Recomended pass through the study plan

Name of the pass: Specialization Radio Communications and Systems - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering Department: Pass through the study plan: Electronics and Communications - Radio Communications and Systems 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
B2M37ART	Architecture of radio receivers and transmitters Josef Dobeš, Pavel Ková Karel Ulovec Pavel Ková (Gar.)	Z,ZK	6	2P+2L	Z	Р
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
B2M17MIOA	Microwave Circuits Karel Hoffmann, P emysl Hudec P emysl Hudec Milan Polívka (Gar.)	Z,ZK	6	2P+2C	Z	Р
B2M31DSP	Advanced DSP methods Pavel Sovka, Petr Pollák Pavel Sovka Pavel Sovka (Gar.)	Z,ZK	6	2P+2C	Z,L	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
B2M17ANT	Antennas Pavel Hazdra, Miloš Mazánek, Jan Kra ek Jan Kra ek Pavel Hazdra (Gar.)	Z,ZK	6	2P+2L	L	Ρ
B2M32BTSA	Wireless Technologies Zden k Be vá , Lukáš Vojt ch, Zbyn k Kocur, Pavel Mach Ján Ku erák Zden k Be vá (Gar.)	Z,ZK	6	2P + 2L	L	Р
B2M17SBS	Wave Propagation for Wireless Links Pavel Pecha Pavel Pecha Pavel Pecha (Gar.)	Z,ZK	6	2P+2C	L	Ρ
		Min. cours.				
	Povinn volitelné p edm ty programu B2M31AEDA,B2M17CADA, (see the list of groups below)	5	Min/Max			51
2010_IVIERPV7		Max. cours.	30/30			PV
		5				

Number of semes	ster: 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 Ji í Jakovenko, Pavel Máša, Ivan Pravda, František Rund, Jan Šístek, Lubor Jirásek, Tomáš Zeman, Ladislav Oppl František Rund František Rund (Gar.)	Z	6	0p+6s	Z,L	Р

2018_MEKPV7	Povinn volitelné p edm ty programu B2M31AEDA,B2M17CADA, (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			N/
		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 group (for specification	courses and on see here o	codes of members of this r below the list of courses)	Com	pletion	Credit	s Scope	Semester	Role
2018_ME	KPV7	Povinn ve	olitelné p edr	n ty programu	Min. Max.	cours. 5 cours. 5	Min/Ma 30/30	IX		PV
B2M31AEDA	Experimen	ital Data Analysis	B2M17CADA	CAD in HF Technique		B2M37D	TRA	Digital Video a	and Audio Broadcas	
B2M37KDKA	Coding in a	digital communications	B2M17MIMA	Microwave Measurements		B2M32M	KSA	Mobile Networks		
B2M17NKA	Antennas I	Design and Technology	B2M34NSV	B2M34NSV VLSI System Design		B2M99RAD R		Radar systems		
B2M37RNVA	Radio Nav	igation					· · · · ·			
2018_ME	KVOL	VoliteIn	é odborné p	edm ty2018	Min.	cours. 0	Min/Ma 0/999	ax		v

List of courses of this pass:

Code	Name of the course	Completion	Credits				
B2M17ANT	Antennas	Z,ZK	6				
Student will get st	onstrated on variou	us types of					
antennas and their arrays. Seminars are both theoretical (analytical and numerical calculation using MATLAB and EM simulators CST) and practical (measurement of antenna							
	parameters).						
B2M17CADA	32M17CADA CAD in HF Technique						
	Introduction into principles and techniques used in modern microwave circuit design.						
B2M17MIMA	Microwave Measurements	Z,ZK	6				
Fast developmer	t of wireless radio data communications (both mobile and stationary) also results in requirements for measurement of numerous rela	ted electrical para	meters in				
frequency band ran	ging from hundreds of MHz to tens of GHz. The "Microwave measurements" subject brings description of all important measurement i	nstruments and m	easurement				
methods used in thi	s field. Instructions devoted to measurement devices also cover detailed inner structures, principles of operation, common measureme	nt setups and optin	num setting.				
Even relatively corr	plex measurement instruments and setups are discussed, for example those used for measurement of noise and non-linear parame	ters. Exercises are	focused on				
practical measurem	ents commonly performed in the wireless communication field. Besides modern measurement instruments, students also learn a numb	er of typical RF and	d microwave				
	components, circuits, subsystems and digitally modulated signals.						
B2M17MIOA	Microwave Circuits	Z,ZK	6				
	Subject is focused on the design of planar passive and active microwave circuits.						
B2M17NKA	Antennas Design and Technology	Z,ZK	6				
Basics of practical	antenna design for selected frequency bands and communication, identification and radar services. Modelling (full-wave analysis), des	ign relationships a	nd specifics				
of antenna construction using professional software tools. Design and manufacture of antenna sample. Practical measurements.							
B2M17SBS	Wave Propagation for Wireless Links	Z,ZK	6				
The aim of the course is to study the wireless transmission channel in real environments focusing on wave propagation for planning of terrestrial and satellite wireless links. The syllabus							
includes both deeper theoretical foundations of radio wave propagation in the atmosphere as well as ITU-R design procedures for terrestrial and satellite, fixed and mobile communications							
	in various frequency bands						

B2M31AEDA	Experimental Data Analysis	Z,ZK	6					
In the course of	, subject "Experimental Data Analysis", students will acquire knowledge regarding fundamental methods for data analysis and machine	learning for evalu	ation and					
interpretation of data. In the course of practical lectures, students will solve individual tasks using real data from signal processing in neuroscience research. In the course of semestral								
project, student will solve complex task and present obtained results. The aim of the subject is to introduce practical application of fundamental statistical methods as well as to teach								
	students to use critical thinking and to acquire additional knowledge in solution of practical tasks.							
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 learn	the methods of di	gital signals					
analysis and be al	ble to practically use them. They learn to know the conditions of use of correlation, spectral and coherent analysis of random signals. T	hey will became fa	amiliar with					
methods of signal	decomposition and independent component analysis and the time-frequency transformations. Emphasis will be placed on an ability to	interpret the resu	Its of signal					
	analyses.							
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, pri	nciples and protoc	ols used in					
different wireless te	echnologies and learn how these technologies can be exploited in real world applications. The goal is to teach students how to solve pr	oblems related to	deployment					
	of wireless networks, their operation or development of wireless networks components.							
B2M32MKSA	Mobile Networks	Z,ZK	6					
The lectures intro	duce principles and functionalities of mobile networks with special focus on currently deployed technologies and future mobile network	ks. Furthermore, a	rchitecture					
and funda	mental principles of GSM, UMTS, LTE/LTE-A, and 5G will be explained. Then, selected key technologies for future mobile networks (6	G) will be explained	ed.					
B2M34NSV	VLSI System Design	Z,ZK	6					
Introduction to ba	sic building blocks, architecture and design methodologies of advanced VLSI systems. Structure and design of digital and analogue in	tegrated circuit su	bsystems.					
Integrated system	description and synthesis using cell libraries and IP cores. Synchronization, power consumption and parasitics reduction issues. Testi	ng and reliability o	f integrated					
systems.	In seminars and labs, the hardware description language VHDL will be explained and used for practical design, synthesis and testing	of a system on ch	ip.					
B2M37ART	Architecture of radio receivers and transmitters	Z,ZK	6					
The subject deals	with the architecture of the radio receivers and transmitters and software radio. The student s familiarize with the design and the mode	rn methods of opt	imization of					
the radio receive	rs and transmitters' functional blocks and with the phenomena related with frequency conversion, noise sources and noise analyses.	They learn concep	tual radio					
receiver and trar	smitter design, including the level and frequency plans and their optimization. The course also deals with the digital signal processing	blocks of the mod	lern radio					
	receivers and their practical implementation.							
B2M37DKM	Digital communications	Z,ZK	6					
The course provid	es fundamentals of digital communications theory: modulation, classical coding, channel models, and basic principles of decoding. Th	e exposition is sys	stematically					
built along the the	poretical lines which allow to reveal all inner connections and principles. This allows students to develop the knowledge and use it in a	n active way in a d	lesign and					
construction	of the communication systems. The course provides a necessary fundamental background for subsequent more advanced communic	cations theory cou	rses.					
B2M37DTRA	Digital Video and Audio Broadcasting	Z,ZK	6					
The subject makes	students familiar with topics related to video and audio transmission. Described are methods of data stream creation, methods of sou	rce and channel c	oding, error					
correction principle	s and modulation formats. Attention is paid to transmission systems standards with regard to transmission channel properties. The subj	ect also deals with	multimedia					
	data services and with measurement in transmission systems.							
B2M37KDKA	Coding in digital communications	Z,ZK	6					
This course extend	s and deepens the topics of the basic communication theory courses in the following main areas. 1) Advanced information theory in co	ding and Network	Information					
Theory develop a f	ramework for understanding the principles of the channel coding in single-user and multi-node/multi-user scenarios. 2) The algebraic cc	oding presents clas	ssical topics					
of block and convo	lutional codes. 3) Advanced coding technique focuses on turbo, LDPC, Space-Time codes and Wireless Network Coding. 4) Advanced	d decoding technic	que, namely					
	iterative and multi-user decoding is a fundamental tool for decoding capacity approaching channel codes.							
B2M37MAM	Microprocessors	Z,ZK	6					
The aim is to make	students acquainted with the properties of microprocessor systems, make students familiar with on-chip peripherals, connect externa	al circuit to the pro	cessor bus,					
and with implemen	tation of the memory or I/O space address extension. Next, taught the students to make simple program in the assembly language, C	language and cor	nbination of					
both. After comp	letion of this subject student should be able to design and implement simpler microprocessor system including connection of necessa	ry peripherals and	software					
	design.							
B2M37RNVA	Radio Navigation	Z,ZK	6					
The course intro	duces students to the terrestrial and satellite radio navigation and radar systems. Students get knowledge of the radio navigation syste	ems, and of the st	ructure of					
navigation and rad	ar signals and methods of their processing. They become familiar with coordinate systems, fundamentals of celestial mechanics, and m	ethods of position	estimation.					
	Students get knowledge of practical applications and the integration of navigation systems.							
B2M99RAD	Radar systems	Z,ZK	6					
B2MPROJ6	Project	Z	6					
Independent wor	k 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 specifi	ed by branch depa	artment or					
brand	ch departments. The project will be defended within the framework of a subject. Project list http://www.fel.cvut.cz/en/education/semest	ral-projects.html						
BDIP25	Diploma Thesis	Z	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 or h	ا er branch of study	, which will					
be specified l	by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehe	ensive final examin	nation.					
BEZM	Safety in Electrical Engineering for a master's degree	Z	0					
The course prov	ides for students of all programs periodic training guidelines for health and occupational safety and gives knowledge of electrical haza	rd of given branch	of study.					
-	Students receive indispensable qualification according to the current Directive of the Dean.							

For updated information see <u>http://bilakniha.cvut.cz/en/f3.html</u> Generated: day 2025-06-15, time 19:47.