

Faculty of Electrical Engineering and Informatics

IMPORTANT NOTES

If for one subject you can find several different types (lecture, practice, laboratory) of courses then please choose one and only one course from each type in order to be able to perform the subject's requirements successfully. Civil Engineering courses are on the website separately. Courses chosen from the offer of Faculty of Civil Engineering will be checked and arranged individually by the departmental coordinator.

Subject code	Subject name			Requirement	ECTS credit
BMEVIEEAA00	Basics of Programming 1			Mid-semester mark	7
Course type	Course code	Course language	Timetable information		
Laboratory	AL	English	THU:12:15-14:00		
Lecture	AE	English	WED:08:15-10:00(IB026)		
Practice	AG	English	FRI:12:15-14:00(QBF11)		
https://portal.vik.bme.hu/kepzes/targyak/VIEEAA00/en/ The main objective of this course is to provide students with appropriate skills in computer-based problem solving and basic use of program development tools. These skills are to be effectively applied during further studies. The C language is selected as working language to illustrate how portable programs can be developed and to allow students to gain practice in actual coding. The classroom practice follows the syllabus of lectures; helps better understand the topics of the lecture through detailed examination of the algorithms. The classes are completed with a long-term individual homework assignment to help improve the students' skills.					
Subject code	Subject name			Requirement	ECTS credit
BMEVIEEAC00	Technology of IT Devices			Mid-semester mark	4
Course type	Course code	Course language	Timetable information		
Laboratory	AL2	English	WED:16:15-18:00(QB-310)		
Laboratory	AL	English	WED:14:15-16:00(QB-310)		
Lecture	AE	English	TUE:14:15-16:00(QB331)		
https://portal.vik.bme.hu/kepzes/targyak/VIEEAC00/en/ The goal of the subject is to present the students the operation of the most important hardware elements of IT devices, the fundamentals of electronics and its manufacturing technology. It is presented what opportunities modern microelectronics assures to computation, what are the physical limits and the trends of development. At the laboratory practices the students experience themselves that hardware and software development occurs with the help of similar methods and tools.					
Subject code	Subject name			Requirement	ECTS credit
BMEVIEEAL01	Project Laboratory			Mid-semester mark	5
Course type	Course code	Course language	Timetable information		
Laboratory	a1	English			
https://portal.vik.bme.hu/kepzes/targyak/VIEEAL01/en/					
Subject code	Subject name			Requirement	ECTS credit
BMEVIEEAL03	Project Laboratory			Mid-semester mark	5
Course type	Course code	Course language	Timetable information		
Laboratory	a1	English			
https://portal.vik.bme.hu/kepzes/targyak/VIEEAL03/en/					
Subject code	Subject name			Requirement	ECTS credit
BMEVIEEAT00	BSc Thesis Project			Mid-semester mark	15
Course type	Course code	Course language	Timetable information		
Practice	a1	English			
https://portal.vik.bme.hu/kepzes/targyak/VIEEAT00/en/					
Subject code	Subject name			Requirement	ECTS credit
BMEVIEEAT01	BSc Thesis Project			Mid-semester mark	15
Course type	Course code	Course language	Timetable information		
Practice	a1	English			
https://portal.vik.bme.hu/kepzes/targyak/VIEEAT01/en/					

Subject code	Subject name		Requirement	ECTS credit
BMEVIEEJV14	Optoelectronics		Exam	4
Course type	Course code	Course language	Timetable information	
Lecture	a1	English	TUE:12:15-14:00(QB331); THU:12:15-14:00(QB331)	
<p>The subject discusses a relatively broad range of optoelectronic devices in depth; including operating characteristics, structure, typical application areas in optical communications and in measurements. The subject is presented only in English language, primarily for foreign students, but Hungarian students may also elect it. Synopsis: Week 1 Optoelectronic semiconductor materials and their technology. Energetic interactions of light and material. The wave equation and its solution. Plane wave, phase velocity, refractive index. Refraction. Generation and recombination in semiconductors and their relationship to the light sensing and light emission. Week 2 Macroscopic solids, heterostructures, optical properties of nanometer-thick layers. Passive devices: transmission properties of optical waveguides and direction couplers. Week 3 Optical fibers in practice. Dispersion. Multipath dispersion, abrupt and gradual change of refractive index type multimode optical fibers. Material dispersion, Waveguide dispersion, single-mode fibers. Week 4 Absorption, attenuation, atomic and electron resonance, the minimum absorption wavelength. Light spillage of the optical fiber, the scattering mechanisms. Week 5 Resonators and optical sensors. Controlled passive devices: optical deflectors, modulators, switches. Week 6 Optical amplifiers. Light amplifier mechanisms in optical fibers. Rahman and Brillouin scattering. Stimulated scattering. Light-doped optical fiber amplifier. Semiconductor light amplifiers. Week 7 Photodetectors. Light Detection using pn junction. The PIN photodiode. Avalanche photodiode. Heterojunction photodiode. The detectors for optical and electrical characteristics. Week 8 Image converter, storage and dissector devices. MOS and CCD video recorders. CCD operation basics. Various CCD arrangements. Realization of the high speed shutter. Week 9 ERROR Week 10 Stimulated emission. Structure, types, and optical modulation properties of laser diodes. Cut-off frequency, transient operation modes. Week 11 ERROR Week 12 Display devices. LCD, plasma, photoluminescent displays. Week 13 Organic semiconductors, OLED light sources and displays. Week 14 Optical digital information recording. Holographic information recording, DVD-ROMs, flash EPROMs.</p>				
Subject code	Subject name		Requirement	ECTS credit
BMEVIEEMA05	System Level Design		Exam	4
Course type	Course code	Course language	Timetable information	
Lecture	02	English	TUE:10:15-12:00(QB331)	
Practice	03	English	FRI:14:15-16:00(QB311)	
<p>https://portal.vik.bme.hu/kepzes/targyak/VIEEMA05/en/ The subject presents the design, implementation and verification of digital hardware. The actual trends and their influence are also discussed.</p>				
Subject code	Subject name		Requirement	ECTS credit
BMEVIEEMA06	Circuit Environment		Exam	4
Course type	Course code	Course language	Timetable information	
Lecture	01	English	WED:10:15-12:00(QB331)	
Practice	02	English	FRI:10:15-12:00(QB-310)	
<p>https://portal.vik.bme.hu/kepzes/targyak/VIEEMA06/en/</p>				
Subject code	Subject name		Requirement	ECTS credit
BMEVIEEML00	Project Laboratory 1		Mid-semester mark	5
Course type	Course code	Course language	Timetable information	
Laboratory	a1	English		
<p>https://portal.vik.bme.hu/kepzes/targyak/VIEEML00/en/</p>				
Subject code	Subject name		Requirement	ECTS credit
BMEVIEEML01	Project Laboratory 2		Mid-semester mark	5
Course type	Course code	Course language	Timetable information	
Laboratory	a1	English		
<p>https://portal.vik.bme.hu/kepzes/targyak/VIEEML01/en/</p>				
Subject code	Subject name		Requirement	ECTS credit
BMEVIEEML02	Project Laboratory 1		Mid-semester mark	5
Course type	Course code	Course language	Timetable information	
Practice	a1	English		
<p>https://portal.vik.bme.hu/kepzes/targyak/VIEEML02/en/</p>				

Subject code	Subject name			Requirement	ECTS credit
BMEVIEEML03	Project Laboratory 2			Mid-semester mark	5
Course type	Course code	Course language	Timetable information		
Laboratory	a1	English			
https://portal.vik.bme.hu/kepzes/targyak/VIEEML03/en/					
Subject code	Subject name			Requirement	ECTS credit
BMEVIEEMT00	Diploma Thesis Design 1			Mid-semester mark	10
Course type	Course code	Course language	Timetable information		
Practice	01	English			
https://portal.vik.bme.hu/kepzes/targyak/VIEEMT00/en/					
Subject code	Subject name			Requirement	ECTS credit
BMEVIEEMT01	Diploma Thesis Design 2			Mid-semester mark	20
Course type	Course code	Course language	Timetable information		
Practice	01	English			
https://portal.vik.bme.hu/kepzes/targyak/VIEEMT01/en/					
Subject code	Subject name			Requirement	ECTS credit
BMEVIEEMT02	Diploma Thesis Design 1			Mid-semester mark	10
Course type	Course code	Course language	Timetable information		
Practice	a1	English			
https://portal.vik.bme.hu/kepzes/targyak/VIEEMT02/en/					
Subject code	Subject name			Requirement	ECTS credit
BMEVIEEMT03	Diploma Thesis Design 2			Mid-semester mark	20
Course type	Course code	Course language	Timetable information		
Practice	a1	English			
https://portal.vik.bme.hu/kepzes/targyak/VIEEMT03/en/					
Subject code	Subject name			Requirement	ECTS credit
BMEVIHIAA01	Basics of Programming 1			Mid-semester mark	7
Course type	Course code	Course language	Timetable information		
Laboratory	LA1	English	THU:10:15-12:00		
Lecture	EA	English	WED:08:15-10:00(IB026)		
Practice	GA	English	FRI:12:15-14:00(QBF10)		
https://portal.vik.bme.hu/kepzes/targyak/VIHIAA01/en/					
Subject code	Subject name			Requirement	ECTS credit
BMEVIHIAB00	Coding Technology			Exam	4
Course type	Course code	Course language	Timetable information		
Lecture	EA	English	THU:14:15-16:00(QBF10); THU:14:15-16:00(QBF10); FRI:10:15-12:00(QBF10)		
https://portal.vik.bme.hu/kepzes/targyak/VIHIAB00/en/ Error control coding: Basic notions of error control (code, codeword, error models, Hamming distance, error correction, error detection, code distance, code parameters). Binary linear code: generator matrix, parity check matrix, systematic codes. Hamming codes. Cyclic linear code, generator polynomial, parity check polynomial. CRC detection technique. Nonbinary linear codes. Reed-Solomon code. Data compression and source coding: Prefix code. Average codeword length and the entropy. Shannon-Fano code, Huffmann code, Lempel-Ziv code. Quantization. Uniform quantization. Lloyd-Max quantizer.. Predictive coding. Voice compression. Video compression. Cryptography and data security: Basic notions, encryption, authentication, integrity protection, access control, repudiation. Ideal encryption. Linear encryption. Public key encryption. RSA algorithm. Hash functions. Basic cryptographic protocols: party authentication, integrity protection, key distribution, digital signature, key certificate. Typical security holes in cryptographic primitives and protocols.					
Subject code	Subject name			Requirement	ECTS credit
BMEVIHIAB01	Communication Networks I.			Mid-semester mark	4
Course type	Course code	Course language	Timetable information		
Laboratory	LA	English	TUE:14:15-18:00		
Lecture	EA	English	TUE:08:15-10:00(QBF08)		
https://portal.vik.bme.hu/kepzes/targyak/VIHIAB01/en/					

Subject code	Subject name		Requirement	ECTS credit
BMEVIHIAB02	Electronics 1		Exam	5
Course type	Course code	Course language	Timetable information	
Lecture	EA	English	WED:14:15-16:00(V1109)	
Practice	GA	English	WED:16:15-18:00(V1109)	
<p>Virtually every electronic equipment used today is constructed on the basis of high complexity circuits. All electrical engineers must know the construction and functioning principles of such devices. In order to understand the behavior of complex systems, the elementary design principles and dimensioning procedures should be presented which is the objective of this course. Obtained skills and expertise: The students get acquainted with the definitions and management of the parameters of electrical components and will understand the calculations of the properties of electronic circuits built up of such components. The skills obtained in the framework of this course (together with the course entitled Electronics 2) empowers students with the necessary expertise to understand the courses of the related study specialization blocks. https://portal.vik.bme.hu/kepzes/targyak/VIHIAB02/en/ /* Font Definitions */ @font-face {font-family:Calibri; panose-1:2 15 5 2 2 2 4 3 2 4; mso-font-charset:238; mso-generic-font-family:swiss; mso-font-pitch:variable; mso-font-signature:-520092929 1073786111 9 0 415 0;} /* Style Definitions */ p.MsoNormal, li.MsoNormal, div.MsoNormal {mso-style-unhide:no; mso-style-qformat:yes; mso-style-parent:""; margin:0cm; margin-bottom:.0001pt; mso-pagination:widow-orphan; font-size:12.0pt; font-family:"Times New Roman","serif"; mso-fareast-font-family:Calibri; mso-fareast-theme-font:minor-latin; color:black;} .MsoChpDefault {mso-style-type:export-only; mso-default-props:yes; font-size:10.0pt; mso-ansi-font-size:10.0pt; mso-bidi-font-size:10.0pt;} @page WordSection1 {size:612.0pt 792.0pt; margin:70.85pt 70.85pt 70.85pt 70.85pt; mso-header-margin:35.4pt; mso-footer-margin:35.4pt; mso-paper-source:0;} div.WordSection1 {page:WordSection1;} --> /* Style Definitions */ table.MsoNormalTable {mso-style-name:"Normál táblázat"; mso-tstyle-rowband-size:0; mso-tstyle-colband-size:0; mso-style-noshow:yes; mso-style-priority:99; mso-style-parent:""; mso-padding-alt:0cm 5.4pt 0cm 5.4pt; mso-para-margin:0cm; mso-para-margin-bottom:.0001pt; mso-pagination:widow-orphan;</p>				
Subject code	Subject name		Requirement	ECTS credit
BMEVIHIAC00	Mobile Communication Networks		Exam	4
Course type	Course code	Course language	Timetable information	
Lecture	EA	English	TUE:10:15-12:00(E405)	
Practice	GA	English	WED:16:15-18:00(E405)	
https://portal.vik.bme.hu/kepzes/targyak/VIHIAC00/en/				
Subject code	Subject name		Requirement	ECTS credit
BMEVIHIAC04	Mobile Communication Systems		Exam	4
Course type	Course code	Course language	Timetable information	
Lecture	EA	English	TUE:10:15-12:00(E405)	
Practice	GA	English	WED:16:15-18:00(E405)	
https://portal.vik.bme.hu/kepzes/targyak/VIHIAC04/en/				
Subject code	Subject name		Requirement	ECTS credit
BMEVIHIAV06	Introduction to Quantum Computing and Communication		Mid-semester mark	2
Course type	Course code	Course language	Timetable information	
Lecture	EA	English	THU:12:15-14:00(IB139)	
Subject code	Subject name		Requirement	ECTS credit
BMEVIHIAV35	Privacy-Preserving Technologies		Mid-semester mark	2
Course type	Course code	Course language	Timetable information	
Lecture	E	English	WED:12:15-14:00(QBF11)	
Subject code	Subject name		Requirement	ECTS credit
BMEVIHIAV39	Adminstrating Computer Networks in Practice I.		Mid-semester mark	2
Course type	Course code	Course language	Timetable information	
Laboratory	L2	English	WED:12:15-14:00(IL107)	
Laboratory	L3	English	WED:14:15-16:00(IL107)	

Subject code	Subject name		Requirement	ECTS credit
BMEVIHVAB00	System Theory		Mid-semester mark	4
Course type	Course code	Course language	Timetable information	
Lecture	A2	English	WED:14:15-16:00(QBF11)	
Practice	C2	English	THU:10:15-12:00	
https://portal.vik.bme.hu/kepzes/targyak/VIHVAB00/en/				
Subject code	Subject name		Requirement	ECTS credit
BMEVIHVAB01	Signals and Systems 2		Exam	6
Course type	Course code	Course language	Timetable information	
Lecture	A2	English	MON:12:15-14:00(V1502); MON:12:15-14:00(V1501); THU:08:15-10:00(V1502)	
Practice	C2	English	WED:10:15-12:00(V1502); WED:10:15-12:00(V1502); THU:08:15-10:00(V1502)	
https://portal.vik.bme.hu/kepzes/targyak/VIHVAB01/en/ The course is a follow-up of Signals and Systems I. It provides the foundations of analysis methods for continuous time systems in the frequency and complex frequency domains. Furthermore, it presents various system description methods and establishes the connections between these representations. It also deals with analysis methods of discrete time signals and systems both in time, frequency and z domains. The link between continuous and discrete systems is presented by dealing with discrete approximation of continuous time systems, and the basics of signal sampling and reconstruction are shown. The last part introduces analysis techniques for continuous time nonlinear circuits and systems.				
Subject code	Subject name		Requirement	ECTS credit
BMEVIHVAC05	Space Technology		Exam	4
Course type	Course code	Course language	Timetable information	
Lecture	A2	English	THU:14:15-16:00(V1103)	
Practice	C2	English	TUE:16:15-18:00(E401)	
https://portal.vik.bme.hu/kepzes/targyak/VIHVAC05/en/				
Subject code	Subject name		Requirement	ECTS credit
BMEVIHVJV62	Simulation of Electronics Circuits		Mid-semester mark	2
Course type	Course code	Course language	Timetable information	
Practice	B2	English	WED:12:15-14:00	
Introduction of the state-of-the-art circuit simulation computer programs used in the modern engineering practice, as well as practicing their use and further deepening the skills obtained about the electronic circuits by solving practical simulation problems. Synopsis: Introduction: the evolution of simulation programs, the history of the SPICE simulator and its versions, non-SPICE based simulators Modeling issues, modeling of semiconductors, functional models Basic algorithms of circuit simulation: operating point calculation, transient analysis, calculation of transfer characteristics Fundamentals and syntax of the SPICE circuit definition language, simple circuits, node and component names, setting of values and subcircuits Using individual analysis types: operating point calculation, transfer characteristics, sensitivity analysis, transient analysis, distortion calculation, small signal transfer function Presentation of the simulation results: conventional output data structure, graphical representation, post-processing opportunities, parametric analysis Using the schematic editor: editing diagrams, symbols and symbol library operations Block-based and multi-level diagrams, interfacing to PCB design programs Simulation of digital and mixed signal circuits: functional analysis, delay effects and their consequences, input and output modeling of digital circuits, mixed signal simulation Signal integrity simulation, usage of transmission lines, investigation of termination types (near-end and far-en terminations), investigation of the effect of capacitive loads Simulation of high frequency circuits: the concept of scatter parameters and the usage thereof, simulation of the input reflection and transfer properties of attenuators and low-pass filters, introduction of filter design Simulation of telecommunication systems, characterization of frequency mixers and amplifiers, investigation of a single-mixing heterodyne receiver Circuit measuring exercise: operating point measurement of a transistor amplifier, comparison of the measured data with the simulation results, measurement of the driving range and its comparison with the simulation results Circuit measuring exercise: introduction of the measurement of high frequency and microwave circuit components, investigation of the transfer and reflection of a filter and an amplifier, demonstration of large-signal properties, as well as the comparison of all these results with the simulated values				
Subject code	Subject name		Requirement	ECTS credit
BMEVIHVMA06	Optical Systems and Applications		Exam	4
Course type	Course code	Course language	Timetable information	
Lecture	A2	English	MON:10:15-12:00	
Practice	C2	English	FRI:10:15-12:00	
https://portal.vik.bme.hu/kepzes/targyak/VIHVMA06/en/				

Subject code	Subject name		Requirement	ECTS credit
BMEVIHVMA08	Electromagnetic Fields		Exam	4
Course type	Course code	Course language	Timetable information	
Lecture	A2	English	MON:10:15-12:00(V1501); MON:10:15-12:00(V1501); THU:14:15-16:00(V1501)	
Practice	C2	English	THU:14:15-16:00(V1501)	
<p>The main goal of the course is the qualitative and quantitative discussion of the electromagnetic phenomena using deductive reasoning based on the Maxwell-equations. In-depth discussion of the theory of electromagnetism starting from the knowledge gathered during the BSc studies. Understanding the basics of the various methods used for the numerical analysis of electromagnetic field problems. Discussion of relevant questions related to the modelling of electromagnetic devices. Analysis, design and optimization of electromagnetic devices in the engineering practice. Discussion of the electromagnetic theory behind the working principles of some devices: ranging from the high power engineering apparatuses through the high frequency applications to the optical and nanoelectronic devices. https://portal.vik.bme.hu/kepzes/targyak/VIHVMA08/en/</p>				
Subject code	Subject name		Requirement	ECTS credit
BMEVISZAA03	Introduction to the Theory of Computing 1		Exam	5
Course type	Course code	Course language	Timetable information	
Lecture	A0	English	THU:14:15-16:00(QBF08)	
Practice	A2	English	WED:14:15-16:00(IB144)	
Practice	A1	English	WED:12:15-14:00(IB147)	
Practice	A3	English	FRI:10:15-12:00(IB144)	
https://portal.vik.bme.hu/kepzes/targyak/VISZAA03/en/				
Subject code	Subject name		Requirement	ECTS credit
BMEVISZAA05	Foundation of Computer Science		Exam	5
Course type	Course code	Course language	Timetable information	
Lecture	A0	English	MON:10:15-12:00(IE220)	
Practice	A3	English	MON:16:15-18:00(IB138)	
Practice	A1	English	WED:12:15-14:00(E403)	
Practice	A2	English	WED:14:15-16:00(E403)	
https://portal.vik.bme.hu/kepzes/targyak/VISZAA05/en/				
Subject code	Subject name		Requirement	ECTS credit
BMEVISZAB02	Probability Theory		Exam	5
Course type	Course code	Course language	Timetable information	
Lecture	A0	English	MON:10:15-12:00(E407)	
Practice	A2	English	THU:08:15-10:00(E305ab)	
Practice	A1	English	TUE:10:15-12:00(E404)	
https://portal.vik.bme.hu/kepzes/targyak/VISZAB02/en/				
Subject code	Subject name		Requirement	ECTS credit
BMEVISZMA03	Information Theory		Mid-semester mark	4
Course type	Course code	Course language	Timetable information	
Lecture	A0	English	TUE:09:15-12:00(E306cd)	
https://portal.vik.bme.hu/kepzes/targyak/VISZMA03/en/				
Subject code	Subject name		Requirement	ECTS credit
BMEVISZMA04	Languages and Automata		Mid-semester mark	4
Course type	Course code	Course language	Timetable information	
Lecture	A0	English	MON:14:15-16:00(E407); MON:14:15-16:00(E407); THU:10:15-12:00(QBF11)	
https://portal.vik.bme.hu/kepzes/targyak/VISZMA04/en/				
Subject code	Subject name		Requirement	ECTS credit
BMEVITMAK47	Engineering Management Methods		Mid-semester mark	2
Course type	Course code	Course language	Timetable information	
Lecture	AE1	English	THU:14:15-16:00(QBF11)	
Engineer as a leader (situations and solution): role of informaticians and electrical engineers in the information				

based society. General trends, business models and the development of value chains. Leader roles, leader tasks and situations. Management of IT based, communication related and business functions in a company. Complex engineering methods in the information transmission and processing, technological and economical optimization of the related processes. Management problems of resource and time allocation, task distribution and scheduling, and workforce placement. Decision preparation techniques: statistical and heuristics based methodologies. Innovation management: tools of innovation management, institutions of innovation management, funding models and typical calls for applications. Organizations of scientific research and technology development, business models of spin-off companies. Conception of technological visions about the future, ways to identify technological breakthroughs, management of generation changes. The process of standardization, its organization and its consequences on technological markets. Intellectual property rights during the innovation process: protection of technical creations, neighboring rights, protection of databases. New trends in IP rights: free software licensing models. Processes of product development and product introduction to the market, market study and marketing methodology. The role of IT technologies in the product and business development, their contribution to the value creation.
<https://portal.vik.bme.hu/kepzes/targyak/VITMAK47/en/>

Subject code	Subject name	Requirement	ECTS credit
BMEVITMMB03	Engineering Management	Exam	4

Course type	Course code	Course language	Timetable information
Lecture	AE1	English	FRI:08:15-12:00(IE220)

Engineering management (EM) in the knowledge-based society. Definition, role and areas of the EM. The evolution of the EM discipline. Peculiarities, generic trends and EM of the information, communication and electronic media technologies (ICT). Managerial elements of the engineering activity. Components and principles of the managerial activity. Managerial situations, methods and tools. Strategic management. Strategy types and parts. Business strategic planning methods. Classes of competitive strategies. Implementation of strategy: success factors, progress tracing. Methods of the strategic direction and control. Complex engineering decision problems, customer-oriented and systemic approaches, solutions, procedures. Planning and allocation of resources, multi-project management. Management of organizations. Organization types in the ICT sector. Lifecycle, decision culture of organizations, change management. Managing cooperation of organizations, complex working groups. Knowledge management. Knowledge process: accumulation, internalization, adaptation, externalization. Competence. Knowledge sharing and transfer. Knowledge based systems. Types of the intellectual property, principles of intellectual property rights. Open access software. Exploitation of the intellectual properties. Intellectual public utilities. ICT specific EM. Technology management. Technological planning, forecast, transfer, launching, change. Making technology vision, analyzing driving forces, scenarios. Technology-driven business strategies. Corporate ICT functions. Application of the ICT in shaping new business strategies, global work-flows, efficient organization structures. Innovation management. Goals of research, development and innovation. Innovation models and metrics. Management of the innovation process, quality and risks. Innovation chain: university-industry partnership, role of the government. Multi-tier organization and operation of the research-development-innovation management. Innovation financing. National and EU sources, grants, funds, tenders. Development projects. Technological incubators, innovation centers, start-up companies, technological consortia in the ICT sector. Product management. Goals and process of the product development. Markets of the ICT products and services. Market players, competitive environment. Market segmentation. Life-cycle of the product, and its management. Product pricing, price-sensitivity of the customers. Market-research, sale and sale-support methods. Business process management. Analyzing, planning, regulating, improving and transforming corporate business process. Criteria of the process-based management systems. Methods for developing processes. IT in the corporate value creation. Customer relationship management (CRM), operation support systems, supply chain management, business continuity management. Special business functions (e.g. billing), industry-specific systems, IT system architecture of telecommunication service providers. Regulatory environment. Sector regulation. Goals and principles of the regulation in general and in the networked and public service sectors. Competition regulation, consumer protection. Regulatory institutions and procedures, ex-ante and ex-post regulation, self-regulation, public hearing, standards. Regulation of the information and communication technologies and markets. Technology and market regulatory models in the ICT sector. Regulatory tasks for deploying the convergence of the telecommunications, information and media technology sectors. Community and national regulation of the electronic communications network and services. Framework and specific directives. Rules for the cooperation of the network operators and service providers. Regulation for managing scarce resources, frequency, number and address management. Concept for regulating information security, data protection and content.
<https://portal.vik.bme.hu/kepzes/targyak/VITMMB03/en/>