energy Sources		3
Environmental Process Instrumentation and Control		3
Surface water and Groundwater Monitoring		3
Technical Acoustic and Noise Control		3
Waste Management Techniques		3
Case Studies in Air Pollution Control		3

FACULTY OF CIVIL ENGINEERING

The Faculty of Civil Engineering is the oldest Faculty of the Budapest University of Technology and Economics and can trace its history back to the University's predecessor, the Institutum Geometricum, founded by Emperor Joseph II in 1782. In the past 229 years, thousands of engineers have graduated from this Faculty to work worldwide as educators, international researchers and engineering project managers.

The most essential service of the faculty - education linked closely to research and engineering work - is reflected in the scientific activities of nearly 140 engineers in 10 departments. They have contributed significantly to the scientific solution of diverse engineering problems. Out of the approximately 2300 students, who study at this Faculty, about 60 students from abroad participate in the English language program.

The engineering program in English leads to a BSc degree in four years, in the Branch of Structural Engineering. The branch offers specific educational objectives: Graduates from the Branch of Structural Engineering create engineering structures by utilizing and designing structural materials. They are expected to design, construct and organize the investments of mechanically, structurally and technologically complex structures in cooperation with architects and transport and hydraulics specialists. Future structural engineers who graduate from this branch will be able to design and construct, among other things, flyovers and underground passages for traffic networks; power stations, cooling towers, craneways, transmission line structures and TV towers; halls, storehouses, industrial plants, and multi-storey buildings as well as hydraulic engineering and water supply structures.

A new MSc course in Computational Structural Engineering is launched from September 2012. This MSc course is designed for those who are interested in modern computer techniques of structural analysis, including the theoretical background of the methods. This course might be especially useful for those who are interested in research and consider continuing doctoral studies.

Departments

Geodesy and Surveying	Architectural Engineering
Construction Materials and Engineering Geology	Structural Mechanics
Photogrammetry and Geoinformatics	Highway and Railway Engineering
Geotechnics	Hydraulic and Water Resources Engineering
Structural Engineering	Sanitary and Environmental Engineering

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Budapest University of Technology and Economics
Faculty of Civil Engineering

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Curriculum of BSc in Civil Engineering (8 semesters), Branch of Structural Engineering, Major of Buildings

Subject Name	Code	Cre-dits	1	2	3	4	5	6	7	Requisities
Compulsory English 1.	BMEGT63A3E1		0/4/t/4							
Compulsory English 2.	BMEGT63A3E2			0/4/t/4						
Communication Skills for Civil Engineers	BMEGT60A6EO				0/2/t/2					
Mathematics A1a - Calculus	BMETE90AX00		4/2/e/6							
Mathematics A2a - Vector Functions	BMETE90AX02			4/2/e/6						Mat1
Mathematics A3 for Civil Engineers	BMETE90AX07				2/2/e/4					Mat2
Physics for Civil Engineers	BMETE11AX13			2/0/t/2						Mat1
Civil Eng. Representation and Drawing	BMEEOMEAT01		2/2/t/4							
Chemistry of Construction Materials	BMEEOEMAT02		2/0/t/2							
Statics	BMEEOTMAT03		2/3/e/6							
Strength of Materials	BMEEOTMAT04			3/3/e/6						Mat1 AT03
Dynamics	BMEEOTMAT05				2/1/e/3					AT04
Technical Informatics	BMEEOFTAT06		1/1/t/2							
Civil Engineering Informatics	BMEEOFTAT31			2/2/t/5						AT06
Surveying I.	BMEEOAFAT08		2/2/t/4							
Surveying II.	BMEEOAFAT09			1/2/e/3						AT08
Introduction to Geoinformatics	BMEEOFTAT10				2/1/t/3					AT31 AT09
Geology	BMEEOEMAT11		1/2/e/3							
Construction Materials I.	BMEEOEMAT12				1/2/t/3					AT02
Soil Mechanics	BMEEOGTAT13				2/2/e/4					AT04 AT11
Earthworks	BMEEOGTAT14					2/1/e/3				AT13
Foundation Engineering	BMEEOGTAT15						2/1/e/4			AT14
Basis of Design	BMEEOHSAT16				2/0/t/2					AT04
Steel Structures I.	BMEEOHSAT17					2/1/t/3				Mat2 AT12 AT16
Reinforced Concrete Structures I.	BMEEOHSAT18					2/1/e/4				Mat2 AT12 AT16
Timber and Masonry Structures	BMEEOHSAT19				2/1/t/3					AT04 AT12
Building Construction Study	BMEEOMEAT20			2/1/t/3						AT01
Roads	BMEEOUVAT21				2/1/t/3					AT09
Railway Tracks	BMEEOUVAT22					2/1/e/3				AT09
Basics of Environmental Engineering	BMEEOVKAT23					2/0/t/2				
Public Works	BMEEOVKAT24				2/2/e/4					AT25 AT26
Hydrology I.	BMEEOVVAT25		2/1/e/3							
Hydraulics I.	BMEEOVVAT26			2/1/e/3						
Hydraulic Engineering, Water Management	BMEEOVVAT27					2/2/t/4				AT25 AT26
Micro- and Macroeconomics	BMEGT30A001						4/0/e/4			
Management and Enterprise	BMEGT20A001							4/0/t/4		
Business Law	BMEGT55A001				2/0/t/2					
Urban and Regional Development	BMEEOUVAT28						3/0/t/3			AT26
Theory of Administration, Real-estate Registr.	BMEEOUVAT29							3/0/t/3		
Construction Management - Estimates	BMEEPEKAS01						1/2/t/3			AT13 AT18
Construction Management - Contracting	BMEEPEKAS02							0/2/e/2		AS01
Rock Mechanics	BMEEOEMAS03							1/1/t/2		AT11 AT19
Construction Materials II.	BMEEOEMAS04						2/2/e/4			AT12
Structural Analysis	BMEEOTMAS05					2/3/e/5				Mat2 AT04
Finite Element Modelling	BMEEOTMAS06						1/2/t/4			AS05
Steel Structures II.	BMEEOHSAS07						2/1/t/4			AT17 AS05
Reinforced Concrete Structures II.	BMEEOHSAS08						2/2/e/4			AT18 AS05
Bridge Construction	BMEEOHSAS09							2/1/e/4		AS08
Constructional Technology	BMEEOHSAS10							1/2/t/3		AS07 AS08
Underground Structures, Deep Foundation	BMEEOGTAS11							3/1/t/4		AT15
Building Construction I.	BMEEOMEAS12					2/1/t/4				AT20
Building Construction II.	BMEEOMEAS13						2/1/e/3			AS12
Residential Building Design	BMEEOMEAS14							1/2/t/3		AS13
Surveying Field Course	BMEEOAFAT30			9n/t/3						AT09!
Laboratory Practice of Testing of Str.&Mat.	BMEEOHSAS15								9n/t/3	AT19 AS07 AS08
Field Course of Structure Geodesy	BMEEOAFAS16					3n/t/1				AT17 AT18 AT30
Industrial Practice	BMEEODHAS17						4weeks			AS01!
Steel Buildings	BMEEOHSASA1								2/2/e/5	AS07
Reinforced Concrete Buildings	BMEEOHSASA2							2/2/e/5		AS08
Timber Structures	BMEEOHSASA3								2/1/t/3	AT19
Strengthening of Structures	BMEEOHSASA4								1/1/e/2	AS08

Curriculum of BSc in Civil Engineering (8 semesters), Branch of Structural Engineering, Major of Buildings (contd.)

Subject			lectures/practical lectures/laboratory							
Name	Code	Cre-dits	1	2	3	4	5	6	7	Requisities
Composite Building Structures	BMEEOHSASA5								1/1/e/2	AS07
Industrial and Agricultural Building Design	BMEEOMEASA6							1/2/e/3		AS13
Elective subject	BMEEO**A***								4cr.	
Diploma project *(8th semester)*	BMEEODHASDM									24cr. min. 204 cr.
Total credits			34	35	31	30	30	30	26	Total 240cr. *
Elective subject:										
Surveying for Engineering Planning	BMEEOAFASI2								2/2/e/4	AT30
Beginners' Hungarian Course	BMEGT658151								0/4/t/4	
Hungarian Culture (in English)	BMEGT658361								0/2/t/2	
Sociology	BMEGT43A002								0/2/t/2	
Theory and Practice of Environmental Econ.	BMEGT42N000								3/0/e/4	

incl. 24 credit for Diploma project in the 8th semester

Curriculum of MSc in Structural Engineering, Major in Computational Structural Engineering

Subject			lectures/practical lectures/laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Advanced Mathematics	BMETE90MX33		2/1/e/3				
Physic Laboratory	BMETE11MX22			0/1/t/1			
Numerical Methods	BMEEOFTMKT2		1/2/e/3				
Database Systems	BMEEOFTMKT3		2/0/t/2				
Advanced Mechanics	BMEEOTMMST9		2/2/e/4				
Finite Element Method I.	BMEEOTMMST0		2/0/e/2				
FEM Modelling of Structures	BMEEOHSMB01		5d/t/2				MST0!
Management Accounting and Controlling	BMEGT35M410				3/0/t/4		
Engineering Ethics	BMEGT41M004				2/0/t/2		
Decision Supporting Methods	BMEEPEKMST4		2/0/t/2				
Structural Reliability	BMEEOHSMST5		2/0/t/2				
Structural Dynamics	BMEEOTMMB02		2/2/t/5				
Stability of Structures	BMEEOTMMB03		2/2/e/5				
Material Models and Plasticity	BMEEOTMMB04			2/1/t/4			
Finite Element Method II.	BMEEOTMMB05			2/1/e/4			MB01
Differentiated Subjects			3 cr.	17 cr.			
Elective Subjects					5 cr.		
Diploma Project	BMEEODHMSDM				t/20		
Total credits			**30**	**29**	**31**		
Exams			**4**	**4**	**0**		
Differentiated Subjects							
Numerical Models for Structures	BMEEOTMMB06			2/0/t/3			
Structural Analysis Theory	BMEEOTMMB07		1/1/f/3				
Seismic Design	BMEEOHSMC03			1/1/t/3			MB02
Conceptual Design	BMEEOHSMB08			2/0/f/3			
FEM Based Structural Design	BMEEOHSMB09			1/2/t/4			MB01, MB03
Geotechnical Design	BMEEOGTMCT1			2/1/e/4			
Numerical Modelling in Geotechnics	BMEEOGTMC05			1/1/t/3			
Extreme Actions of Structures	BMEEOHSMB10		2/0/t/3				
Fracture Mechanics and Fatigue	BMEEOHSMB11		3/0/e/4				

FACULTY OF ELECTRICAL ENGINEERING AND INFORMATICS

The Faculty of Electrical Engineering founded in 1949 has been renowned for excellence in research and education throughout the years of changes in the scope of engineering. Over this period, the faculty has earned a wide-spread international reputation for its high academic standards and scientific achievements. Spearheading the movement to establish a modern education system, it has offered a comprehensive English curriculum since 1984. In 1992 the name of the faculty was changed to Faculty of Electrical Engineering and Informatics in order to give recognition to the growing importance of computer science. The education programmes in English include a 3.5-year BSc, a 2-year MSc and a 3-year PhD programme in the fields of electrical engineering and engineering information technology.

This Bulletin describes the curricula and the subjects being available for the 2013/2014 academic year, regarding the BSc, MSc and PhD programmes, respectively.

The undergraduate **BSc programme** (7 semesters) aims at providing a comprehensive knowledge with sound theoretical foundations in two areas: (1) Electrical Engineering including more specific studies in electronics, computer engineering and power engineering; and (2) Engineering Information Technology dedicated to the major domains of computer science. The major specializations in Electrical Engineering are infocommunication systems, embedded and controller systems and power engineering. Studies in Engineering Information Technology include specialization in infocommunication and software technology. Each specialization contains three courses focusing on the field of interest followed by a laboratory course and a project laboratory. In order to pursue studies in a given specialization the number of students must exceed a certain threshold, otherwise the interested students are kindly directed to another specialization.

The **MSc programme** (4 seminars) advances the knowledge in the following fields: (1) Electrical Engineering, offering specializations in (i) embedded systems, (ii) infocommunication systems, and (iii) electrical machines and drives; (2) Engineering Information Technology, offering specializations in (i) applied computer science, and (ii) system development; and (3) Business Information Systems, offering specialization in (i) Analytical Business Intelligence.

The post-graduate **PhD programme** is available in all domains offered in the MSc programme.

Since research and development requires innovative engineering expertise, one of the major concerns of the faculty is to endow students with high level mathematical skills in modeling complex engineering systems. This objective implies the use of system and algorithmic theory in addition to a thorough knowledge in physics. The search for optimal solutions in the highly complex architectures of electrical engineering and engineering information technology necessitates not only engineering but economical considerations, as well. As a result, the scope of the programme must include design, research and management expertise at the same time.

Several strategies have been designed to help students develop high level skills in mathematics, physics, and computation. Besides theoretical knowledge they need to carry out design and development activities in the field of communication, instrumentation, and power industries to further perfect their practical skills. The curriculum also includes solving tasks in the fields of production and operation.

Scientific groups are formed to encourage the students to do independent but supervised laboratory work. Project laboratory is one of the core parts of the studies which are dedicated to independent problem solving with the armoury of modern work stations and software packages. The expertise of handling these tools are inevitable in pursuing an engineering career.

In order to strengthen the transfer of knowledge and know-how between the university and industry, the faculty maintains close contact with well known multinational companies in the field of communication and computer industry. As a result, many industrial experts offer their experience and knowledge as part-time lecturers, project supervisors, members of examination committees.

Admission policy

To maintain a high educational standard is the basic interest of both the university and the students. Only a constant guard of quality can ensure that tuition fee is traded for a degree of high reputation bearing a competitive value in the global market. Therefore, the priority of our acceptance policy is sustaining the quality of education by selecting those students whose knowledge and previous qualifications are in match with the expertise required by the courses. This rule holds for all applicants, no matter the country or the educational institutions they came from. Only the implementation of this acceptance policy helps us to preserve the value of the degree, which the students rightly deserve in exchange of their tuition fee and in exchange of their continuous effort committed during the course. In order to implement the principles, our faculty has adopted the following terms of acceptance:

Practical guidelines for acceptance to the MSc programme

1. Applicants with BSc studies having a WGAP (Weighted Grade Average Point) equal or better than 'good' (more than 3.51 out of 5.00) will receive acceptance to the MSc course.

2. Applicants with a BSc qualification less than 'good' (less than 3.50 out of 5.00) are regretfully rejected to enter the MSc program.

3. Applicants should also submit two recommendations given by renowned academic personnel.

Practical guidelines for acceptance to the PhD programme

1. The primary condition of admission to postgraduate studies is that the applicant must hold a Master of Science (or Engineering) degree in Electrical and Electronic Engineering (or in some closely related fields) or Informatics. Admission to postgraduate studies will be considered if the qualification of previous studies is at least of level "good" (more than 3.51 out of 5.00) or equivalent.

2. Applicants are expected to have a definite scope of research in electrical engineering or computer science, where they would like to advance their knowledge. They are requested to present a proposal, specifying a domain of interest with some research objectives, milestones and deliverables during the postgraduate studies. The suggested topic should have sufficient preliminaries in their university studies.

3. Applicants with experience and initial results in the suggested research topic will have preference. A short summary of preliminary research activities together with relevant reports, published papers ... etc. would be of help in the admission process.

4. Applicants should also submit two recommendations given by renowned academic personnel

Each admission is valid only for the forthcoming academic year (starting right after the letter of acceptance). In the case of commencing studies later than the semester indicated in the letter of acceptance, or returning to studies after a passive semester, the faculty does not take responsibility for ensuring that the students can follow the same specialization which he or she studied prior to the passive semester, and reserves the right to direct the student to other specialization depending on the changes in the number applicants for specializations.

Departments

Automation and Applied Informatics
Electronics Technology
Electron Devices
Department of Networked Systems and Services
Control Engineering and Information Technology
Measurement and Information Systems

Computer Science and Information Theory
Broadband Infocommunications
  and Electromagnetic Theory
Telecommunications and Media Informatics
Electric Power Engineering

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Dean of the Faculty: Dr. László Vajta
Vice-Dean of the Faculty:
  Prof. Dr. János Levendovszky
Course Directors:
  BSc Programmes: Dr. Bálint Kiss
  MSc and PhD Programmes: Dr. József Harangozó
Programme Co-ordinator: Ms. Margit Nagy

Curriculum of BSc Subjects in Electrical Engineering

Subject			lectures/practical lectures/laboratory							
Name	Code	Cre-dits	1	2	3	4	5	6	7	Requisities
Economics and Human Science Studies**										
Micro- and Macroeconomics	BMEGT30A001	4		4/0/0/e						
Management and Business Economics	BMEGT20A001	4				4/0/0/p				
Business Law	BMEGT55A001	2						2/0/0/p		
Obligatory Econ. & Human Elective 1		2	2/0/0/p							
Obligatory Econ. & Human Elective 2		2						2/0/0/p		
Obligatory Econ. & Human Elective 3		2						2/0/0/p		
Obligatory Econ. & Human Elective 4		2							2/0/0/p	
Obligatory Econ. & Human Elective 5		2							2/0/0/p	
Elements of Natural Science										
Mathematics A1a - Calculus	BMETE90AX00	6	4/2/0/e							
Mathematics A2a - Vector Functions	BMETE90AX02	6		4/2/0/e						BMETE90AX00-C
Mathematics A3 for Electrical Engineers	BMETE90AX09	4			2/2/0/e					BMETE90AX02-C
Mathematics A4- Probalility Theory	BMETE90AX08	4			2/2/0/p					BMETE90AX02-C
Physics 1	BMETE11AX01	5		4/0/0/e						BMETE90AX00-S
Physics 2	BMETE11AX02	5			4/0/0/e					BMETE11AX01-C
Foundation of Computer Science	BMEVISZA105	6	4/2/0/e							
Materials Sciences	BMEGEMTAV01	4	3/0/1/e							
Informatics 1	BMEVIIIA202	5			3/2/0/e					BMEVIIIA108-C
Informatics 2	BMEVIAUA203	5				3/2/0/e				BMEVIHIA107*
Free Elective Subjects										
Free Elective 1		4						4/0/0/e		
Free Elective 2		4						4/0/0/e		
Free Elective 3		2						2/0/0/e		
Fundational Technical Studies										
Basics of Programming 1	BMEVIHIA106	5	2/1/1/p							
Basics of Programming 2	BMEVIAUA116	4		2/0/2/p						BMEVIHIA106-C
Digital Design 1	BMEVIIIA105	6	2/2/1/e							
Digital Design 2	BMEVIIIA106	6		3/2/0/e						BMEVIIIA105-C
Signals and Systems 1	BMEVIHVA109	6		4/2/0/p						BMETE90AX00-S
Signals and Systems 2	BMEVIHVA200	6			3/3/0/e					BMEVIHVA109-C
Electrotechnics	BMEVIVEA201	6			4/0/1/e					BMEVIHVA109-C
Electromagnetic Fields	BMEVIHVA204	5				3/1/0/e				
Electronics 1	BMEVIHIA205	6				3/2/0/e				
Electronics 2	BMEVIAUA300	5					3/2/0/e			BMEVIHIA205-S
Microelectronics	BMEVIEEA306	5					3/0/1/p			BMEVIHIA205-S
Measurement Technology	BMEVIMIA206	5				3/2/0/p				BMEVIHVA200-S
Power System Engineering	BMEVIVEA207	5				3/1/1/e				BMEVIHVA200-S , BMEVIVEA201-C
Infocommunication	BMEVITMA301	5					3/2/0/e			BMETE90AX08-C
Electronics Technology	BMEVIETA302	5					3/1/1/e			BMEGEMTAV01-S , BMETE11AX01-S
Control Engineering	BMEVIIIA303	5					3/2/0/e			BMEVIHVA200-S
Specialization Studies										
Specialization Theoretical Subject 1		4						3/1/0/e		
Specialization Theoretical Subject 2		4						3/1/0/e		
Specialization Theoretical Subject 3		4						3/1/0/e		
Laboratory 1	BMEVIMIA304	5					0/0/4/p			BMEVIMIA206-C, BMEVIHIA205-C
Laboratory 2	BMEVIMIA305	4						0/0/3/p		BMEVIMIA304-C, BMEVIIIA303-S, BMEVIAUA300-S
Laboratory for Specialization		4						0/0/3/p		
Project Laboratory		5						0/0/4/p		
Thesis Project		15							0/10/0/s	

S - Signature of the Subject is required

C - Credit of the Subject is required

* - Cannot be taken prior to the Subject (can be taken in parallel)

**Course descriptions and available Economics and Human Sciences Electives are listed in this Bulletin at the Faculty of Economic and Social Sciences. Restrictions may apply.
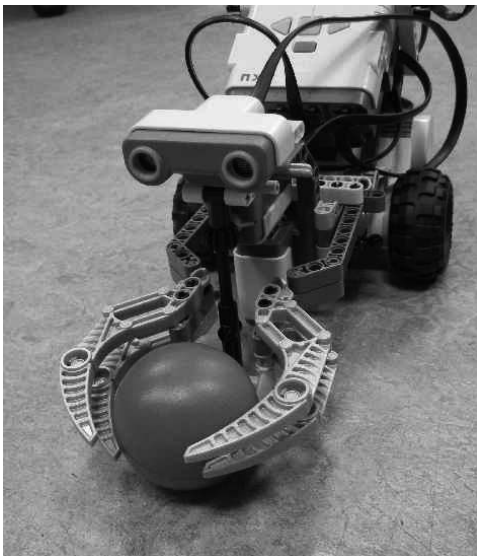
Curriculum of BSc Subjects
in Engineering Information Technology

| Subject | | | lectures/practical lectures/laboratory | | | | | | | |
Name	Code	Cre-dits	1	2	3	4	5	6	7	Requisities
Economics and Human Science Studies										
Micro- and Macroeconomics	BMEGT30A001	4	4/0/0/e							
Management and Business Economics	BMEGT20A001	4		4/0/0/p						
Business Law	BMEGT55A001	2			2/0/0/p					
Obligatory Econ. & Human Elective 1		2	2/0/0/p							
Obligatory Econ. & Human Elective 2		2		2/0/0/p						
Obligatory Econ. & Human Elective 3		2			2/0/0/p					
Obligatory Econ. & Human Elective 4		2			2/0/0/p					
Obligatory Econ. & Human Elective 5		2					2/0/0/p			
Elements of Natural Science										
Calculus 1 for Informaticians	BMETE90AX04	7	4/2/0/e							
Calculus 2 for Informaticians	BMETE90AX05	7		4/2/0/e						BMETE90AX04-C
Probability Theory	BMEVISZA208	4			3/1/0/e					BMETE90AX05*
Introduction to the Theory of Computing 1	BMEVISZA103	5	2/2/0/e							
Introduction to the Theory of Computing 2	BMEVISZA110	4		2/2/0/e						BMEVISZA103-S
Coding Technology	BMEVIHIA209	5			3/1/0/p					BMEVISZA110-C
Theory of Algorithms	BMEVISZA213	5				2/2/0/e				BMEVISZA110-S
Physics 1i	BMETE11AX03	4		4/0/0/e						BMETE90AX04-C
Physics 2i	BMETE11AX04	4			4/0/0/e					BMETE11AX03-C
Free Elective Subjects										
Free Elective 1		2					2/0/0/p			
Free Elective 2		4						4/0/0/e		
Free Elective 3		4						4/0/0/e		
Fundational Technical Studies										
Signals and Systems	BMEVIHVA214	5			3/1/0/p					BMETE90AX05-C
Electronics	BMEVIEEA307	4				3/1/0/p				BMETE11AX04*
Control Engineering	BMEVIAUA309	4				3/1/0/p				BMEVIHVA214-C
Digital Design 1	BMEVIMIA102	5	2/2/0/p							
Digital Design 2	BMEVIMIA111	5		2/2/0/e						BMEVIMIA102-C
Computer Graphics and Image Processing	BMEVIIIA316	4				3/1/0/p				
Computer Architectures	BMEVIHIA210	5			2/2/0/e					BMEVIMIA111-S
Computer Networks	BMEVIHIA215	4			3/1/0/e					BMEVIHIA210*
Telecommunication Networks and Services	BMEVITMA310	4				3/1/0/e				BMEVIMIA215-S
Measurement Laboratory 1	BMEVIMIA211	2			0/0/2/p					BMEVIMIA102-C
Measurement Laboratory 2	BMEVIMIA216	2				0/0/2/p				BMEVIMIA211-C
Measurement Laboratory 3	BMEVIMIA312	2					0/0/2/p			BMEVIMIA111-S, BMEVIMIA219-S
Measurement Laboratory 4	BMEVIMIA315	2						0/0/2/p		BMEVIHIA215-S, BMEVIMIA219-S
Basics of Programming 1	BMEVIEEA100	5	2/2/0/e							
Basics of Programming 2	BMEVIIIA114	4		2/2/0/p						BMEVIEEA100-C
Software Technology	BMEVIIIA217	4			3/1/0/e					BMEVIIIA114-C
Software Techniques	BMEVIAUA218	4				3/1/0/e				BMEVIIIA217-S
Management of Information Systems	BMEVITMA314	4					3/1/0/e			BMEVITMA310-S
Operating Systems	BMEVIMIA219	4				3/1/0/e				BMEVIHIA210-S
Databases	BMEVITMA311	5					3/1/0/e			BMEVISZA213-S
Artificial Intelligence	BMEVIMIA313	5					3/1/0/e			BMEVISZA213-S
Software Laboratory 1	BMEVIEEA101	2	0/0/2/p							BMEVIEEA100*
Software Laboratory 2	BMEVIIIA115	2		0/0/2/p						BMEVIIIA114*
Software Laboratory 3	BMEVIIIA212	2			0/0/2/p					BMEVIIIA114-C
Software Laboratory 4	BMEVIIIA220	2				0/0/2/p				BMEVIIIA217-S
Software Laboratory 5	BMEVITMA308	2						0/0/2/p		BMEVITMA308-C
System Modeling	BMEVIMIA401	5							3/1/0/e	BMEVISZA208-C, BMEVIIIA217-S
Specialization Studies										
Specialization Subject 1		4						3/1/0/e		
Scecialization Subject 2		4						3/1/0/e		
Specialization Subject 3		4						3/1/0/e		
Specialization Laboratory 1		2						0/0/2/p		
Specialization Laboratory 2		2							0/0/2/p	
Project Laboratory		6							0/0/4/p	
Thesis Project		15							0/10/0/s	

Curriculum of BSc Subjects
in Electrical Engineering and Engineering Information Technology

Subject			lectures/practical lectures/ laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Compulsory English I.	BMEGT63A301	2	0/4/0p				
Compulsory English II.	BMEGT63A302	2		0/4/0p			BMEGT63A301
Communication Skills - English	BMEGT63A061	2			0/2/0p		BMEGT63A302
English for Engineers	BMEGT63A051	2				0/2/0p	BMEGT63A061

Curriculum of MSc Subjects in Engineering Information Technology
Applied Computer Science Specialization

Subject			lectures/practical lectures/ laboratory				Requisities
Name	Code	Cre-dits	1	2	3	4	
Fundamentals in Natural Sciences (24 credits)							
System Optimization	BMEVISZM117	4	4/0/0/e				
Advanced Mathematics for Software Engineers D (Stochastics 1 - 2)	BMETE90MX43	4		4/0/0/e			
Formal Methods	BMEVIMIM100	4	3/0/0/p				
Data Security	BMEVIHIM102	4	3/0/0/p				
Languages and Automata	BMEVISZM104	4		3/0/0/p			
Software Architectures	BMEVIAUM105	4		3/0/0/p			
Subjects from Economic and Human Sciences (10 credits)							
Elective Subject 1	BMEGTxxMxxx	2			2/0/0/p		
Elective Subject 2	BMEGTxxMxxx	2			2/0/0/p		
Elective Subject 3	BMEGTxxMxxx	2			2/0/0/p		
Engineering Management	BMEVITMM112	4				4/0/0/e	
Basic Obligatory Subjects for the Specialization (28 credits)							
Distributed Systems	BMEVIAUM124	4	2/1/0/e				Excluded if BMEVIIIM140 was already taken
Mobil Software Development	BMEVIAUM125	4	2/1/0/e				
Model-Driven Paradigms	BMEVIAUM126	4	2/1/0/e				Excluded if VIMIM147 and VIIIM228 was already taken
Service-Oriented Systems	BMEVIAUM208	4		2/1/0/e			Excluded if BMEVIMIM234 was already taken
Integrated Information Systems	BMEVIAUM209	4		2/1/0/e			
Laboratory for Distributed Systems and Mobile Software Development	BMEVIAUM210	4		0/0/3/p			
Laboratory for Service-Oriented Systems and Model-Driven Paradims	BMEVIAUM302	4			0/0/3/p		
Basic Compulsory Elective Subjects for the Specialization (52 credits)							
Compulsory Elective Subject 1	BMEVIAUMxxx	4		2/1/0/e			
Compulsory Elective Subject 2	BMEVIAUMxxx	4			2/1/0/e		
Compulsory Elective Subject 3	BMEVIAUMxxx	4			2/1/0/e		
Project Laboratory 1	BMEVIAUM813	5	0/0/5/p				
Project Laboratory 2	BMEVIAUM863	5		0/0/5/p			Credits of BMEVIAUM813
Thesis Project 1	BMEVIAUM913	10			0/5/0/p		Credits of BMEVIAUM863
Thesis Project 2	BMEVIAUM963	20				0/10/0/p	Credits of BMEVIAUM913 and BMETE90MX43, and all credits of Basic Obligatory Subjects
Freely Elective Subjects (6 credits)							
Freely Elective Subject 1	BMExxxxxxxx	4				4/0/0/p	
Freely Elective Subject 2	BMExxxxxxxx	4				4/0/0/p	
Freely Elective Subject 3	BMExxxxxxxx	2				2/0/0/p	

Notes:

1. Subjects from Economic and Human Sciences: three subjects are selected by the Faculty from the following list before the actual semester

Quality Management	BMEGT20M002	2			2/0/0/p		
Argumentation, Negotiation, Persuasion	BMEGT41MS01	2			2/0/0/p		
Investments	BMEGT35M004	2			2/0/0/p		
Management Accounting	BMEGT35M005	2			2/0/0/p		

2. Basic Compulsory Elective Subjects: *the three subjects will be determined before the actual semester.*

3. Freely Elective Subjects: *a list of these subjects is under construction.*

Notation: working hours/week: x/y/z/r

    x = lecture hours

    y = practice hours

    z = laboratory hours

    r = requirement (e = exam, p = continuous work for a mark, s = signature)

Curriculum of MSc Subjects in Engineering Information Technology System Development Specialization

Subject			lectures/practical lectures/laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Fundamentals in Natural Sciences (24 credits)							
System Optimization	BMEVISZM117	4	4/0/0/e				
Advanced Mathematics for Software Engineers D (Stochastics 1 - 2)	BMETE90MX43	4		4/0/0/e			
Formal Methods	BMEVIMIM100	4	3/0/0/p				
Data Security	BMEVIHIM102	4	3/0/0/p				
Languages and Automata	BMEVISZM104	4		3/0/0/p			
Software Architectures	BMEVIAUM105	4		3/0/0/p			
Subjects from Economic and Human Sciences (10 credits)							
Elective Subject 1	BMEGTxxMxxx	2			2/0/0/p		
Elective Subject 2	BMEGTxxMxxx	2			2/0/0/p		
Elective Subject 3	BMEGTxxMxxx	2			2/0/0/p		
Engineering Management	BMEVITMM112	4				4/0/0/e	
Basic Obligatory Subjects for the Specialization (28 credits)							
Distributed Systems	BMEVIAUM124	4	2/1/0/e				Excluded if BMEVIIIM140 was already taken
Mobil Software Development	BMEVIAUM125	4	2/1/0/e				
Model-Driven Paradigms	BMEVIAUM126	4	2/1/0/e				Excluded if VIMIM147 and VIIIM228 was already taken
Service-Oriented Systems	BMEVIAUM208	4		2/1/0/e			Excluded if BMEVIMIM234 was already taken
Integrated Information Systems	BMEVIAUM209	4		2/1/0/e			
Laboratory for Distributed Systems and Mobile Software Development	BMEVIAUM210	4		0/0/3/p			
Laboratory for Service-Oriented Systems and Model-Driven Paradims	BMEVIAUM302	4			0/0/3/p		
Basic Compulsory Elective Subjects for the Specialization (52 credits)							
Compulsory Elective Subject 1	BMEVIAUMxxx	4	2/1/0/e				
Compulsory Elective Subject 2	BMEVIAUMxxx	4		2/1/0/e			
Compulsory Elective Subject 3	BMEVIAUMxxx	4		2/1/0/e			
Project Laboratory 1	BMEVIAUM813	5	0/0/5/p				
Project Laboratory 2	BMEVIAUM863	5		0/0/5/p			Credits of BMEVIAUM813
Thesis Project 1	BMEVIAUM913	10			0/5/0/p		Credits of BMEVIAUM863
Thesis Project 2	BMEVIAUM963	20				0/10/0/p	Credits of BMEVIAUM913 and BMETE90MX43, and all credits of Basic Obligatory Subjects
Freely Elective Subjects (6 credits)							
Freely Elective Subject 1	BMExxxxxxxx	4				4/0/0/p	
Freely Elective Subject 2	BMExxxxxxxx	4				4/0/0/p	
Freely Elective Subject 3	BMExxxxxxxx	2				2/0/0/p	

Notes:

1. Subjects from Economic and Human Sciences: three subjects are selected by the Faculty from the following list before the actual semester

Quality Management	BMEGT20M002	2			2/0/0/p		
Argumentation, Negotiation, Persuasion	BMEGT41MS01	2			2/0/0/p		
Investments	BMEGT35M004	2			2/0/0/p		
Management Accounting	BMEGT35M005	2			2/0/0/p		

2. Basic Compulsory Elective Subjects: *the three subjects will be determined before the actual semester.*

3. Freely Elective Subjects: *a list of these subjects is under construction.*

Notation: working hours/week: x/y/z/r

> *x = lecture hours*
>
> *y = practice hours*
>
> *z = laboratory hours*
>
> *r = requirement (e = exam, p = continuous work for a mark, s = signature)*

Curriculum of MSc Subjects in Electrical Engineering
Embedded Systems Specialization

Subject			lectures/practical lectures/ laboratory				Requisities
Name	Code	Cre-dits	1	2	3	4	
Fundamentals in Natural Sciences (24 credits)							
Physics 3	BMETE11MX01	5	3/1/0/e				
Measurement Theory	BMEVIMIM108	4	3/0/0/p				
Software Design	BMEVIIIM110	4	3/0/0/p				
Advanced Mathematics for Electrical Engineers A (Advanced Linear Algebra + Stochastics)	BMETE90MX30	6		4/2/0/e			
Nanoscience	BMEVIETM114	5		4/0/0/p			
Subjects from Economic and Human Sciences (10 credits)							
Elective Subject 1	BMEGTxxMxxx	2			2/0/0/p		
Elective Subject 2	BMEGTxxMxxx	2			2/0/0/p		
Elective Subject 3	BMEGTxxMxxx	2			2/0/0/p		
Engineering Management	BMEVITMM112	4				4/0/0/e	
Basic Obligatory Subjects for the Specialization (28 credits)							
System Architectures	BMEVIMIM149	4	2/1/0/e				
Software Technology for Embedded Systems	BMEVIMIM150	4	2/1/0/e				
Real-time and Safety-critical Systems	BMEVIMIM151	4	2/1/0/e				
Information Processing	BMEVIMIM237	4		2/1/0/e			
Embedded System Design	BMEVIMIM238	4		2/1/0/e			
Laboratory for System Architectures	BMEVIMIM239	4		0/0/3/p			
Laboratory for Information Processing	BMEVIMIM322	4			0/0/3/p		
Basic Compulsory Elective Subjects for the Specialization (52 credits)							
Interfacing Embedded Systems to Information Systems	BMEVIMIM343	4		2/1/0/e			
High-Performance Microcontrollers	BMEVIMIM342	4			2/1/0/e		
Digital Filters	BMEVIMIM278	4			2/1/0/e		
Project Laboratory 1	BMEVIMIM802	5	0/0/5/p				
Project Laboratory 2	BMEVIMIM852	5		0/0/5/p			Credits of BMEVIMIM802
Thesis Project 1	BMEVIMIM902	10			0/5/0/p		Credits of BMEVIMIM852
Thesis Project 2	BMEVIMIM952	20				0/10/0/p	Credits of BMEVIMIM902 and BME-TE90MX30, and all credits
Freely Elective Subjects (6 credits)							
Freely Elective Subject 1	BMExxxxxxxx	4				4/0/0/p	
Freely Elective Subject 2	BMExxxxxxxx	4				4/0/0/p	
Freely Elective Subject 3	BMExxxxxxxx	2				2/0/0/p	

Notes:

1. Subjects from Economic and Human Sciences: three subjects are selected by the Faculty from the following list before the actual semester

Quality Management	BMEGT20M002	2			2/0/0/p		
Argumentation, Negotiation, Persuasion	BMEGT41MS01	2			2/0/0/p		
Investments	BMEGT35M004	2			2/0/0/p		
Management Accounting	BMEGT35M005	2			2/0/0/p		

2. Freely Elective Subjects: *a list of these subjects is under construction.*

Notation: working hours/week: x/y/z/r

> *x = lecture hours*
>
> *y = practice hours*
>
> *z = laboratory hours*
>
> *r = requirement (e = exam, p = continuous work for a mark, s = signature)*

Curriculum of MSc Subjects in Electrical Engineering Infocommunication Systems Specialization

Subject			lectures/practical lectures/ laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Fundamentals in Natural Sciences (24 credits)							
Physics 3	BMETE11MX01	5	3/1/0/e				
Communication Theory	BMEVIHVM107	4	3/0/0/p				
Software Design	BMEVIIIM110	4	3/0/0/p				
Advanced Mathematics for Electrical Engineers B (Combinatorial Optimization + Stochastics)	BMETE90MX38	6		4/2/0/e			
Photonic Devices	BMEVIETM113	5		4/0/0/p			
Subjects from Economic and Human Sciences (10 credits)							
Elective Subject 1	BMEGTxxMxxx	2			2/0/0/p		
Elective Subject 2	BMEGTxxMxxx	2			2/0/0/p		
Elective Subject 3	BMEGTxxMxxx	2			2/0/0/p		
Engineering Management	BMEVITMM112	4				4/0/0/e	
Basic Obligatory Subjects for the Specialization (28 credits)							
Wireline and Wireless Transmission Technologies	BMEVITMM155	4	2/1/0/e				
Convergent Networks and Services	BMEVITMM156	4	2/1/0/e				Excluded if BMEVIHIM244 was already taken
Network and Service Management	BMEVITMM157	4	2/1/0/e				
Human-Computer Interaction	BMEVITMM224	4		2/1/0/e			
Network Planning	BMEVITMM215	4		2/1/0/e			Excluded if BMEVIHIM354 was already taken
Laboratory for Infocommunications I.	BMEVITMM245	4	0/0/3/p				
Laboratory for Infocommunications II.	BMEVITMM311	4		0/0/3/p			
Basic Compulsory Elective Subjects for the Specialization (52 credits)							
Information and Network Security	BMEVITMM280	4		2/1/0/e			
Optical Networks	BMEVITMM347	4			2/1/0/e		
Performance Analysis of Infocommunication Systems	BMEVITMM325	4			2/1/0/e		
Project Laboratory 1	BMEVITMM807	5	0/0/5/p				
Project Laboratory 2	BMEVITMM857	5		0/0/5/p			Credits of BMEVITMM807
Thesis Project 1	BMEVITMM907	10			0/5/0/p		Credits of BMEVITMM857
Thesis Project 2	BMEVITMM957	20				0/10/0/p	Credits of BMEVITMM907 and BMETE90MX38, and all credits of Basic Obligatory Subjects
Freely Elective Subjects (6 credits)							
Freely Elective Subject 1	BMExxxxxxxx	4				4/0/0/p	
Freely Elective Subject 2	BMExxxxxxxx	4				4/0/0/p	
Freely Elective Subject 3	BMExxxxxxxx	2				2/0/0/p	

Notes:

1. Subjects from Economic and Human Sciences: three subjects are selected by the Faculty from the following list before the actual semester

Quality Management	BMEGT20M002	2			2/0/0/p		
Argumentation, Negotiation, Persuasion	BMEGT41MS01	2			2/0/0/p		
Investments	BMEGT35M004	2			2/0/0/p		
Management Accounting	BMEGT35M005	2			2/0/0/p		

2. Freely Elective Subjects: *a list of these subjects is under construction.*

Notation: working hours/week: x/y/z/r

> *x = lecture hours*
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> *y = practice hours*
>
> *z = laboratory hours*
>
> *r = requirement (e = exam, p = continuous work for a mark, s = signature)*

Curriculum of MSc Subjects in Electrical Engineering
Electrical Machines and Drives Specialization

Subject			lectures/practical lectures/laboratory				Requisities
Name	Code	Cre-dits	1	2	3	4	
Fundamentals in Natural Sciences (24 credits)							
Physics 3	BMETE11MX01	5	3/1/0/e				
Alternating Current Systems	BMEVIVEM111	4	3/0/0/p				
Measurement Theory	BMEVIMIM108	4	3/0/0/p				
Advanced Mathematics for Electrical Engineers C (Advanced Linear Algebra + Analysis)	BMETE90MX39	6		4/2/0/e			
Electrical Insulations and Discharges	BMEVIVEM116	5		4/0/0/p			
Subjects from Economic and Human Sciences (10 credits)							
Elective Subject 1	BMEGTxxMxxx	2		2/0/0/p			
Elective Subject 2	BMEGTxxMxxx	2		2/0/0/p			
Elective Subject 3	BMEGTxxMxxx	2		2/0/0/p			
Engineering Management	BMEVITMM112	4				4/0/0/e	
Basic Obligatory Subjects for the Specialization (28 credits)							
Theory and Design of Electric Machines	BMEVIVEM173	4	2/1/0/e				
Electrical Equipment and Insulation	BMEVIVEM174	4	2/1/0/e				
Control of Electrical Drives	BMEVIVEM175	4	2/1/0/e				
Electrical Systems of Renewable Energies	BMEVIVEM262	4		2/1/0/e			
Electric Vehicles	BMEVIVEM263	4		2/1/0/e			
Laboratory for Electrical Machines and Drives 1	BMEVIVEM264	4		0/0/3/p			
Laboratory for Electrical Machines and Drives 2	BMEVIVEM319	4			0/0/3/p		
Basic Compulsory Elective Subjects for the Specialization (52 credits)							
Servo and Robot Drives	BMEVIVEM287	4		2/1/0/e			
Modeling and Simulation	BMEVIVEM365	4			2/1/0/e		
Microcomputer Controlled Drives	BMEVIVEM366	4			2/1/0/e		
Project Laboratory 1	BMEVIVEM819	5	0/0/5/p				
Project Laboratory 2	BMEVIVEM869	5		0/0/5/p			Credits of BMEVIVEM319
Thesis Project 1	BMEVIVEM919	10			0/5/0/p		Credits of BMEVIVEM869
Thesis Project 2	BMEVIVEM969	20				0/10/0/p	Credits of BMEVIVEM919 and BMETE90MX39, and all credits of Basic Obligatory Subjects
Freely Elective Subjects (6 credits)							
Freely Elective Subject 1	BMExxxxxxxx	4				4/0/0/p	
Freely Elective Subject 2	BMExxxxxxxx	4				4/0/0/p	
Freely Elective Subject 3	BMExxxxxxxx	2				2/0/0/p	

Notes:

1. Subjects from Economic and Human Sciences: three subjects are selected by the Faculty from the following list before the actual semester

Quality Management	BMEGT20M002	2		2/0/0/p			
Argumentation, Negotiation, Persuasion	BMEGT41MS01	2		2/0/0/p			
Investments	BMEGT35M004	2		2/0/0/p			
Management Accounting	BMEGT35M005	2		2/0/0/p			

2. Freely Elective Subjects: *a list of these subjects is under construction.*

Notation: working hours/week: x/y/z/r

  x = lecture hours

  y = practice hours

  z = laboratory hours

  r = requirement (e = exam, p = continuous work for a mark, s = signature)

Curriculum of MSc Subjects in Business Information Systems
Analytical Business Intelligence Specialization

| Subject			lectures/practical lectures/ laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Elements of Natural Sciences (10 credits)							
Mathematical Statistics	BMEVISZM102	5	3/0/2/e				
Operation Research	BMETE90MX50	5		3/1/0/e			
Economics and Human Science Studies (21 credits)							
Accounting	BMEGT35M400	5		3/1/0/e			
Controlling	BMEGT35M401	5				3/1/0/e	BMEGT35M400
E-Law	BMEGT55M400	3			2/0/0/p		
Project Management	BMEGT20M400	3		2/0/0/p			
Finances	BMEGT35M402	5	3/1/0/e				
Foundational Technical Studies (15 credits)							
Data Security	BMEVIHIM183	5	3/1/0/p				
Network and Database Technologies	BMEVITMM184	5	3/1/0/e				
Data Mining Techniques	BMEVISZM185	5		3/1/0/p			
Specialization Studies (24 credits)							
Business and Financial Analytics	BMEGT35M403	4	3/0/0/e				
Customer Analytics	BMEVITMM199	5		3/0/1/e			
Trend Analysis and Visualization	BMEVITMM246	5		3/0/1/e			
Media and Text Mining	BMEVITMM275	5			3/0/1/e		BMEVISZM185
Risk Analysis and Management	BMEVIHIM277	5			3/0/1/e		
Basic Compulsory Elective Subjects (8 credits)							
Processing of Personal and Public Data	BMEVIETM294	4			3/0/0/e		
Engineering Management	BMEVITMM112	4			4/0/0/e		
Open Elective Subjects (6 credits)							
Open Elective Subject	BMExxxxxxxx	2			2/0/0/p		
Open Elective Subject	BMExxxxxxxx	4			4/0/0/e		
Individual studies (40 credits)							
Project Laboratory 1	BMEVITMM376	4	0/0/4/p				
Project Laboratory 2	BMEVITMM388	6		0/0/6/p			BMEVITMM376
Diploma Thesis Design 1	BMEVITMM377	10			0/5/0/p		BMEVITMM388
Diploma Thesis Design 2	BMEVITMM389	20				0/10/0/p	BMEVITMM377and 84 credits from the previous subjects

Notation: working hours/week: x/y/z/r

    x = lecture hours

    y = practice hours

    z = laboratory hours

    r = requirement (e = exam, p = continuous work for a mark, s = signature)
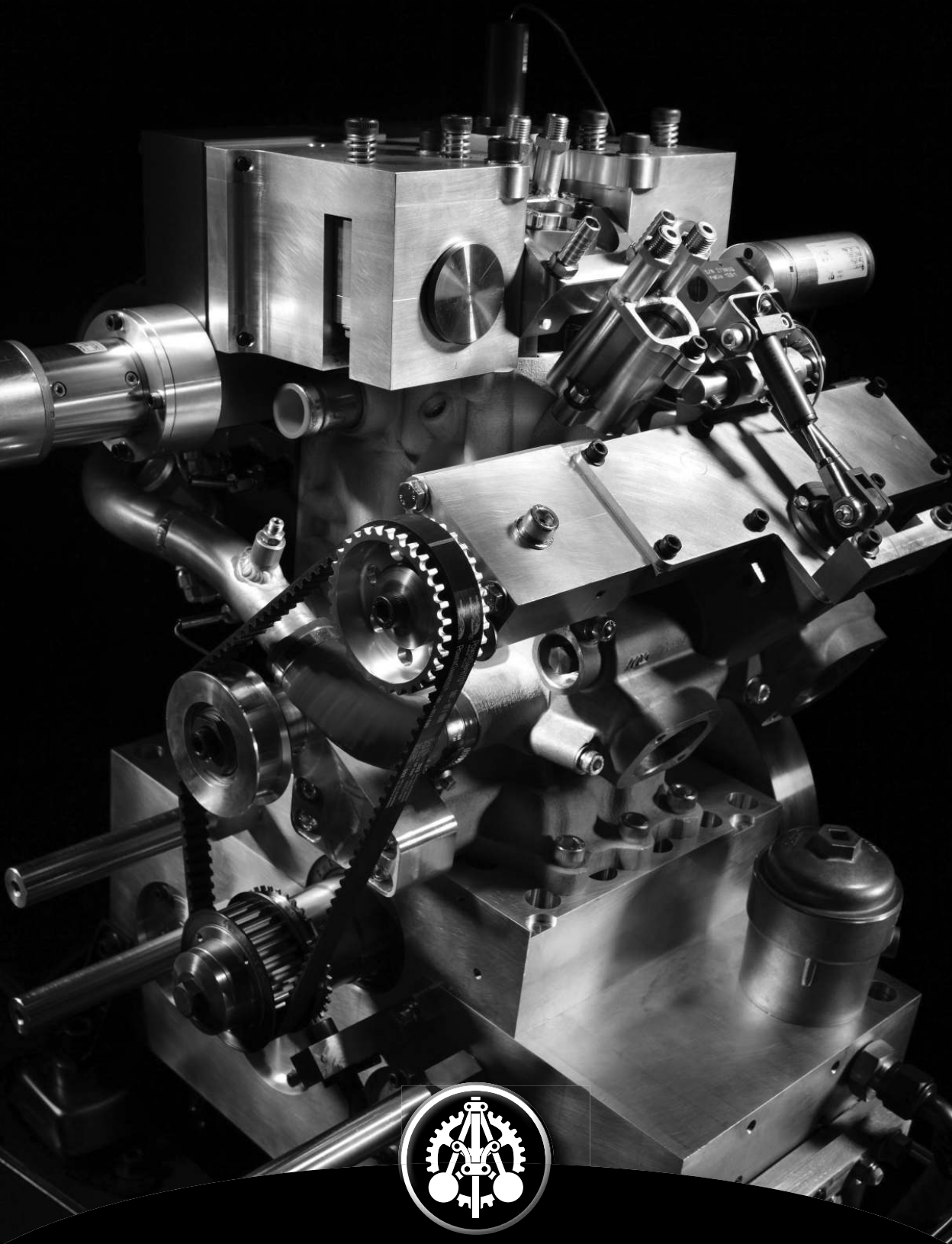
FACULTY OF MECHANICAL ENGINEERING

Introduction

The Mechanical Engineering Program at the Budapest University of Technology and Economics began in 1863, and the Faculty of Mechanical Engineering was established soon afterward, beginning official operations in the 1871/72 academic year. The Faculty is justly proud of its continuous and progressive 150-year history and now offers undergraduate and graduate programs in both Hungarian and English.

Since the 2006/07 academic year, the Faculty of Mechanical Engineering has offered a 7 semester undergraduate BSc degree program in English. The new two-year graduate program in English, leading to an MSc degree started in February 2009, students can start their study either in the fall and in the spring semester. Individual postgraduate academic and research programs, which are usually completed in two to three years, are available for those who already have an MSc degree and wish to pursue a PhD degree.

The undergraduate BSc program of the Faculty of Mechanical Engineering is designed to continue a tradition of excellence by:

- providing well-grounded and broad knowledge that graduates of this Faculty can apply immediately in their work and also use as the basis for further studies; and
- graduating competent engineers who are not only masters of their profession, but also possess an ethical philosophy of engineering based on accuracy, punctuality and reliability as well as a respect for the human element.

The goals of the Faculty's MSc and PhD programs are:

- to train creative, inventive mechanical engineers who can apply the engineering skills and the knowledge they have gained from the natural sciences on a state-of-the-art level; and
- to foster the development of leaders in engineering research and development.

Brief Description on the MSc in Mechanical Engineering Modeling started in 2009:

'One designed by a civil engineer starts moving that is bad; one designed by a mechanical engineer does not move that is bad, too. Mechanical engineers should design machines that move.'

This course deals with those time-dependent problems of mechanical engineering, which typically require the efficient modeling of these tasks in order to access the continuously developing methods of computational engineering. Modern computational methods are very popular since they show their easy-to-use interface for engineers. This often causes misunderstanding and disappointment during the naive applications of engineering software. Computational methods are reliable if they are properly tested and the principles of their applied algorithms and procedures are understood. This is analogous to the modern cartoon industry: the 25 pictures of one second of a cartoon can be drawn by computers if the first and the last picture of that second are designed for them by the artist but the computers will totally fail if they have to draw the cartoon without any reference picture, or based on the first (or last) picture only.

The tasks of mechanical engineers that typically require the modeling of machines in motion and that of time-varying processes are based on solid and fluid mechanics, thermodynamics and electronics. Modeling means the understanding and active application of the related theories, which are supported by differential equations and numerical methods in mathematics. Modeling needs also experimental work during the research-development-innovation process in case engineers do not have enough information about the motions and processes they want to capture by a model. Finally, modeling is also affected by the engineers knowledge in design, technology, and informatics, since the model should not be so complex that the available software is unable to solve them within reasonable time and for reasonable cost.

The above principles affected the formation of this master course. After the brief summary of the required mathematics, solid mechanics, fluid mechanics, thermodynamics, electronics, control and informatics, the students have to choose a major and a minor specialization from the following list of modules:

1. Solid Mechanics 2. Fluid Mechanics 3. Thermal Engineering
4. Design and Technology 5. Robotics
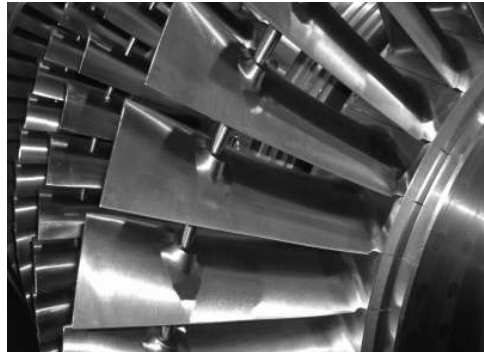
The possible combinations provide a large flexibility starting with the more research oriented knowledge (combinations of the first 3 modules), through the development oriented one (major from modules 1-3 and minor from 4-5 or vice versa), till the practice and applied oriented innovation (major and minor from the modules 4-5).

This new course is in English only. It is based on the foundations provided by the long-standing positive traditions of some former successful courses of the Faculty of Mechanical Engineering at BME, like Engineering Mathematics, Integrated Engineering (mechanical and electrical), Robotics (formerly also in Russian), Mechanical Engineering (BSc and MSc courses in English).

This course is also compatible to many master courses in mechanical engineering in the European Union (see, for example, U Bristol, U Bath, ENS Cachan, TU Karlsruhe, U Hannover, TU Munich):

Engineering Fluid Dynamics; Mechanics and Technical Design; Mechanics and Technology; Research in Mechanics and Systems of Engineering; Advanced Dynamics Engineering; Geometric Modeling and Design; Manufacturing Modeling; Power Transmission and Motion Control Systems; Thermal Engineering; Components of Electrical Engineering; Motion Engineering and Robotics; Dynamics and Control in Robotics; Computational Mechanics, etc.

Departments:

Department of Materials Science and Engineering
Department of Fluid Mechanics
Department of Energy Engineering
Department of Building Service Engineering and Process Engineering
Department of Machine and Industrial Product Design
Department of Manufacturing Science and Engineering
Department of Hydrodynamics Systems
Department of Mechatronics, Optics and Information Engineering
Department of Applied Mechanics
Department of Polymer Engineering

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Dean: Prof. Dr. Tibor Czigány
Vice-Dean (international and scientific affairs):
Dr. Ádám Kovács
Course Director: Mr. Axel Groniewsky
Program Co-ordinator: Ms. Margit Nagy

Curriculum of BSc Subjects

Subject			lectures/practical lectures/laboratory								Requisities
Name	Code	Credits	1	2	3	4	5	6	7	8	
1st semester, Fall											
Compulsory English I.	BMEGT63A301	2	0/4/0								p
Descriptive Geometry	BMETE90AX06	3	1/2/0								e
Introduction to Mechanical Engineering	BMEGEVGAG01	4	2/1/1								e
Information Systems	BMEGERIA31I	4	2/0/2								p
Macro- and Microeconomics	BMEGT30A001	4	4/0/0								e
Mathematics A1a - Calculus	BMETE90AX00	6	4/2/0								e
Technical Chemistry	BMEVEKTAGE1	3	2/0/1								p
Statics	BMEGEMMAGM1	3	1/1/0								p
	Total credits:	29									
2nd Semester, Spring											
Compulsory English II.	BMEGT63A302	2		0/4/0							p
Materials Science and Testing	BMEGEMTAGA1	6		3/1/1							e
Fundamentals of CAD	BMEGEGEA3CD	4		1/0/2							p
Physics A2	BMETE15AX02	2		2/0/0							e
Fundamentals of Machine Design	BMEGEGEAGM1	4		2/2/0							p
Mathematics A2a - Vector Functions	BMETE90AX02	6		4/2/0							e
Software Engineering	BMEGERIA32P	2		0/2/0							p
Strength of Materials	BMEGEMMAGM2	5		2/2/0							e
	Total credits:	31									
3rd Semester, Fall											
Dynamics	BMEGEMMAGM3	5			2/2/0						e
Materials Engineering	BMEGEMTAGA2	4			2/1/1						e
Physics A3	BMETE15AX03	2			2/0/0						p
Machine Elements 1.	BMEGEGEAGG1	5			2/1/1						e
Environmental Management Systems	BMEGT42A003	3			3/0/0						p
Mathematics A3 for Mechanical Engineers	BMETE90AX10	4			2/2/0						p
Mathematics Global Exam	BMETE90AX23										ge
Analysis of Technical and Economical Data	BMEGEVGAG14	3			2/1/0						p
Measurement Technology	BMEGEMIAMG1	3			2/0/1						p
	Total credits:	29									
4th Semester, Spring											
Basics of Electrical Engineering	BMEVIAUA007	3				2/0/1					p
Machine Elements 2.	BMEGEGEAGG2	6				3/1/1					e
Manufacturing	BMEGEGTAG01	5				2/0/3					e
Control Engineering	BMEGERIAGEI	4				2/2/0					e
Engineering Thermodynamics	BMEGEENAETD	3				2/1/0					p
Polymer Materials Science and Engineering	BMEGEPTAG0P	6				3/0/2					e
Vibrations	BMEGEMMAGM4	3				2/1/0					p
Mechanics Global Exam	BMEGEMMAGM0										ge
	Total credits:	30									
5th Semester, Fall											
Electromechanics	BMEVIAUA008	4					2/1/1				e
Fluid Mechanics	BMEGEÁTAG11	5					3/1/1				p
Heat Transfer	BMEGEENAEHK	4					2/2/0				e
Diffusion Processes	BMEGEVÉAG02	2					1/1/0				e

e - exam, p - practical mark, ge - global exam

Subject			lectures/practical lectures/laboratory								Requisities
Name	Code	Credits	1	2	3	4	5	6	7	8	
Measurement at Energy and Env. Protection	BMEGEENAG51	3					0/1/2				p
Measurement Technique of Processes	BMEGEVGAG03	2					1/0/1				p
Fundamentals of FEM	BMEGEMMAGM5	3					1/1/1				p
Management and Business Economics	BMEGT20A001	4					4/0/0				p
Business Law	BMEGT55A001	2					2/0/0				p
Optional subject:		2									
Marketing (2 credits) OR	BMEGT20A002						2/0/0				e
Communication Skills - English (2 credits)	BMEGT63A061						0/2/0				e
	Total credits:	31									
6th Semester, Spring											
Technical Acoustics and Noise Control	BMEGEÁTAG15	3						2/0/1			e
Fluid Machinery	BMEGEVGAG02	4						2/1/1			e
Heat Engines	BMEGEENAEGK	4						2/1/1			e
Numerical Simulation of Fluid Flows	BMEGEÁTAG06	2						1/0/1			p
Processes and Equipments of Chemical Industry	BMEGEVÉAG03	5						3/2/0			e
Air Pollution, Wastewater and Solid Waste Man.	BMEGEÁTAG04	3						3/0/0			p
Independent Study 1	BMEGEVGAG06	4						0/0/4			p
Optional subject:		4									
Heating (4 credits) OR	BMEGEÉPAG61							3/1/0			e
Manager Communication (2 credits) AND	BMEGT63A081							0/2/0			e
Crosscultural Communication (2 credits)	BMEGT63A091							0/2/0			e
	Total credits:	29									
7th Semester, Fall											
Fluid Flow Systems	BMEGEVGAG07	3							2/1/0		p
Energy Processes and Equipments	BMEGEENAG71	5							3/0/2		p
Volumetric Pumps and Compressors	BMEGEVGAG04	2							1/1/0		p
Measurement for Chemical and Environment Proc.	BMEGEVÉAG04	3							0/1/2		p
Final Project	BMEGEXXA4SD	15							0/10/0		p
Optional subject:		4									
Air-conditioning (4 credits)	BMEGEÉPAG62								2/2/0		p
	Total credits:	32									

The Faculty of Mechanical Engineering offers additional and optional courses (30 credits - upgrade 240) on BSc level to its students to take.

Optional subjects											
Modeling of Processes and Equipment	BMEGEÉEAG01	3							1/1/0		p
Laboratory	BMEGEÉEAG00	5							0/0/4		p
Independent Study 2	BMEGEVGAIP2	8							0/0/8		p
Heating	BMEGEÉPAG61	4							3/1/0		e
Manager Communication	BMEGT63A081	2							0/2/0		e
Crosscultural Communication	BMEGT63A091	2							0/2/0		e
English for Engineers	BMEGT63A051	2							0/4/0		e
Analytical Mechanics	BMEGEMMMW01	4							3/0/0		e
Advanced Fluid Mechanics	BMEGEÁTMW01	4							3/0/0		e
Advanced Thermodynamics	BMEGEENMWAT	4							2/1/0		e

XX in the Final Project code varies from department to department   *e - exam, p - practical mark, ge - global exam*

Curriculum of MSc Subjects
Mechanical Engineering Modeling

Subject		lectures/practical lectures/laboratory/credit/requisite							
		Beginning: spring				Beginning: fall			
Name	Code	1	2	3	4	1	2	3	4
Basic Subjects									
Differential Equations and Numerical Methods	BMETE90MX46	4/2/0/8/e					4/2/0/8/e		
Laser Physics	BMETE12MX00		3/1/0/4/e			3/1/0/4/e			
Analytical Mechanics	BMEGEMMMW01	3/0/0/4/e					3/0/0/4/e		
Advanced Fluid Mechanics	BMEGEÁTMW01	3/0/0/4/e					3/0/0/4/e		
Advanced Thermodynamics	BMEGEENMWAT	2/1/0/4/e					2/1/0/4/e		
Electronics	BMEVIAUM001		2/0/1/4/e			2/0/1/4/e			
Advanced Control and Informatics	BMEGEMIMW01		2/1/0/4/e			2/1/0/4/e			
Special Compulsory Subjects									
Machine Design and Production Technology	BMEGEGEMW01		2/1/0/4/e			2/1/0/4/e			
Major Compulsory Subject I			3/0/1/5/p			3/0/1/5/p			
Major Compulsory Subject II		2/1/0/5/p					2/1/0/5/p		
Major Project				0/0/11/14/p				0/0/11/14/s	
Special Subjects									
Major Elective Subject I				1/0/2/3/e					1/0/2/3/e
Major Elective Subject II					1/0/1/3/e		1/0/1/3/e		
Major Elective Subject III					1/1/0/3/p		1/1/0/3/p		
Minor Compulsory Subject I		3/0/1/5/p					3/0/1/5/p		
Minor Compulsory Subject II			2/1/0/5/p			2/1/0/5/p			
Minor Elective Subject I				1/0/1/3/e					1/0/1/3/e
Minor Elective Subject II				2/0/0/3/p					2/0/0/3/p
Final Project					0/0/15/19/s				0/0/15/19/s
Subjects in Economics									
Management	BMEGT20MW02		3/0/0/5/p			3/0/0/5/p			
Marketing	BMEGT20MW01			3/0/0/5/p					3/0/0/5/p
Elective Subjects									
Further Elective Subjects			1/1/0/3/p	1/0/1/3/p			1/0/1/3/p	1/1/0/3/p
Criterion									
Industrial Practice									
Total									
Total credit points		30	31	31	28	31	30	23	36
Total contact hours		17/4/1/22	17/4/2/23	8/0/15/23	3/2/16/21	17/4/2/23	17/4/1/22	3/1/13/17	8/1/18/27
Number of Exams		4	4	2	1	4	4	1	2

e - exam, p - practical mark, ge - global exam

Curriculum of MSc Subjects
Majors

Subject		lectures/practical lectures/laboratory/credit/requisite							
		Beginning: spring				Beginning: fall			
Name	Code	1	2	3	4	1	2	3	4
Fluid Mechanics									
Basic Subjects									
Advanced Fluid Mechanics	BMEGEÁTMW01	3/0/0/4/e					3/0/0/4/e		
Special Subjects / Major or Minor Compulsory Subjects									
Computational Fluid Dynamics	BMEGEÁTMW02		2/2/0/5/p			2/2/0/5/p			
Flow Measurements	BMEGEÁTMW03	2/1/1/5/p					2/1/1/5/p		
Major Project	BMEGEÁTMWD1			0/0/11/14/p				0/0/11/14/s	
Special Subjects / Major or Minor Elective Subjects									
Large-Eddy Simulation in Mechanical Engineering	BMEGEÁTMW05			1/1/0/3/ p					1/1/0/3/p
Fluid Technical Process Modeling	BMEGEÁTMW06			2/0/0/3/p					2/0/0/3/p
Multiphase and Reactive Flow Modeling	BMEGEÁTMW07			1/1/0/3/p					1/1/0/3/p
Unsteady Flows in Pipe Networks	BMEGEVGMW02			2/0/0/3/p					2/0/0/3/p
Measurement Techniques and Signal Processing	BMEGEMIMW07			2/0/0/3/p					2/0/0/3/p
Building Aerodynamics	BMEGEÁTMW08				2/0/1/3/p			2/0/1/3/p	
Aerodynamics and its Application for Vehicles	BMEGEÁTMW09				2/0/0/3/p			2/0/0/3/p	
Advanced Technical Acoustics and Measurement Techniques	BMEGEÁTMW10				2/0/0/3/p			2/0/0/3/p	
Hemodynamics	BMEGEVGMW03				2/0/0/3/p			2/0/0/3/p	
Flow Stability	BMEGEVGMW04				2/0/0/3/p			2/0/0/3/p	
Theoretical Acoustics	BMEGEVGMW05				2/0/0/3/p			2/0/0/3/p	
Final Project	BMEGEÁTMWD2				0/0/15/19/s			0/0/15/19/s	
Solid Mechanics									
Basic Subjects									
Analytical Mechanics	BMEGEMMMW01	3/0/0/4/e					3/0/0/4/e		
Special Subjects / Major or Minor Compulsory Subjects									
Finite Element Analysis	BMEGEMMMW02	2/0/2/5/p					2/0/2/5/p		
Continuum Mechanics	BMEGEMMMW03		2/1/0/5/p			2/1/0/5/p			
Major Project	BMEGEMMMWD1			0/0/11/14/p				0/0/11/14/s	
Special Subjects / Major or Minor Elective Subjects									
Elasticity and Plasticity	BMEGEMMMW05			1/1/0/3/p					1/1/0/3/p
Nonlinear Vibrations	BMEGEMMMW06			1/1/0/3/e					1/1/0/3/e
Coupled Problems in Mechanics	BMEGEMMMW07			1/0/1/3/p					1/0/1/3/p
Mechanisms	BMEGEMMMW08				1/1/0/3/p			1/1/0/3/p	
Beam Structures	BMEGEMMMW09				1/1/0/3/e			1/1/0/3/e	
Experimental Methods in Solid Mechanics	BMEGEMMMW10				1/0/1/3/p			1/0/1/3/p	
Final Project	BMEGEMMMWD2				0/0/15/19/s				0/0/15/19/s
Themal Engineering									
Basic Subjects									
Advanced Thermodynamics	BMEGEENMWAT	2/1/0/4/e					2/1/0/4/e		
Special Subjects / Major or Minor Compulsory Subjects									
Combustion Technology	BMEGEENMWCT		2/1/1/5/p			2/1/1/5/p			

e - exam, p - practical mark, ge - global exam

Curriculum of MSc Subjects
Majors (Contd.)

Subject		lectures/practical lectures/laboratory/credit/requisite							
		Beginning: spring				Beginning: fall			
Name	Code	1	2	3	4	1	2	3	4
Measurements in Thermal Engineering	BMEGEENMWM1	1/0/3/5/p				1/0/3/5/p			
Major Project	BMEGEENMWD1			0/0/11/14/p				0/0/11/14/s	
Special Subjects / Major or Minor Elective Subjects									
Energy Conversion Processes and its Equipment	BMEGEENMWEE			2/1/0/3/e					2/1/0/3/e
Simulation of Energy Engineering Systems	BMEGEENMWSE			1/0/2/3/p					1/0/2/3/p
Thermal Physics	BMEGEENMWTP			2/0/1/3/p					2/0/1/3/p
Thermo-Mechanics	BMEGEENMWTM				2/0/1/3/p			2/0/1/3/p	
Steam and Gas Turbines	BMEGEENMWTU				2/1/0/3/p			2/1/0/3/p	
Thermo-Hydraulics	BMEGEENMWTH				2/1/0/3/e			2/1/0/3/e	
Final Project	BMEGEENMWD2				0/0/15/19/s				0/0/15/19/s
Design and Technology									
Special Subjects / Major or Minor Compulsory Subjects									
Machine Design and Production Technology	BMEGEGEMW01		2/1/0/4/e				2/1/0/4/e		
Product Modeling	BMEGEGEMW02		2/0/1/5/p				2/0/1/5/p		
Advanced Manufacturing	BMEGEGTMW01	1/0/3/5/p				1/0/3/5/p			
Major Project	BMEGEGEMWD1			0/0/11/14/p				0/0/11/14/s	
Special Subjects / Major or Minor Elective Subjects									
CAD Technology	BMEGEGEMW04			1/0/2/4/p					1/0/2/4/p
Materials Science	BMEGEMTMW01			2/0/0/3/e					2/0/0/3/e
Structural Analysis	BMEGEGEMW05			1/0/2/4/p					1/0/2/4/p
Process Planning	BMEGEGTMW02				1/1/0/3/p			1/1/0/3/p	
NC Machine Tools	BMEGEGTMW03				1/1/0/3/p			1/1/0/3/p	
Fatigue and Fracture	BMEGEMTMW02				2/0/0/3/e			2/0/0/3/e	
Final Project	BMEGEGEMWD2				0/0/15/19/s				0/0/15/19/s
Robotics									
Basic Subjects									
Advanced Control and Informatics	BMEGEMIMW01		2/1/0/4/e				2/1/0/4/e		
Special Subjects / Major or Minor Compulsory Subjects									
Robot Constructions	BMEGEGTMW04		2/0/1/5/p				2/0/1/5/p		
Robot Control	BMEGEGTMW09	2/1/0/5/p					2/1/0/5/p		
Major Project	BMEGEGTMWD1			0/0/11/14/p				0/0/11/14/s	
Special Subjects / Major or Minor Elective Subjects									
Production Planning and Control	BMEGEGTMW10			3/0/0/3/e					3/0/0/3/e
Software Technologies	BMEGEMIMW03			2/0/1/3/p					2/0/1/3/p
Artificial Neural Networks and Hybrid Systems	BMEGEGTMW11			1/1/0/3/e					1/1/0/3/e
Robot Programming	BMEGEGTMW06			1/0/2/3/p					1/0/2/3/p
Simulation of CNC Machines and Robots	BMEGEGTMW12				2/0/0/3/p			2/0/0/3/p	
Assembly	BMEGEGTMW07				1/1/1/3/p			1/1/1/3/p	
Special Robots and Robot Applications	BMEGEGTMW08				1/1/0/3/p			1/1/0/3/p	
Microelectronics in Control	BMEGEMIMW06				1/1/0/3/p			1/1/0/3/p	
Final Project	BMEGEGTMWD2				0/0/15/19/s				0/0/15/19/s

e - exam, p - practical mark, ge - global exam

The Faculty of Natural Sciences, one of the newest faculties at the Budapest University of Technology and Economics, was established in 1998 and now employs 196 full and part time faculty members. The Faculty provides classes in Physics, Mathematics and Cognitive Science and is designed to meet the needs of its own and other faculties.

Courses are offered on BSc and MSc/MA degree levels. The Faculty provides post-graduate scientific training as well. Currently more than 65 PhD students are pursuing personal programs in different areas of sciences. The Faculty also offers short courses on specific topics of current interest.

The Faculty of Natural Sciences administers its own BSc and MSc/MA programs in Physics, Mathematics, Applied Mathematics and Cognitive Science. A continuing educational program is also offered in Reactor Physics and Reactor Technology. For many years the "Eugene Wigner International Training Course for Reactor Physics Experiments" has also been organized on a yearly basis.

The **BSc in Physics Program**, a traditional curriculum, leads to a BSc degree in 6 semesters (currently available only in Hungarian). The facilities and scientific-tutorial background of the Institute of Physics and the Institute of Nuclear Techniques offer unique opportunities in areas like low temperature physics, acousto-optics, holography or the nuclear training reactor. A further advantage of our Physics BSc Program is the engineering background provided by the Budapest University of Technology and Economics. Two specializations can be chosen: "Physicist" and "Applied Physics".

In another 4 semesters an **MSc in Physics** degree can be earned; courses are given also in English. This program provides comprehensive knowledge, built upon strong theoretical and experimental bases in four areas of specialization. Students who choose the specialization "Research Physicist" get acquainted with theoretical tools of modern physics and with state of the art experimental methods. Students in specialization "Applied Physics" study material testing techniques, material science, optics and R&D skills. Graduates from specialization "Nuclear Techniques" may become professionals in energetics, radiation and environment protection. The specialization "Medical Physics" transfers knowledge of creative use and development of modern medical instruments.

The **BSc in Mathematics Program,** a traditional curriculum, leads to a BSc degree in 6 semesters (currently available only in Hungarian). In the fourth semester students are offered two options: specialization "A" Theoretical Mathematics is recommended to those who are interested in a deeper understanding of some

branches of mathematics and in doing theoretical research and are probably going to continue their studies in a Mathematics MSc Program. Specialization "B" Applied Mathematics is recommended to students who are eager to apply their knowledge in industry or finance. Therefore, we have prepared courses related to information technology, economical and financial mathematics, or technology. Graduated students from either specialization are allowed to continue their studies in one of our Mathematics Master programs.

In another 4 semesters an **MSc in Mathematics** or MSc in Applied Mathematics degree can be earned.

There are no specializations in the MSc in Mathematics Program. Basic subjects are algebra and number theory, mathematical analysis, geometry, probability theory and statistics, discrete mathematics and operations research.

Students of the **MSc in Applied Mathematics Program** choosing the "Applied Analysis" specialization will meet applications of mathematical analysis in natural sciences, finance and industry. Graduates from the "Operations Research" specialization are able to create models for problems in controlling systems or optimization. Students who specialized in "Financial Mathematics" can analyze financial processes or insurance problems and are able to interpret the results. Graduates from the "Stochastics" specialization can recognize and study random laws in various phenomena. The language of courses of the specializations "Financial Mathematics" and "Stochastics" is English.

MA in Cognitive Science. The aim of the master program is to train researchers skilled in complex analysis of human cognition and knowledge relying on the methods of science. Students may complete courses in all major domains of cognitive science including cognitive psychology, neuroscience, linguistics and the philosophy of science. Students will be equipped with both theoretical knowledge and practical skills such as statistical analysis and research ethics. Graduates will be able to carry out research in various areas of cognitive science combining theoretical insights and methods of biological (neuroscience, experimental psychology, developmental studies), and formal (mathematics, logic, philosophy of science, linguistics) disciplines. Graduates' competences allow them to undertake doctoral studies, and to work in a variety of applied domains including medicine, biotechnology and education.

Continuing educational program in reactor physics and technology is a four semester program offered to professionals working in the nuclear industry. The subjects include reactor physics, thermohydraulics, radiation protection, radiochemistry, reactor technology, nuclear safety and laboratory experiments.

Postgraduate program in Operations Research in four semesters is recommended to professionals - with MSc - who often meet problems related to optimization (economists, engineers, etc.). The program includes theoretical classes (bases of discrete, continuous and stochastic optimization) and practice oriented classes as well (modelling, software packages, algorithm implementation, etc.). In the second and third semester students carry out individual projects which help them to obtain the required knowledge and practice for the future.

The **"Eugene Wigner International Training Course for Reactor Physics Experiments"** is a three weeks long international course, in cooperation with the Technical University Bratislava, Technical University Prague and Atominstitute of the Austrian University Vienna. The language of the course is English. The main organizer of the course is the Institute of Nuclear Techniques. For more information see:

http://www.reak.bme.hu/nti/Education/Wigner_Course

Institutes

Institute of Mathematics
Department of Algebra
Department of Analysis
Department of Differential Equations
Department of Geometry
Department of Stochastics

Institute of Nuclear Techniques
Department of Nuclear Techniques
Department of Nuclear Energy
Institute of Physics
Department of Atomic Physics
Department of Physics
Department of Theoretical Physics
Department of Cognitive Science

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Vice-dean (finance): Dr. Márta Lázi
Vice-dean (Scientific and International):
 Dr. Ilona Kovács
Vice-dean (education): Dr. András Vetier
Course director of educational program in reactor
physics and technology: Dr. Bálint Szabó

Curriculum of MSc in Physics

Subject			lectures/practical lectures/laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
General Subjects							
Problem Solving in Mathematics	BMETE95MF00	2	0/2/0/m/2				
Computer Solution of Technical and Physical Problems	BMETE12MF01	2	0/0/2/m/2				
Investment		2		2/0/0/m/2			
Professional subjects							
Atomic and molecular physics	BMETE15MF02	3	2/1/0/m/3				
Physical materials science	BMETE12MF02	3		2/0/0/m/3			
Nuclear physics	BMETE80MF00	4		3/0/0/e/4			
Particle physics	BMETE13MF00	4			4/0/0/e/4		
Computer simulation in statistical physics	BMETE15MF03	3	2/0/0/e/3				
Physics laboratory	BMETE80MF06	6	0/0/6/m/6				
Specialized professional subjects							
Seminar I-IV	BMETE12MF04-07	6	0/2/0/m/2	0/2/0/m/2	0/2/0/m/2	0/2/0/s/0	
Independent laboratory I-II	BMETE12MF08-09	19		0/0/7/m/7	0/0/12/m/12		
Specialization courses		30	7/0/0/e/10	7/0/0/e/10	7/0/0/e/10		
Diploma work	BMETE80MF10	30				0/0/10/e/30	
Freely elected courses							
Freely elected courses I-III		6	2/0/0/m/2	2/0/0/m/2	2/0/0/m/2		
Electable language courses							
Foreign language			0/4/0/s/0	0/4/0/s/0			

Lecture/Practice/Laboratory/Exam type/Credit

Exam type: e=exam, m=midterm exam, s=signature

Curriculum of MSc in Mathematics

Subject			lectures/practical lectures/laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Theoretical foundations							
Algebra and Number theory block							
Linear algebra		7	4/4/0/e+m/7				
Number theory		5	2/2/0/e+m/5				
Algebra 1		4		2/2/0/e/4			
Algebra 2				2/2/0/e/4			
Analysis block							
Analysis 1, 2		12	4/2/0/e+m/6	4/2/0/e/6			
Analysis 3, 4		7	2/2/0/e+m/5	1/1/0/m/2			
Differential equations		6		4/2/0/e/6			
Partial differential equations		5		2/2/0/m/5			
Numerical methods 1.		6	4/2/0/e/6				
Functional analysis		3		4/2/0/e+m/6			
Discrete mathematics and computer science block							
Combinatorics and graph theory 1, 2		7	2/2/0/e/4	2/1/0/e/3			
Theory of algorithms		4	2/2/0/e/4				
Criptography and coding theory		3		3/0/0/e/3			
Informatics 2		3	1/0/2/m/3				
Informatics 4		4	0/0/4/m/4				
Geometry block							
Geometry		6		4/2/0/e+m/6			
Differential geometry 1		3	2/1/0/m/3				
Differential geometry 2		5	2/2/0/e+m/5				
Operations research and financial mathematics block							
Operations research		4		2/2/0/m/4			
Optimization models		2	0/0/2/m/2				
Introduction to macro/microeconomics		4	2/2/0/m/2	2/2/0/m/2			

Subject			lectures/practical lectures/laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Mathematics of economics and finance		6		2/2/0/e/6			
Insurance mathematics 1		3		2/0/0/e/3			
Stochastics block							
Probability theory		4	2/2/0/e+m/4				
Mathematical statistics		6		2/0/4/e/6			
Stochastic processes		6	2/2/0/e/6				
Ergodic theory and dynamical systems		2		2/0/0/m/2			
Biomathematics block							
Stochastic models in bioinformatics		3		2/0/0/e/3			
Dynamical models in biology		2	2/0/0/e/2				
Primary body of professional subjects							
Algebra and Number theory block							
Commutative algebra and algebraic geometry		5			3/1/0/m/5		
Group theory		5		3/1/0/e/5			
Analysis block							
Dynamical systems		5		3/1/0/e/5			
Fourier analysis and function series		5	3/1/0/e/5				
Partial differential equations 2		5		3/1/0/m/5			
Discrete mathematics block							
Theoretical computer science		5		3/1/0/m/5			
General and algebraic combinatorics		5	3/1/0/m/5				
Combinatorial optimization		5				3/1/0/e/5	
Geometry block							
Differential geometry and topology		5	3/1/0/e/5				
Representation theory		5				3/1/0/m/5	
Operations research block							
Linear programming		5			3/1/0/e/5		
Global optimization		5				3/1/0/m/5	
Stochastics block							
Stochastic analysis and applications		5			3/1/0/e/5		
Statistics and information theory		5		3/1/0/m/5			
Professional subjects of specialization							
Professional subjects of specialization, Algebra block							
Representation theory of rings and groups		5				3/1/0/m/5	
Advanced linear algebra		3	2/0/0/e/3				
Homological algebra		2	2/0/0/m/2				
Professional subjects of specialization, Analysis block							
Matrix analysis		3			2/0/0/e/3		
Operator theory		5	3/1/0/e/5				
Potential theory		3				2/0/0/m/3	
Inverse scattering problems		3		2/0/0/e/3			
Distribution theory and green functions						2/0/0/e/2	
Numerical analysis 2. partial differential equations		3				2/0/2/e/5	
Professional subjects of specialization, Discrete mathematics block							
Algorithms and their complexity		5				3/1/0/m/5	
Graphs, hypergraphs and their applications		5			3/1/0/m/5		
Professional subjects of specialization, Geometry block							
Projective geometry		5			3/1/0/m/5		
Combinatorial and discrete geometry		5		3/1/0/m/5			
Noneuclidean geometry		5	3/1/0/m/5				
Professional subjects of specialization, Operations research block							
Nonlinear programming		5				3/1/0/e/5	
Stochastic programming		5		3/1/0/e/5			
Professional subjects of specialization, Number theory block							
Algebraic number theory		3				2/0/0/e/3	
Analytical number theory		2				2/0/0/m/2	
Algebraic and arithmetical algorithms		5			3/1/0/m/5		
Professional subjects of specialization, Stochastics block							
Markov processes and martingales		5			3/1/0/e/5		
Stochastic differential equations		5				3/1/0/e/5	
Limit and large deviation theorems of probab.		5	3/1/0/e/5				
Stochastic models		2				2/0/0/m/2	

Subject			lectures/practical lectures/laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Advanced dynamical systems		2				2/0/0/m/2	
Statistics softwares 2		2		0/0/2/m/2			
Others							
Individual projects 1, 2		4		0/0/4/m/4	0/0/4/m/4		
Optional subjects in economy or social sciences		2		2/0/0/m/2			
Mathematical modelling 1, 2		1	2/0/0/m/1		2/0/0/m/1		
Optional subjects		8		3/0/0/e/3	5/0/0/e+m/5		
Diploma thesis					2/0/0/5	8/0/0/15	
SUM hours/credits			**26/30**	**25/30**	**25/30**	**20/30**	

Lecture/Practice/Laboratory/Exam type/Credit

Exam type: e=exam, m=midterm exam, s=signature

Curriculum of MSc in Applied Mathematics
Specialization in Applied Analysis

Subject			lectures/practical lectures/laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Theoretical foundations							
Analysis 3		6	3/3/0/e+m/6				
Analysis 4		2		1/1/0/m/2			
Functional analysis		6		4/2/0/e+m/6			
Partial differential equations		5	2/2/0/e/6				
Numerical methods		6	4/2/0/e/6				
Functional analysis		3		4/2/0/e+m/6			
Differential geometry		6		3/2/0/e+m/5			
Primary body of professional subjects							
Theoretical computer science		5		3/1/0/m/5			
General and algebraic combinatorics		5	3/1/0/m/5				
Commutative algebra and algebraic geom.		5			3/1/0/m/5		
Representation theory		5				3/1/0/m/5	
Differential geometry and topology		5	3/1/0/e/5				
Dynamical systems *		5		3/1/0/e/5			
Fourier analysis and function series *		5	3/1/0/e/5				
Partial differential equations 2 *		5		3/1/0/m/5			
Stochastic analysis and applications		5			3/1/0/e/5		
Statistics and information theory		5		3/1/0/m/5			
Global optimization		5				3/1/0/m/5	
Linear programming		5			3/1/0/e/5		
Professional subjects of specialization							
Percolation theory ***		2				2/0/0/m/3	
Mathematical methods of classical mechanics		2		2/0/0/m/2			
Numerical methods 2. Partial differential equations **		5				2/0/2/e/5	
Vector spaces in Physics		2	2/0/0/m/2				
Matrix analysis		3			2/0/0/e/3		
Mathematical chemistry **		5				2/0/2/e/5	
Operator theory		5	3/1/0/e/5				
Potential theory ***		3				2/0/0/m/3	
Inverse scattering problems		3			2/0/0/e/3		
Geometry of classical fields		2	2/0/0/m/2				
Statistical physics		3		2/0/0/e/3			
Distribution theory and green functions						2/0/0/e/2	
Others							
Individual projects 1, 2		4		0/0/4/m/4	0/0/4/m/4		
Optional subjects in economy or social sciences		2		2/0/0/m/2			
Mathematical modelling 1, 2		1	2/0/0/m/1		2/0/0/m/1		
Optional subjects		8		3/0/0/e/3	5/0/0/e+m/5		
Diploma thesis					2/0/0/5	8/0/0/15	
SUM hours/credits			**26/30**	**25/30**	**25/30**	**20/30**	

Lecture/Practice/Laboratory/Exam type/Credit. Exam type: e=exam, m=midterm exam, s=signature

*The courses marked by * are mandatory for the students who choose this specialization.*
*From the courses marked by ** respectively *** 1-1 is mandatory for the students who choose this specialization.*

Curriculum of MSc in Applied Mathematics
Specialization in Operations Research

Subject			lectures/practical lectures/laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Theoretical foundations							
Theory of algorithms		4	2/2/0/e/4				
Numerical methods 1		6	4/2/0/e/6				
Informatics 4		4		0/0/4/m/4			
Stochastic processes		6	2/2/0/e/6				
Mathematical statistics		5		2/2/0/e/5			
Introduction to macroeconomics		2	2/0/0/m/2				
Introduction to microeconomics		2		2/0/0/m/2			
Financial mathematics		6		2/2/0/e/6			
Operations research		4	2/2/0/m/4				
Optimization models		2	0/0/2/m/2				
Primary body of professional subjects							
Theoretical computer science		5		3/1/0/m/5			
General and algebraic combinatorics		5	3/1/0/m/5				
Commutative algebra and algebraic geom.		5			3/1/0/m/5		
Representation theory		5				3/1/0/m/5	
Differential geometry and topology		5	3/1/0/e/5				
Dynamical systems		5		3/1/0/e/5			
Fourier analysis and function series		5	3/1/0/e/5				
Partial differential equations 2		5		3/1/0/m/5			
Stochastic analysis and applications		5			3/1/0/e/5		
Statistics and information theory *		5		3/1/0/m/5			
Global optimization *		5				3/1/0/m/5	
Linear programming *		5			3/1/0/e/5		
Professional subjects of specialization							
Nonlinear programming		5				3/1/0/e/5	
Combinatorial optimization		5				3/1/0/e/5	
Stochastic programming		5		3/1/0/e/5			
Softwares in operations research		2			0/0/2/m/2		
Control systems		3			2/0/0/m/3		
Introduction to the economic dynamics		5	3/1/0/e/5				
Game theory		3	2/0/0/m/3				
Econometry		2	0/0/2/m/2				
Others							
Individual projects 1, 2		4		0/0/4/m/ 4	0/0/4/m/ 4		
Optional subjects in economy or social sciences 2				2/0/0/m/2			
Mathematical modelling 1, 2		1	2/0/0/m/1		2/0/0/m/1		
Optional subjects		8		3/0/0/e/3	5/0/0/e+m/5		
Diploma thesis					2/0/0/5	8/0/0/15	
SUM hours/credits			**26/30**	**25/30**	**25/30**	**20/30**	

Lecture/Practice/Laboratory/Exam type/Credit

Exam type: e=exam, m=midterm exam, s=signature

*The courses marked by * are mandatory for the students who choose this specialization.*

Curriculum of MSc in Applied Mathematics
Specialization in Financial Mathematics

Subject			lectures/practical lectures/laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Theoretical foundations							
Analysis 3		6	3/3/0/e+m/6				
Analysis 4		2		1/1/0/m/2			
Functional analysis		6		4/2/0/e+m/6			
Partial differential equations		5	2/2/0/e/6				
Stochastic processes		6	2/2/0/e/6				
Insurance mathematics		3		2/0/0/e/3			
Introduction to macroeconomics		2	2/0/0/m/2				
Introduction to microeconomics		2		2/0/0/m/2			
Financial mathematics		6		2/2/0/e/6			
Statistical softwares 1		2	0/0/2/m/2				
Stochastic models in bioinformatics		3		2/2/0/m/3			
Primary body of professional subjects							
Theoretical computer science		5		3/1/0/m/5			
General and algebraic combinatorics		5	3/1/0/m/5				
Commutative algebra and algebraic geom.		5			3/1/0/m/5		
Representation theory		5				3/1/0/m/5	
Differential geometry and topology		5	3/1/0/e/5				
Dynamical systems		5		3/1/0/e/5			
Fourier analysis and function series		5	3/1/0/e/5				
Partial differential equations 2		5		3/1/0/m/5			
Stochastic analysis and applications*		5			3/1/0/e/5		
Statistics and information theory*		5		3/1/0/m/5			
Global optimization		5				3/1/0/m/5	
Linear programming *		5			3/1/0/e/5		
Professional subjects of specialization							
Professional subjects of specialization Statistics block							
Nonparametric statistics		3		2/0/0/e/3			
Statistical softwares 2		2		0/0/2/m/2			
Professional subjects of specialization Stochastic systems block							
Markov processes and martingales		5			3/1/0/e/5		
Stochastic differential equations		5				3/1/0/e/5	
Financial processes		3				2/0/0/m/3	
Dynamical programming in financial mathematics			2/0/0/e/3				
Individual projects 1 (in stoch. Mathematics)		4				0/0/4/m/4	
Professional subjects of specialization Economy sciences block							
Extreme value theory		5	3/1/0/e/5				
Insurance mathematics 2		2				2/0/0/m/2	
Analysis of financial time series			0/0/2/m/2				
Multivariate statistics with applications		5		2/0/0/m/2			
Individual projects 2 (in math. economy)		4	0/0/4/m/4				
Others							
Optional course in economy or social sciences	2			2/0/0/m/2			
Mathematical modelling 1, 2		1	2/0/0/m/1		2/0/0/m/1		
Optional subjects		8		3/0/0/e/3	5/0/0/e+m/5		
Diploma thesis					2/0/0/5	8/0/0/15	
SUM hours/credits			**26/30**	**25/30**	**25/30**	**20/30**	

Lecture/Practice/Laboratory/Exam type/Credit

Exam type: e=exam, m=midterm exam, s=signature

*The courses marked by * are mandatory for the students who choose this specialization.*

Curriculum of MSc in Applied Mathematics
Specialization in Stochastics

Subject			lectures/practical lectures/laboratory				Requisities
Name	Code	Cre-dits	1	2	3	4	
Theoretical foundations							
Analysis 3		6	3/3/0/e+m/6				
Analysis 4		2		1/1/0/m/2			
Functional analysis		6		4/2/0/e+m/6			
Partial differential equations		5	2/2/0/e/6				
Stochastic processes		6	2/2/0/e/6				
Insurance mathematics		3		2/0/0/e/3			
Mathematics of economy and finance		6		2/2/0/e/6			
Mathematical Statistics		2		2/0/0/e/3			
Stochastic models in bioinformatics		3		2/2/0/m/3			
Primary body of professional subjects							
Theoretical computer science		5		3/1/0/m/5			
General and algebraic combinatorics		5	3/1/0/m/5				
Commutative algebra and algebraic geom.		5			3/1/0/m/5		
Representation theory		5				3/1/0/m/5	
Differential geometry and topology		5	3/1/0/e/5				
Dynamical systems		5		3/1/0/e/5			
Fourier analysis and function series		5	3/1/0/e/5				
Partial differential equations 2*		5		3/1/0/m/5			
Stochastic analysis and applications*		5			3/1/0/e/5		
Statistics and information theory*		5		3/1/0/m/5			
Global optimization		5				3/1/0/m/5	
Linear programming		5			3/1/0/e/5		
Professional subjects of specialization							
Professional subjects of specialization Statistics block							
Multivariate statistics with applications		5	3/1/0/e/5				
Nonparametric statistics		3		2/0/0/e/3			
Statistical softwares 2		2		0/0/2/m/2			
Professional subjects of specialization Stochastic block							
Markov processes and martingales		5			3/1/0/e/5		
Stochastic differential equations		5				3/1/0/e/5	
Financial processes		3				2/0/0/m/3	
Others							
Limit and large deviation theorems of probab.	5			3/1/0/e/5			
Stochastic models***		2		2/0/0/m/2			
Advanced dynamical systems***		2		2/0/0/m/2			
Individual projects 1, 2		4		0/0/4/m/4	0/0/4/m/4		
Optional subjects of economy or social sci.		2		2/0/0/m/2			
Mathematical modelling 1, 2		1	2/0/0/m/1		2/0/0/m/1		
Optional subjects				3/0/0/e/3	5/0/0/e+m/5		
Diploma thesis					2/0/0/5	8/0/0/15	
SUM hours/credits			**26/30**	**25/30**	**25/30**	**20/30**	

Lecture/Practice/Laboratory/Exam type/Credit

Exam type: e=exam, m=midterm exam, s=signature

The courses marked by * are mandatory for the students who choose this specialization.

One of from the courses marked by *** is mandatory for the students who choose this specialization

Curriculum of MA in Cognitive Science

Subject			lectures/practical lectures/laboratory				
Name	Code	Cre-dits	1	2	3	4	Requisities
Theoretical foundations							
Neurobiology	BMETE47MC00	5	2/2/0/e/5				
Mathematics	BMETE92MC11	5	2/0/2/e/5				
Informatics	BMETE92MC19	3	2/0/0/m/3				
Statistics and Methodology	BMETE92MC20	5	2/0/2/e/5				
Introduction to Cognitive Science	BMETE47MC01	3	2/0/0/m/3				
Cognitve Psychology 1	BMETE47MC04	3	2/0/0/e/3				
Introduction to Linguistics	BMETE47MC02	3	2/0/0/m/3				
Psycholinguistics	BMETE47MC05	5		2/0/2/e/5			Introduction to Linguistics
Neuropsychology	BMETE47MC06	5		2/0/2/e/5			Neurobiology
Evolutionary Psychology	BMETE47MC07	3		2/0/0/e/3			Introduction to Cognitive Sci.
Epistemology	BMEGT41M410	3		2/0/0/m/3			
Cognitve Psychology 2	BMETE47MC04	5		2/0/2/e/5			
Computer Programming	BMETE47MC08	3		0/2/0/m/3			Informatics
Intelligent Systems	BMEVITMM031	3		2/0/0/m/3			Informatics
Philosophy of Science	BMEGT41M411	3		2/0/0/m/3			
Professional subjects							
Introduction to Cultural Studies	BMEGT43M410	3			2/0/0/e/3		Philosophy of Science
Historical Reconstruction of Sci. Thinking	BMEGT41M413	5			2/2/0/e/5		Philosophy of Science
Cognitive Neuroscience	BMETE47MC11	5			2/0/2/e/5		Neuropsychology
Child Language	BMETE47MC12	5			2/2/0/e/5		Psycholinguistics
Professional subjects of specialization							
Professional subjects of specialization Cognitive Neuroscience block							
Perception and Learning	BMETE47MC13	3			2/0/0/m/3		Neuropsychology
Visual Neuroscience	BMETE47MC14	3			2/0/0/m/3		Neuropsychology
Cognitve Informatics in Human Vision	BMEVITMM032	3			2/0/0/m/3		Informatics
MatLab	BMETE92MC14	3			2/0/0/m/3		Informatics
Professional subjects of specialization Psycholinguistics block							
Pragmatics and Cognitive Linguistics	BMETE47MC15	3			2/0/0/m/3		Introduction to Linguistics
Language Understanding and Production	BMETE47MC16	3			2/0/0/m/3		Psycholinguistics
Aphasia	BMETE47MC17	3			2/0/0/m/3		Psycholinguistics
Speech perception and production	BMEVITMJV62	4			2/2/0/m/4		Psycholinguistics
Professional subjects of specialization Cognitive Models of Science block							
Theory of Science	BMEGT41M412	3			2/0/0/m/3		Philosophy of Science
Philosophy of Mind	BMETE47MC18	3			2/0/0/m/3		Philosophy of Science
Logical Reasoning		3			2/0/0/m/3		Philosophy of Science
Others							
Elective course		3	2/0/0/m/3	2/0/0/m/3			
Research Seminar	BMETE47MC20	10				0/0/10/m/10	Introduction to Cognitive Sci.
Thesis Work	BMETE47MC21	20			0/2/0/m/3	0/20/0/e/20	Introduction to Cognitive Sci.
SUM hours/credits			**22/30**	**22/30**	**22/30**	**30/30**	

Lecture/Practice/Laboratory/Exam type/Credit

Exam type: e=exam, m=midterm exam, s=signature

FACULTY OF ECONOMIC AND SOCIAL SCIENCES

General Information

Based on the long tradition of providing education in the fields of economics, management and social sciences, in 1998 the Budapest University of Technology and Economics established a new faculty, the 'Faculty of Economic and Social Sciences' employing 300 instructors and researchers.

Parallel to the traditional five-year university training, according to the Bologna model the two-cycle system (for BSc and MSc degrees) was introduced in 2006.

The accredited full time degree programs in Economics, Engineering Management, Communication and Media Studies, Teachers Training in Vocational Fields are carried out according to the latest European standards. Besides its own training programs the Faculty co-operates closely with all the engineering faculties of the University providing courses in management, economics, social sciences, languages and physical education.

Additionally the Faculty offers different kinds of post-graduate programs and short-term courses of various types.

Currently more than 100 PhD students are participating in different individual research programs in different areas of economic and social sciences.

The Faculty of Economic and Social Sciences pays special attention to the integration of theoretical and practical knowledge in its curricula and Faculty has established strong professional relationships with the participants of various economic fields (profit and non profit oriented institutions, banks etc).

Educational and Research Activities

The total number of participants of different graduate-, postgraduate and distance learning forms of training launched by the faculty is about 6000. The number of full-time students of basic training of the faculty itself has been increasing. Research is conducted in 2 doctorate (PhD) schools.

Languages, International Studies

Dutch, English, French, German, Italian, Spanish, Russian and Hungarian as a foreign language are taught at levels from A1 to C1 by 80 lecturers and language instructors at BME Centre of Modern Languages. Language instruction for Specific Purposes (LSP) as well as translator and interpreter training are also offered by the Centre.

Students can sit for nationally and internationally accredited general and specific (LSP for   Economics or Engineering) language exams at 3 different levels (B1, B2 and C1) at the BME Language Examination Centre.

The teaching staff of the Centre is actively involved in the Hungarian and Central European Studies programme (for detailed description see the section of Hungarian and Central European Studies).

Physical Education

The University offers a wide range of curricular and extra-curricular forms of physical education. The Department of Physical Education co-operates with the University Sports Club and other student sports organisations.

Farkas Heller Foundation

Farkas Heller was a world famous professor of economics and former rector of the University. The foundation established in 1999 in his honour provides for the development of training and research at the Faculty. The foundation operates as an organization of common benefit. The foundation receives donations from different organizations for different general and specified tasks that would promote the establishment of further forms of cooperation with companies, research centres and other organizations.

Harvard Businessmanager

It is a great honour for us that professors of our faculty form the editorial board of Harvard Businessmanager, the Hungarian version of the outstanding international business journal Harvard Business Review.

Institutes and Departments

Institute of Applied Pedagogy and Psychology
Department of Ergonomics and Psychology
Department of Technical Education
Centre for Continuing Engineering Education
Centre for Learning Innovation and Adult Learning
Institute of Economic Sciences
Department of Environmental Economics
Department of Economics
Institute of Social Studies
Department of Philosophy and History of Science
Department of Sociology and Communication
Institute of Business Sciences
Department of Management and Corporate Economics
Department of Finance and Accounting
Department of Business Law

Center of Modern Languages
BME Language Examination Centre
English Department
German Department
Department of Romance Languages
 Section of Hungarian Language
 Section of Slavic Languages

Center of Physical Education

Budapest University of Technology and Economics
Faculty of Economic and Social Sciences
Faculty Office:
Building "Q" wing A, Mezzanine-floor, Room 5.
Mailing Address: Magyar tudósok krt. 2.
H-1111 Budapest, Hungary
Phone: (+36-1) 463-3591
Fax: (+36-1) 463-3590

Dean of the Faculty: Dr. János Kövesi
Vice-Deans of the Faculty:
Dr. Zoltán Sturcz (general and education)
Dr. Annamária Orbán (scientific and international)
Dr. Gábor Bóta (finance)

FACULTY OF TRANSPORTATION ENGINEERING
AND VEHICLE ENGINEERING

The Faculty of Transportation Engineering and Vehicle Engineering has been training engineers in the field of transportation and vehicle engineering since 1951. Since that time, the profile of engineering training has been widened several times. Actually, conforming to the linear training at the Faculty of Transportation Engineering and Vehicle Engineering, there are three basic specifications:

- BSc in Transportation Engineering,
- BSc in Vehicle Engineering,
- BSc in Logistics Engineering,

As the second stage of the linear training courses (BSc), there are three master training courses (MSc) in the same fields, i.e:

- Transportation Engineering master specialty,
- Vehicle Engineering master specialty,
- Logistics Engineering master specialty.

With adequate BSc qualification certified engineering qualification (MSc) can be obtained in 2 years at these master training specialties. All the fundamental and complementary educations continued at the Faculty are carried out in accordance with the rules of the ECTS (European Credit Transfer System). The quantity of students' labour necessary for attaining the knowledge material of an arbitrary subject is measured through credit-points. One credit-point means on average 30 hours of student's labour, one study semester contains a study material with the quantity of 30 credit-points.

Departments:

Department of Material Handling and Logistics Systems
Department of Automobiles and Vehicle Manufacturing
Department of Vehicle Elements and Vehicle-Structure-Analysis
Department of Control for Transportation and Vehicle Systems
Department of Transport Technology and Economics
Department of Aeronautics, Naval Architecture and Railway Vehicles

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Budapest University of Technology and Economics
Faculty of Transportation Engineering and
Vehicle Engineering

Faculty Office:	*Dean of the Faculty: Dr. István Varga*
Building R, 1st Floor, Room No. 105.	*Vice-Dean of the Faculty: Dr. András Eleod*
Mailing Address: Műegyetem rkp. 7-9.	*Program Co-ordinator: Ms. Edit Szalai*
H-1111 Budapest, Hungary	
Phone: (+36-1) 463-4140	
Fax: (+36-1) 463-2550	

Description of BSc training

BSc in Transportation Engineering
　　Length of study: 7 semesters

　　Program objectives: The education of transportation engineers, who are able to design, arrange, operate and control transportation and transport-logistics processes, to fulfil the related official and management tasks, as well as the works related to the selection, operation and maintenance of equipments realising processes, including the elements of infrastructure, informatics and control systems, as well. Possessing the obtained knowledge, the BSc graduated transportation engineers will be able to continue their studies in the second cycle of engineering education (leading to an MSc degree).
　　Specialisations: Road transport processes, Railway transport processes, Air transport processes, Processes of ship transport, Transportation processes, Haulage Management
　　Competencies and skills: The transportation engineers received a basic certificate (BSc) - taking into consideration also the specialisations - become able:
- to recognise the demands for transportation and transportation-logistics, to determine the relationships to be applied,
- to exert active detailed cognition of transportation-and transportation logistics processes, to manage the processes mentioned together with their technical realisation,
- to design processes in accordance with the function of transportation and transportation-logistics systems, to select the technical components and to manage the operation of the system,
- to keep in operation vehicles and mobile machines serving the transportation process, to make the control systems operated, to take into consideration the environmental factors,
- to perform designing, organising and keeping in operation duties,
- to carry out public service and marketing activities.

BSc in Vehicle Engineering
　　Length of study: 7 semesters

　　Program objectives: The education of vehicle engineers, who are able to keep in operation road vehicles, railway vehicles, aircraft and ships, as well as building machines and materials-handling machines in a system oriented way, taking into consideration the characteristics of the transportation and transport-logistics processes, furthermore to solve the basic tasks of engineering, concerning their design, development, manufacturing and repair. They can perform special missions with emphasized regard to transport safety, environment protection and energy planning. Possessing the obtained knowledge, the BSc graduated vehicle and mobile-machinery engineers will be able to continue the studies in the second cycle of engineering education (leading to an MSc degree).
　　Specialisations: Railway vehicles, Road vehicles, Aircraft, Ships, Buildings machines, Automated materials-handling equipments and robotics, Vehicle manufacturing, Vehicle mechatronics, Vehicle superstructures.
　　Competencies and skills: Possessing the basic certificate, the vehicle engineers - taking into consideration also the prospective specialisations - become able:
- to determine the necessary equipment for the realisation of transportation and logistic processes,
- to organize, arrange, control the safe, the powerful and environmental-protective operation of vehicles, vehicle systems, mobile machines, materials-handling machines and machine systems,
- to perform the basic engineering tasks related to the designing, manufacturing, repair, as well as organisation of vehicles and mobile-machinery,
- to provide and organize the official work related to installation and operation of vehicles and mobile-machinery.

BSc in Logistics Engineering
　　Length of study: 7 semesters

　　Program objectives: The education of logistics engineers, who are able to analyse, organise and manage the logistics processes and systems related to the material and information flow (transportation, material handling, storage, commission, loading, acquisition, distribution, recycling) inside and outside of enterprises, and further, to solve the basic tasks of engineering; concerning their design, development, manufacture and repair. Possessing the obtained knowledge, the BSc graduated logistics engineers will be able to continue their studies in the second cycle of engineering education (leading to an MSc degree).
　　Specialisations: Logistic processes, Technical logistics, Shipping logistics
　　Competences and skills: Possessing the basic certificate, the logistics engineers - taking into consideration also the prospective specialisations - become able:

63

- to define the equipment necessary to realize logistics systems and processes,
- to organize, arrange, control logistics systems in a safe and environmentally-friendly way,
- to perform the basic engineering tasks related to the design, manufacture and repair, as well as the organization of material handling machines,
- to provide and organize the official work related to the installation and operation of logistics machinery.

Actually, due to changes in basic training (BSc) our Faculty can ensure training in English with tuition fee for the time being only part-time (attending term at other faculties, training exchange students). The list of optional subjects in the given term is on website: http://english.www.bme.hu/studies/

Description of MSc training

MSc in Transportation Engineering
Length of study: 4 semesters

Program objectives: The MSc level education of transportation engineers, who are prepared to analyse, to design, to organise and to control transportation processes and systems taking into consideration the principles of economics and system orientation. They are prepared to carry out management and official tasks, as well as to select and keep vehicles and equipment in operation as elements of transportation systems, including the elements of infrastructure and informatics systems, too.

Competencies and skills: Possessing the MSc degree, transportation engineers are able:

to recognise connections between systems and processes of transportation, to evaluate and to handle them in the framework of system theory, as well as to apply the related principles and methods,

connected with the specialization selected, to carry out state assessments, to develop, design, organise and control complex transportation systems.

Basic specialization accepted to the input without any conditions:
- basic specialization of transportation engineering

Basic specializations accepted to the input under given conditions:
- mechanical engineering;
- mechatronics engineering;
- military staff and safety technology engineering;
- civil engineering;
- engineering informatics;
- light industry engineering.

Curriculum of MSc in Vehicle Engineering

Subject			
Name	Code	Cre-dits	C/P/L
Basic knowledge of natural science			
Engineering mathematics	BMEKOVJM101	4	2/1/0/m
Control theory	BMEKOKAM102	3	2/0/0/e
Electronics - electronic measur. syst.	BMEKOKAM103	4	2/1/0/m
I+C technologies	BMEKOKAM104	3	2/1/0/m
System technique - system modelling	BMEKOVJM108	3	2/1/0/m
Advanced materials and technologies	BMEKOJJM107	4	2/1/0/m
Economical and human knowledge			
Decision making methods	BMEKOKGM110	4	3/1/0/m
Project management	BMEKOKGM111	2	2/0/0/m
Professional basic knowledge			
Informatics in logistics	BMEKOKUM301	5	3/0/1/e
Planning of mat. handl. and w. systs I.	BMEKOKUM302	3	1/1/0/m
Planning of mat. handl. and w. systs II.	BMEKOKUM303	5	2/2/0/ e
Logistics machine, equipment, robotics	BMEKOEAM304	5	2/1/1/e
Control and automation of logistic sys.	BMEKOEAM305	5	2/1/1/e
Database systems in logistics	BMEKOEAM306	4	2/0/1/e
Specialisation in processes in logistics			
Planning of logistic processes	BMEKOKUM307	6	2/1/2/e
Enterprise logistics	BMEKOKUM308	6	2/1/1/e
Production logistics - production plan.	BMEKOEAM309	4	2/0/1/e
Operation of logistics systems	BMEKOKGM310	4	2/0/1/m
Specialisation in technical logistics			
Data communication systems	BMEKOEAM311	6	2/1/2/e
Materials handl. in flex. manufact. sys.	BMEKOEAM312	4	2/0/1/e
Machine intelligence	BMEKOEAM313	4	2/0/1/m
Robots and applications	BMEKOEAM314	6	2/1/1/e

MSc in Vehicle Engineering
Length of study: 4 semesters

Program objectives: The MSc level education of vehicle engineers, who are prepared to develop, design, manufacture and research operation processes, as well as to keep in operation, maintain railway vehicles, road vehicles, agricultural vehicles, ships, aircraft, building machines and materials-handling machines taking into consideration the requirements of safety, environment protection and energy management.

Competencies and skills: Possessing the MSc degree, vehicle engineers are able:

- to integrate a system oriented and process analysing way of thinking directed on vehicles and mobile-machinery, having a role in transportation processes,
- connected with the specialization selected, to carry out assessments, to develop, design, organise and control complex systems of vehicle technology.

Curriculum of MSc in Transportation Engineering

Subject			
Name	Code	Cre-dits	C/P/L
Basic knowledge of natural science			
Engineering mathematics	BMEKOVJM101	4	2/1/0/m
Control theory	BMEKOKAM102	3	2/0/0/e
Electronics - electronic measurem. syst.	BMEKOKAM103	4	2/1/0/m
I+C technologies	BMEKOKAM104	3	2/1/0/m
Mechanics K	BMEKOJKM105	3	2/1/0/m
Advanced materials and technologies	BMEKOJJM107	4	2/1/0/m
Economical and human knowledge			
Decision making methods	BMEKOKGM110	4	3/1/0/m
Project management	BMEKOKGM111	2	2/0/0/m
Professional basic knowledge			
Transport Economics	BMEKOKGM201	4	2/1/0/e
Transport automation	BMEKOKAM202	4	2/1/0/e
Transport informatics	BMEKOKUM203	5	2/0/2/m
Traffic flow	BMEKOKUM204	4	2/1/0/e
Intelligent transport systems	BMEKOKUM205	5	2/0/2/e
Transport operation	BMEKOKUM206	5	2/2/0/e
Specialisation in transportation systems			
Logistics	BMEKOKUM207	5	3/1/0/e
Passenger transport	BMEKOKUM208	5	2/0/2/e
Transport modelling	BMEKOKUM209	6	1/0/3/m
Environmental effects of transport	BMEKOKUM210	4	2/1/0/e
Specialisation in transport automation			
Signal processing in transport	BMEKOKAM211	5	2/2/0/e
Inf. connect. of the vehic. and the track	BMEKOKAM212	3	2/0/0/e
Model. and contr. of vehic. and traf systs.	BMEKOKAM213	3	2/0/0/e
Engineering of trans. automat. systems	BMEKOKAM214	9	2/0/5/m
Specialisation in transportation engineering-management			
Controlling systems in transportation	BMEKOKGM215	6	4/0/0/e
Financing techniques in transportation	BMEKOKGM216	5	1/0/3/m
Management of transport and logistic service	BMEKOKGM217	6	2/2/0/e
Human resource management in transportation	BMEKOKGM218	3	1/0/2/e

Basic specialization accepted to the input without any conditions:
- basic specialization of transportation engineering

Basic specialization accepted to the input under given conditions:
- mechanical engineering;
- mechatronics engineering;
- military staff, and safety technology engineering;
- agricultural and food industrial engineering;
- engineering informatics.

MSc in Engineering Logistics
Length of study: 4 semesters

Program objectives: The MSc level education of logistics engineers, who are prepared to analyse, design, organise and control logistic processes and systems with regard to the management of material-flows and connected information-flows realised between the companies concerned. They are prepared to design, develop and take part in manufacturing and quality control, as well as to control the operation of logistic machinery, tools and equipments of elements of logistic systems.

Competencies and skills: Possessing the MSc degree, logistic engineers are able to interconnect the component-processes of logistic systems and the component-units performing the physical realisation of the former relationships.

Basic specialization accepted to the input without any conditions:
- basic specialization of transportation engineering

Basic specialization accepted to the input under given conditions:
- mechanical engineering;
- mechatronics engineering;
- military staff, and safety technology engineering;
- agricultural and food industrial engineering;
- engineering informatics;
- light industry engineering.

Admittance to master courses (MSc) ensured by the announced training, partly in English language, is possible in case of meeting the input conditions, passing entrance examination and in case of at least 5 students' participation.

Curriculum of MSc in Engineering Logistics

Subject			
Name	Code	Cre-dits	C/P/L
MSc in Engineering Logistics			
Basic knowledge of natural science			
Engineering mathematics	BMEKOVJM101	4	2/1/0/m
Control theory	BMEKOKAM102	3	2/0/0/e
Electronics - electronic meas. syst.	BMEKOKAM103	4	2/1/0/m
System technique and analysis	BMEKOVJM109	3	2/1/0/m
Mechanics J	BMEKOJKM106	3	2/1/0/m
Advanced materials and technologies	BMEKOJJM107	4	2/1/0/m
Economical and human knowledge			
Decision making methods	BMEKOKGM110	4	3/1/0/m
Integrated quality management systems	BMEKOGJM112	2	2/0/0/m
Professional basic knowledge			
Comp. aided concept., dimens. and m.	BMEKOJHM401	8	2/2/2/e
Vehicle operation, reliability and diag.	BMEKOVJM402	3	2/0/0/e
Materials flow and technical logistics	BMEKOEAM403	2	2/0/0/m
Mechatronics, robotics and microcomp.	BMEKOKAM404	5	2/1/1/e
Vehicle body structures	BMEKOJKM405	3	1/1/0/e
Vehicle engines and transmission syst.	BMEKORHM406	6	3/1/1/e
Specialisation in railway vehicle engineering			
Design and testing of railway vehicle sys.	BMEKOVJM407	9	2/0/5/m
Railway vehicle system dynamics	BMEKOVJM408	4	2/1/0/e
Operation of railway vehicles	BMEKOVJM409	3	2/0/0/e
Diesel and electric traction	BMEKOVJM410	4	2/1/0/e
Specialisation in automobile engineering			
Engine design	BMEKOGJM411	6	2/0/2/e
Transmission syst. design and veh. mech.	BMEKOGJM412	4	2/1/0/e
Suspension design and vehicle dynamics	BMEKOGJM413	4	2/1/0/e
Vehicle constr. and design, road safety	BMEKOGJM414	6	2/0/3/m
Specialisation in naval architect engineering			
Design and testing of ships	BMEKORHM415	8	2/2/2/e
Theory and propulsion of ships III.	BMEKORHM416	4	2/0/1/e
Manufacturing and operation of ships	BMEKORHM417	3	2/0/0/e
Construction of ships	BMEKORHM418	5	2/0/2/m

Subject			
Name	Code	Cre-dits	C/P/L
Specialisation in aircraft engineering			
Design and testing of aircrafts	BMEKORHM419	9	2/0/5/m
Flight theory	BMEKORHM420	4	2/1/0/e
Theory of aircraft engines	BMEKORHM421	4	2/1/0/e
Construction of aircraft	BMEKORHM422	3	2/0/0/e
Specialisation in mobile machine and building machine engineering			
Dynamics of logistical machines	BMEKOEAM423	5	2/0/2/e
Mobile hydrostatic system	BMEKOEAM424	5	2/1/1/e
Design of concrete technology's mach.	BMEKOEAM425	5	2/0/2/e
Construction processes	BMEKOKUM426	5	2/1/0/m
Specialisation in automated materials-handling engineering			
Theory of mat. handling machine design	BMEKOEAM427	5	2/1/1/e
Network control syst. of mat. handling	BMEKOEAM428	5	2/0/2/m
Mechatronics	BMEKOEAM429	5	2/1/1/e
Automated materials handling systems	BMEKOEAM430	5	2/0/1/e
Specialisation in vehicle manufacturing and vehicle repair			
Measuring syst in the vehicle manufact.	BMEKOJJM431	3	2/0/0/m
Vehicle manufacturing systems	BMEKOJJM432	9	2/2/4/e
Surface engineering	BMEKOJJM433	5	2/0/1/e
Typical vehicle-production technologies	BMEKOJJM434	3	2/0/0/e
Specialisation in vehicle system engineering			
Measurm. techn. and signal proc. in veh.	BMEKOKAM435	5	2/0/2/m
Vehicle system dynamics and control	BMEKOVJM436	7	2/2/1/e
Vehicle system informatics	BMEKOVJM437	5	2/0/2/e
Vehicle simulation and optimisation	BMEKOVJM438	3	2/0/0/e
Specialisation in transportation safety			
Road safety, accident reconstruction	BMEKOGJM439	6	2/1/1/e
Vehicle eval, traffic environ., human fact.	BMEKOGJM440	5	2/1/1/e
Dynamics of vehicle	BMEKOGJM441	4	2/0/0/e
Motor vehicle measurements	BMEKOGJM442	5	2/0/3/m
Specialisation in alternative vehicle drive system			
Design of alternative vehicle drive syst.	BMEKOGJM443	7	2/2/1/e
Control of hybrid vehicle systems	BMEKOGJM444	5	2/0/2/e
Dynamics of electro-hybrid vehicles	BMEKOGJM445	3	2/0/0/e
Design of mech. comp. for alt.. drive syst.	BMEKOGJM446	5	2/0/2/m

Description of the Doctoral training

The mission of the "Doctoral School of Mechanical Engineering Sciences "Kálmán Kandó" is to prepare students for doctoral procedures in an organized form in the field of vehicles and vehicle systems, as well as with the machines of mechanisation of building and materials handling machines. The Doctoral School ensures high level training in system-modelling, process analysis, designing, automation and measurement procedures, as well as in evaluation of system-reliability, in safety maximisation and in optimum material selecting, furthermore in vehicle and mobile machine maintenance and repair technology development. The name of the predecessor Doctoral Program was "Vehicles and Mobile Machines", the head of the predecessor program was Prof. Pál Michelberger, full member of the Hungarian Academy of Scineces (HAS), from 1994 untill 2001. From 2001 Prof. István Zobory, Doctor of the HAS is the head of the Doctoral School.

The identification number of the Doctoral School at the University is 146. The Doctoral School has been qualified by the Hungarian Accreditation Committee (MAB), under MAB decision number 2010/10/XII/3/2/392, according to this, the Doctoral School is evaluated as "Adequate". The decision is valid until August 31, 2014.
In the framework of the Doctoral School, the following seven "Doctoral Programs" are cultivated:
- **Railway Vehicle Systems.** Head of Program: Prof. István Zobory, Doctor of the HAS,
- **Road Vehicle Systems.** Head of Program: Prof. László Palkovics, corresp. member of the HAS,
- **Systems of Aircraft and Ships.** Head of Program: Prof. József Rohács, Dr. habil.,
- **Systems of Building Machines, Materials Handling Machines and Entrepreneurial Logistics.** Head of Program: Prof. Béla Kulcsár, Dr. habil.,
- **Vehicle Elements and Drive Systems.** Head of Program: Prof. András Eleőd, Doctor of the HAS,
- **Techniques of Vehicle Manufacturing and Repair.** Head of Program: Prof. János Takács, Dr. habil.,
- **Vehicle Chassis- and Light Weight Structures.** Head of Program: Prof. Gábor Vörös, Doctor of the HAS,

Among the heads of programs there are Széchenyi Prize-winner and Apáczai Csere János Prize-winner professors.

The mission of the Doctoral School of Transportation Sciences "Gábor Baross" is to prepare students in an organised form for the doctoral procedures connected with the analysis, modelling, economical realising and evaluating of passenger and goods transportation, as well as logistical processes. From the academic year 2000/2001, the doctoral training is going on in the framework of Doctoral Schools. The name of the predecessor Doctoral Program was "Transportation Science", the heads of the predecessor program were: Prof. Elemér Borotvás, Doctor of transport sciences, from 1994 until 1999, from 1999 until 2000 Prof. Éva Köves-Gilicze, Doctor of the HAS, and actually Prof. József Bokor, Full member of the HAS is leading this doctoral school.

The identification number of the Doctoral School at the University is 147. The Doctoral School has been qualified by the Hungarian Accreditation Committee (MAB), under MAB decision number 2010/10/XII/3/2/392, according to this the Doctoral School is evaluated as "Adequate". The decision is valid until August 31, 2014. This Doctoral School is unique in Hungary, where the right of issuing PhD degrees in the field of Transportation sciences is guaranteed. In the framework of the Doctoral School the following three "Doctoral Programs" are cultivated:
- **Transportation and Logistical processes and Systems.** Head of Program: Prof. Éva Köves-Gilicze, Doctor of the HAS,
- **Systems for Transportation Control and Regulation.** Head of Program: Prof. József Bokor, Full member of the HAS,
- **Systems for Transportation Economy and Operation.** Head of Program: Prof. Katalin Tánczos, Doctor of the HAS.

All the three heads of programs are Széchenyi Prize-winner professors.

KIR JÒZSEF

MŰEGYETEM

Pre-Engineering Course

The Budapest University of Technology and Economics (BME) is one of the leading universities in Europe and a member of CESAER (Conference of European Schools for Advanced Engineering Education and Research), with a high admission standard.

The Hungarian secondary schools have very high level final exam in mathematics and physics, one of the highest in the world, as it has been proved through international competitions. Very often, there is a gap between the Hungarian and foreign students' secondary school's education program as far as the preparation for engineering studies are concerned. Many students are not trained enough to solve complex problems.

Therefore the Pre-Engineering Course is designed to help students develop the basic skills necessary to successfully pursue engineering studies at the Budapest University of Technology and Economics or any other engineering or science-oriented university with high academic standards.

The program lasts one academic year and offers intensive instruction in mathematics, physics, and English language. In addition, students are introduced to conceptual approaches in engineering.

New students at the Budapest University of Technology and Economics take a required Placement Test on the week before the academic year starts (see the Academic Calendar). Based on the results of this test, students will either be accepted into the first semester of the undergraduate program (BSc), or will be instructed to the Pre-Engineering Course prior to the undergraduate program.

Students who think they would benefit from the profound preparation of the Pre-Engineering Course may simply register for the Pre-Engineering Course (without taking the Placement Test).

Exams are given at the end of each semester of the Pre-Engineering Course. Students who achieve at least good results at the end of the second semester can begin their first year engineering studies at the Budapest University of Technology and Economics without taking the Placement Test.

Students who will not continue their studies at the Budapest University of Technology and Economics can take any of the individual subjects on a credit basis. Acceptance of the credits depends on the student's home institution.

Budapest University of Technology and Economics
Central Study Office

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Műegyetem rkp. 3-9. bldg. R, Hungary
Phone: (+36-1) 463-4140
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Course Director: Dr. Zsolt Papp
Office: Building F. room 10, tel.: +36-1-463-4179
Program Co-ordinator: Ms. Edit Szalai.

Description of Subjects

Description of 1ˢᵗ Semester Subjects (Fall)

Introductory Physics I

Mechanics

Principles and concepts of classical physics. Vector and scalar quantities. Motion in one and two dimensions. Projectiles. Newton's laws. Conservative and dissipative forces. Equilibrium of rigid bodies. Levers, pulleys. Torque, circular motion, angular acceleration, moment of inertia. Linear and angular momentum. Work and energy. Energy of rotational motion, work of spring. Laws of conservation. 2 hours of lectures with demonstrational experiments and problem solving practice 4 hours/week.

Electricity

Fundamental phenomena of electrostatics. Electric charge, field strength. Electric potential and voltage. Electric polarization. Capacitors. Energy of the electric field. Electric current. Electric power. Electric circuits. Magnetic field produced by current. Electromagnetic induction. Self induction. Transformers. Alternating current. Electrical oscillations. Electromagnetic waves. 2 hours of lectures with demonstrational experiments and problem solving practice 4 hours /week.

Introductory Mathematics I

Algebra

Real numbers and algebraic expressions. Fundamental laws, identities. Equations in one variable: linear and quadratic equations. Applications to word problems. Quadratic formula, relationship between roots and coefficients, the discriminant. Radical equations, extraneous roots. System of equations in two or more variables. Word problems. Exponents, integer and fractional. Laws of exponents. 4 hours /week.

Geometry

Elements of geometry: circumference and area of geometric figures, surface area and volume of geometrical solids. Right triangle trigonometry. Law of cosines and sines. To solve a triangle. Trigonometric identities, equations. 4 hours/week. Compulsory English for Pre-Eng. Students I.

(0 credit)

Description of 2ⁿᵈ Semester Subjects (Spring)

Introductory Physics II

Vibration, Waves, and Thermodynamics

Elastic properties of materials, vibrational motion. Simple and physical pendulum. Wave motion. Transverse and longitudinal waves. Interference. Standing waves. Polarization of transverse waves. Sound waves. Thermodynamics: temperature and the behavior of gases, the ideal gas law, specific and molar heat capacity, first and second laws of thermodynamics, entropy, Carnot theorem and conservation of energy, refrigerators and heat pumps. 2 hours of lectures with demonstrational experiments and problem solving practice 4 hours /week.

Optics and Atomic Physics

Optics: fundamental concepts of optics; reflexion, refraction, dispersion of light; coherence of light; light as electromagnetic wave; interference, diffraction, polarization; holograms. Atomic physics: photoelectric effect; wave particle dualism; hydrogen atom model. 2 hours of lectures with demonstrational experiments and problem solving practice 4 hours/week.

Introductory Mathematics II

Algebra

Factoring. Sets: definition, notations, subset. Operations with sets. Wenn diagrams. The set of real numbers, intervals. Linear and quadratic inequalities. Functions: definition, domain and range of a function. Properties of functions. Inverse of a function. Exponential and logarithmic functions and equations. Absolute value, equations and inequalities involving absolute values. Sequences. Arithmetic and geometric progressions. Geometric progression with an infinite number of terms. 4 hours/week.

Geometry

Coordinate system. Distance and midpoint formula. To sketch a graph. Equations of a line. The circle. Quadratic functions and parabolas. Ellipse and Hyperbola. Trigonometric functions. Complex numbers. Complex algebra. 4 hours/week.

Computer Algebra

Introduction. What is Maple? The Command window. The Maple Syntax. Mathematical functions. The Maple Packages. Data types and operations. Expression sequences, arrays, sets. Plot structures. Basic plotting. Solving equations exactly and approximately. Preparing report with Graphs, comments. Applications. 2 hours/ week.

Compulsory English for Pre-Eng. Students

(0 credit)

Elective subjects (2nd Semester)

Computing

General informations about computers and peripheral devices. Algorithms and programs. PASCAL Programming Language. 2 hours/week.

Engineering Drawing

Rules and conventions of engineering drawing. Descriptive geometry. 2 hours/week.

Advanced Algebra

Functions (definition, domain, range, graph, zeros). Operations on functions. Power functions, polynomials. Graph of polynomials and rational functions using zeros and asymptotic behaviour at infinity. Limit of functions. Calculating limits. Convergent, divergent sequences. Calculating limits of sequences. Monotonic, bounded sequences. 2 hours/week.

Graduation Speech

"Do not go where the path may lead, go instead where there is no path and leave a trail"

I am most honored to be called amongst many to give this speech on this special occasion. I stand here today to reinforce character and vision.

I started by grace and have finished by grace, and I thank God, my parents, my lecturers, my fellow graduating students, and of course you sited here as well as my friends, for this rare opportunity to stand before you. Have you ever sat in your mums chair at her office, and in her absence you had to sign the collection of a letter (your admission letter) which was delivered to her, and yet you did not know it was your admission letter to school abroad, I guess not, but that was me signing the collection of that letter more than four years ago.

Leaving your mother land to a foreign land to be educated should not be done without vision/dream. Four and half years ago I could have fallen prey to the lack of vision, stepping my feet into Hungary and listening to those who at the time had no vision telling me to be comfortable with the poorest of academic grades, and I thought to myself if the reason for being educated in this institution is to fall short of my expectations then I could have as well been home schooled, I decided not to speak with poor minds on serious issues for I had vision.

This group of graduates has been strong, tough and thriving, having clearer vision by the day, walking with any of them would leave a lesson of hard work and the ability to bend due to tough academic work and yet not be bent. Budapest University of Technology and Economics in my short experience is not a place for poor minds so I urge you to be visionaries if you must take the world by storm.

We are here today to celebrate the end of a very significant phase in life and the beginning of the next most important phase of a new life outside school. The world has been waiting for us and we are now ready for them. I believe that the lessons learnt here at BME, from the accomplishments/successes, failures and studies, means we now posses the skills to learn, aptitude to succeed, ability and creativity to make a difference, to work to meet world needs and to assist in solving the problems facing the society at large. Knowledge as we know is power and it is gotten from education, although it might seem expensive buy it, for ignorance is more expensive. This school has taught us the elements of character and vision, on this note I want to encourage all students to show character, have vision and pursue it, and if an opportunity of success has not knocked on your door build a door and keep in mind that neither success nor failure is final keep succeeding.

To accomplish great things today and in the future, we must not only dream, but also act, and not just act but plan and believe in our dreams and vision, for "the future belongs to those who believe in the beauty of their dream", and "I hope your dreams take you to the corners of your smile, to the highest of your hopes, to the windows of your opportunities and to the most special places your heart has ever known".

Courses and Doctorate schools at BME

We offer undergraduate & PhD courses in:

- Architecture
- Architectural Engineering
- Civil Engineering
- Chemical Technology
- Biotechnology
- Electrical Engineering
- Engineering Information Technology
- Mechanical Engineering
- Transportation Engineering
- Logistics
- Vehicle Engineering
- Aerospace Technology
- Mathematics
- Physics
- Cognitive Science

Doctorate Schools (14)

- Pál Vásárhelyi PhD School
  in Civil Engineering and Earth Sciences
- Géza Pattantyús-Ábrahám PhD School
  in Mechanical Engineering
- Pál Csonka PhD School
  in Architecture and Engineering
- DLA School in Architecture
- George A. Olah PhD School
  in Chemistry and Chemical Technology
- PhD School in Computer Science and Information Technology
- PhD School in Electrical Engineering
- Gábor Baross PhD School
  in Transportation Sciences
- Kálmán Kandó PhD School
  in Mechanical Engineering
- PhD School in Physics
- PhD School in Mathematics and Computer Sciences
- PhD School in Psychology

2013/2014 ACADEMIC CALENDAR

Fall Semester: All accepted new Students

Registration in Students' Office, Bldg. R 105. (**after payment** of tuition fees)	**21 Aug – 6 Sept 2013**
Appointments for Obligatory Medical Check-up (Necessary for Health Insurance).	21 Aug – 6 Sept
Preparatory Classes (Math, Physics) **for Placement Test**	**21 – 23 Aug**
Placement Tests: Math, Physics and English Language	**26 – 28 Aug**
Orientation Program Newly enrolled regular and Exchange Students	**26 – 30 Aug**
Placement Test Results Posted Outside Student's Office	**30 Aug at 12 am**
Presentation of Schedules for Freshmen in Bldg. R 105. **Student's Office**	30 Aug at 12 am -1 pm
First day of classes	**9 Sept** at **8:15 am** (Monday)
Pre-Engineering Classes begin	**9 Sept**
Opening ceremony	**4 Oct (Friday)**
Last Day of Classes for Freshmen, Exchange Students, Pre-Engineering Students	**13 Dec (Friday)**
Classes and Examinations in 2014 for Pre-Engineering Students	2 - 31 Jan 2014
Winter Holidays for Pre-Engineering Students	**14 Dec 2013 – 2 Jan 2014**
Examination Period for 1st Year Students (Check with your Faculty!)	**16 Dec 2013 – 31 Jan 2014**
Winter Holidays for 1st Year Students	**21 Dec 2013 – 2 Jan 2014**

Fall Semester: 2nd and Higher Year Students

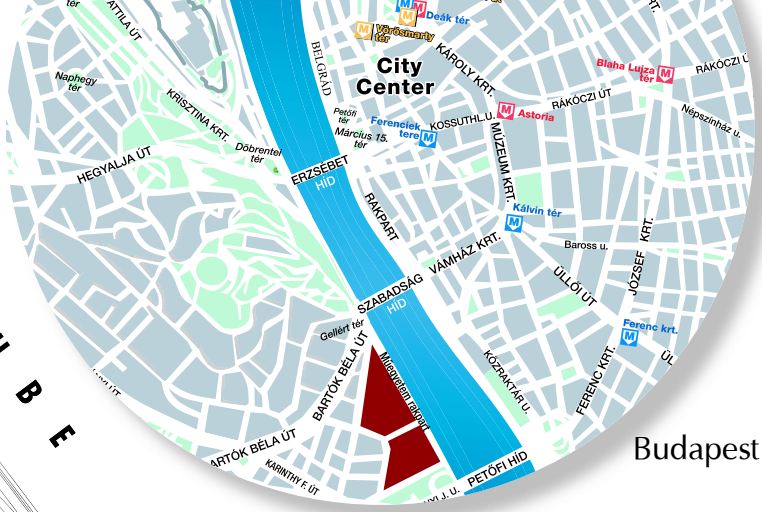|	
Registration in Student's Office	**2 – 4 Sept 2013**
First Day of Classes	9 Sept 2013
Last Day of Classes	13 Dec 2013
Delayed submission	16 Dec 2013 – 10 Jan 2014
Examination Period (Check with your Faculty!)	**16 Dec 2013 – 31 Jan 2014**
Winter Holidays for All Students	**21 Dec 2013 – 2 Jan 2014**

Spring Semester: All Students

Registration in Students' Office, Bldg. R 105.	**3 - 7 Feb 2014**
Orientation for Exchange and Transfer Students	3 - 7 Feb 2014
First Day of Classes	**10 Feb 2014 (Monday)**
Last Day of Classes	**16 May 2014 (Friday)**
Delayed submission	19 May – 6 June 2014
Examination Period (Check with your Faculty!)	**19 May – 27 June 2014**
Last Day of Final Exams	**27 June 2014**

Days off for All Students

Sports day	16 Sept 2013 (Monday)	Open day	22 Nov 2013 (Friday)
National Day	23 Oct 2013 (Wednesday)	Easter Monday	21 April 2014 (Monday)
All Saints' Day	1 Nov 2013 (Friday)	Labour Day	1 May 2014 (Thursday)
Students' Sci. Con.	12 Nov 2013 (Tuesday)	Whit Monday	9 June 2014 (Monday)

Szabadság Bridge

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Petőfi Bridge

City Center

Budapest

Administration Block A
Fluid Mechanics Building Ae
Chemistry Building Ch
Mechanical Engineering Building D
Building Construction Laboratory El
Physics Building F
Production Engineering Building G
Informatics Buildings I, Q
Vehicle Engineering Building J
Central Building K
Central Library Kö
Hydraulic Machinery Laboratory L
Mechanics Building Mm/Mg
Mechanical Technology Building Mt
Classrooms R, T, H, E
Electrical Engineering
and Informatics
Buildings St, V1, V2
Nuclear Training Reactor TR

International Students Office: R

Q

I

Infopark

Lágymányosi
Bridge

MŰEGYETEM 1782

Budapest University of Technology and Economics

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