Recomended pass through the study plan

Name of the pass: Specialization Communication Networks and Internet - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering Department: Pass through the study plan: Electronics and Communications - Communication Networks and Internet Branch of study guranteed by the department: Welcome page Guarantor of the study branch:

Program of study: Electronics and Communications

Type of study: Follow-up master full-time

Note on the pass:

Coding of roles of courses and groups of courses:

P - compulsory courses of the program, PO - compulsory courses of the branch, Z - compulsory courses, S - compulsory elective courses, PV compulsory elective courses, F - elective specialized courses, V - elective courses, T - physical training courses

Coding of ways of completion of courses (KZ/Z/ZK) and coding of semesters (Z/L): KZ - graded assesment, Z - assesment, ZK - examination, L - summer semester, Z - winter semester

Number of semester: 1

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BEZM	Safety in Electrical Engineering for a master's degree Vladimír K la, Radek Havlí ek, Ivana Nová, Josef ernohous, Pavel Mlejnek Radek Havlí ek Vladimír K la (Gar.)	Z	0	2BP+2BC	z	Ρ
B2M37DKM	Digital communications Jan Sýkora Jan Sýkora Jan Sýkora (Gar.)	Z,ZK	6	3P+1C	Z	Р
B2M37MAM	Microprocessors Petr Skalický, Stanislav Vítek Stanislav Vítek (Gar.)	Z,ZK	6	2P+2L	Z	Р
B2M31DSP	Advanced DSP methods Pavel Sovka, Petr Pollák Pavel Sovka Pavel Sovka (Gar.)	Z,ZK	6	2P+2C	Z,L	Ρ
B2M32PST	Advanced Networking Technologies Zbyn k Kocur, Leoš Bohá Leoš Bohá Leoš Bohá (Gar.)	Z,ZK	6	2P + 2C + 4D	z	Ρ
B2M32PRSA	Access Networks Ji í Vodrážka, Tomáš Zeman, Pavel Lafata Petr Jareš Ji í Vodrážka (Gar.)	Z,ZK	6	2P + 2L	Z	Р

Number of semes	ster: 2					
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
B2M32BTSA	Wireless Technologies Zbyn k Kocur, Zden k Be vá , Lukáš Vojt ch, Pavel Mach Ján Ku erák Zden k Be vá (Gar.)	Z,ZK	6	2P + 2L	L	Р
B2M32OSS	Optical Systems and Networks Leoš Bohá , Ji í Weiss Michal Lucki Leoš Bohá (Gar.)	Z,ZK	6	2P + 2L	L	Р
B2M32RTK	Telephony Communication Control Robert Beš ák, Pavel Troller Robert Beš ák Robert Beš ák (Gar.)	Z,ZK	6	2P + 2L	L	Р
		Min. cours.				
2018_MEKPV5	Povinn volitelné p edm ty programu B2M32DMT,B2M32DSAA, (see the list of groups below)	5	Min/Max			
		Max. cours.	30/30			PV
		5				

Number of semester: 3

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
B2MPROJ6	Project Tomáš Zeman, Ivan Pravda, František Rund, Ji í Jakovenko, Pavel Máša, Jan Šístek, Lubor Jirásek, Ladislav Oppl František Rund František Rund (Gar.)	Z	6	0p+6s	Z,L	Р
2018_MEKPV5	Povinn volitelné p edm ty programu B2M32DMT,B2M32DSAA, (see the list of groups below)	Min. cours. 5 Max. cours. 5	Min/Max 30/30			PV
2018_MEKVOL	Volitelné odborné p edm ty2018	Min. cours. 0	Min/Max 0/999			V

Number of semes	ster: 4					
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BDIP25	Diploma Thesis	Z	25	22s	L	Р
2018_MEKVOL	Volitelné odborné p edm ty2018	Min. cours.	Min/Max			V
		0	0/999			V

List of groups of courses of this pass with the complete content of members of individual groups

Kód		Name of the group of courses and codes of members of this group (for specification see here or below the list of courses)		Com	pletion	Credits	Scope	Semester	Role	
2018_ME	KPV5	Povinn	volitelné p edr	n ty programu	Min. Max	cours. 5 . cours. 5	Min/Ma x 30/30	C		PV
B2M32DMT	Diagnostic	s and Measurement in T	and Measurement in T B2M32DSAA Network Application Diagnostics			B2M32DSVA Distri		Distributed Computing		
B2M32IBEA	Information	n Security	Security B2M37KASA Compression of images and signa			B2M32M	KSA M	obile Netwo	rks	
B2M32THOA	Queueing ⁻	Theory B2M31ZRE Speech Processing								
2018_MEKVOL Volitelné odborné p edm ty2018		Min.	cours. 0	Min/Max 0/999	¢		v			

List of courses of this pass:

Code	Name of the course	Completion	Credits			
B2M31DSP	Advanced DSP methods	Z,ZK	6			
The course follows	the basic course in signal processing and introduces advanced methods of analysis and digital signal processing. Graduates will learr	the methods of di	gital signals			
analysis and be at	le to practically use them. They learn to know the conditions of use of correlation, spectral and coherent analysis of random signals.	They will became f	amiliar with			
methods of signal	decomposition and independent component analysis and the time-frequency transformations. Emphasis will be placed on an ability to	o interpret the resu	Its of signal			
	analyses.					
B2M31ZRE	Speech Processing	Z,ZK	6			
The subject is dev	oted to basis of speech processing addressed to students of master program. Discussed speech technology is currently applied in m	any systems in diff	erent fields			
(e.g. information dia	alogue systems, voice controlled devices, dictation systems or transcription of audio-video recordings, support for language teaching,	etc.). Students will	learn basic			
algorithms for spe	eech analysis (spectral analysis, LPC, cepstral analysis, pitch, formants, etc.), principles of speech recognition (GMM-HMM, ANN-HM	IM systems, small	and large			
vocab	Ilary recognizers), speaker recognition (based on VQ and GMM), speech synthesis or speech enhancement. Further information car	be found at <a< td=""><td></td></a<>				
href=http://n	oel.feld.cvut.cz/vyu/ae2m31zre>http://noel.feld.cvut.cz/vyu/ae2m31zre. Pro zapsané studenty jsou detailní informace na	výukovém portálu	<a< td=""></a<>			
	href=https://moodle.fel.cvut.cz>Moodle FEL.					
B2M32BTSA	Wireless Technologies	Z,ZK	6			
The lectures give overview of fundamental principles of wireless networks in various areas of their application. Students will understand architecture, principles and protocols used in						
different wireless technologies and learn how these technologies can be exploited in real world applications. The goal is to teach students how to solve problems related to deployment						
	of wireless networks, their operation or development of wireless networks components.					

B2M32DMT Diagnostics and Measurement in Telecommunications	Z,ZK	6					
The subject builds on knowledge of basic types of interfaces used in telecommunications (from classic, via a packet-oriented and expected future	generation system). Ex	plains the					
importance of key parameters, presents tools for the monitoring and measurement methodology and fault diagnosis. Students verify acquired knowledge to practical tasks in the							
laboratory to real systems and advanced measurement techniques.							
B2M32DSAA Network Application Diagnostics	Z,ZK	6					
The first part of the course deals with complex network structures, their characteristics identification, with recognition of both structural static and	dynamic patterns, and	anomaly					
detection. The second part of the course is focused on specification methods of static and dynamic behavior and their verification. The use of the met	hods is demonstrated o	n examples					
dealing with network application issues. The special treatment is dedicated not only to network and cloud applications, but also to posibilities of di-	agnostic process autom	nation. The					
B2M32DSVA	7.7%	6					
The course is focused on technologies that support distributed computing on mechanisms ensuring reliable efficient and secure connection of an	plication processes pro	oramming					
interfaces of communication channels and up-to-date middleware technologies. A significant part of lectures is dedicated to distributed algorithm	s that assure causality,	exclusive					
access, deadlock detection/avoidance, fault-tolerance, mobile computing, and security.	<i>,</i> ,						
B2M32IBEA Information Security	Z,ZK	6					
The Information Security course provides a complete source of information on the field of security of information systems and information technologi	es. The most of informat	tion in today					
society is created, transferred, stored in electronic form so information security is very important part of it. Technical background for information s	ecurity is provided by c	ryptology.					
B2M32MKSA Mobile Networks	Z,ZK	6					
The lectures introduce principles and functionalities of mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and future mobile networks with special focus on currently deployed technologies and focus on currently deploy	tworks. Furthermore, a	rchitecture					
and fundamental principles of GSM, UMTS, LTE/LTE-A, and 5G will be explained. Then, selected key technologies for future mobile netwo	rks (6G) will be explaine	ed.					
B2M32OSS Optical Systems and Networks	Z,ZK	6					
The course deals with the use of optical radiation for the transmission of information. The aim is to acquaint students with the functions of important activation are transmission of information.	components used in a	n advanced					
optical communication systems and networks. Students will learn now to design practical optical fiber link and the network. Students will receiv implementation of a all-optical photonic networks in the future, which will be based on a combination of wavelength multiplex with an	all-optical switching	e for the					
		6					
The course covers the area of high-speed transmission of information in the access network level, with emphasis on the use of ontical transmission	n media and its combin	o Dation with					
metallic lines (FTTx). In the practical part, students will learn the methods required for the design, modeling, measurement and analysis of transmis	sion media, diagnostics	of systems					
and whole access networks.		,					
B2M32PST Advanced Networking Technologies	Z,ZK	6					
Subject Advanced Network Technologies expands students' knowledge of modern network technologies. The course is practically oriented and for	used on explaining the	function of					
advanced network protocols as used in modern data networks of today and tomorrow. Students will gain practical experience with the issues like	Internet routing, softwar	re-defined					
networks, multicast routing, IPv6, and MPLS networks. Part of the course is also devoted to a detailed explanation of transport protocols TCP/UDI	o and a manner in whice	h software					
applications can access transportation services of TCP/IP data networks.							
B2M32RTK Telephony Communication Control	Z,ZK	6					
The course is oriented to audio of video issues in telecommunication networks, both fixed and mobile. Students will learn principles of switching systems is central exchanges and networks. The focus is on digital switching systems is	ems and their managen	nent as well					
i.e. so-called next generation network (NGN) and voice communication in 4G networks. (VoLTE).	as circuit as packet swit	ch onenteu,					
B2M32THOA Queueing Theory	Z.ZK	6					
The aim of the course is to present an overview of dimensioning of telecommunication networks on the basis of results of the queuing theory (QT) and to introduce poss	sibilities of					
simulation and modelling of networks, both from the point of view of grade of service (GoS) and quality of service (QoS). Results of the QT are ap	plied on different servic	e systems					
and telecommunication networks being currently operated and developed. Theoretical knowledge about models of service systems can be applied of	on dimensioning of diffe	rent service					
systems in real life - not only on the telecommunications one.							
B2M37DKM Digital communications	Z,ZK	6					
The course provides fundamentals of digital communications theory: modulation, classical coding, channel models, and basic principles of decodir	ig. The exposition is sys	stematically					
built along the theoretical lines which allow to reveal all inner connections and principles. This allows students to develop the knowledge and use i	t in an active way in a d	lesign and					
Construction of the communication systems. The course provides a necessary fundamental background for subsequent more advanced com		15es.					
DZIVIS/ KASA COMPLESSION OF IMAGES AND SIGNALS	∠,∠N al information (entrony	0 redundancy					
and irrelevancy) Within the laboratory exercises students will work with implementations of particular algorithms including objective and subject	ve methods of quality e	valuation					
B2M37MAM Microprocessors	7 7K	6					
The aim is to make students acquainted with the properties of microprocessor systems, make students familiar with on-chip peripherals, connect e	xternal circuit to the pro	cessor bus,					
and with implementation of the memory or I/O space address extension. Next, taught the students to make simple program in the assembly langua	, ge, C language and cor	mbination of					
both. After completion of this subject student should be able to design and implement simpler microprocessor system including connection of new	essary peripherals and	software					
design.							
B2MPROJ6 Project	Z	6					
Independent work in the form of a project. A student will choose a topic from a range of topics related to his or her branch of study, which will be s	pecified by branch depa	artment or					
branch departments. The project will be defended within the tramework of a subject. Project list http://www.fel.cvut.cz/en/education/se	mestral-projects.html	67					
BDIP25 Diploma Thesis		25					
Independent final comprehensive work for the master's degree study programme. A student will choose a topic from a range of topics related to his	s or ner branch of study	, which will					
BE7M Sofoty in Electrical Engineering for a master's degree		Δ					
The course provides for students of all programs periodic training guidelines for health and occupational safety and gives knowledge of electrical	hazard of given branch	U of study					
Students receive indispensable qualification according to the current Directive of the Dean.		. 5. 5tuay.					

For updated information see <u>http://bilakniha.cvut.cz/en/f3.html</u> Generated: day 2025-06-06, time 20:20.