# Study plan

# Name of study plan: Electronics and Communications - Radio Communications and **Systems**

Faculty/Institute/Others: Faculty of Electrical Engineering Department: Branch of study guaranteed by the department: Welcome page Garantor of the study branch: Program of study: Electronics and Communications Type of study: Follow-up master full-time Required credits: 109 Elective courses credits: 11 Sum of credits in the plan: 120 Note on the plan:

Name of the block: Compulsory courses in the program Minimal number of credits of the block: 79 The role of the block: P

Code of the group: 2018 MEKDIP Name of the group: Diploma Thesis Requirement credits in the group: In this group you have to gain 25 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 25 Note on the group:

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

## Characteristics of the courses of this group of Study Plan: Code=2018\_MEKDIP Name=Diploma Thesis

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 her branch of study, which will						
be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination.						

## Code of the group: 2018\_MEKP7

Name of the group: Compulsory subjects of the programme Requirement credits in the group: In this group you have to gain 54 credits Requirement courses in the group: In this group you have to complete 9 courses Credits in the group: 54 Specializace radiové systémy Note on the group:

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	Р
B2M37ART	Architecture of radio receivers and transmitters Josef Dobeš, Pavel Ková Karel Ulovec Pavel Ková (Gar.)	Z,ZK	6	2P+2L	Z	Р
B2M32BTSA	Wireless Technologies Zden k Be vá , Lukáš Vojt ch, Zbyn k Kocur, Pavel Mach <b>Ján Ku erák</b> Zden k Be vá (Gar.)	Z,ZK	6	2P + 2L	L	Р
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

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B2M31DSP	Advanced DSP methods Pavel Sovka, Petr Pollák Pavel Sovka Pavel Sovka (Gar.)	Z,ZK	6	2P+2C	Z,L	Р	
B2MPROJ6	Project Ji í Jakovenko, Pavel Máša, Ivan Pravda, František Rund, Jan Šístek, Lubor Jirásek, Tomáš Zeman, Ladislav Oppl <b>František Rund</b> František Rund (Gar.)	Z	6	0p+6s	Z,L	Р	
B2M17SBS	Wave Propagation for Wireless Links Pavel Pecha Pavel Pecha Pavel Pecha (Gar.)	Z,ZK	6	2P+2C	L	Р	
Characteristics of the	courses of this group of Study Plan: Code=2018 MEKP7 Nam	e=Compulso	rv suhie	ects of the	e program	me	
B2M17ANT Ant	tennas	<u></u>	i y ouioje	7	71	6	
$\sum_{i=1}^{i}$							
antennas and their arrays Se	aminars are both theoretical (analytical and numerical calculation using MATLAB and F	M simulators CS	T) and nra	rtical (measu	irement of an	tenna	
narameters)			n) and pla			terina	
	white stures of realist receivers and transmitters				71/		
D2IVI37ARI   AIC	chilecture of radio receivers and transmitters and software radio. The student of the	iliorize with the e	اممامم ممط	the medern	.,∠n   mathada af a	0 timization of	
the subject deals with the ar	childer of the radio receivers and transmitters and software radio. The student's fair	manze with the c	lesign and		nethous of o		
the radio receivers and trans	mitters functional blocks and with the phenomena related with frequency conversion, r	loise sources and	a noise ana	ilyses. They	earn concept		
receiver and transmitter desi	gn, including the level and frequency plans and their optimization. The course also dea	is with the digital	signal proc	cessing block	s of the mod	ern radio	
receivers and their practical i							
B2M32BTSA   Wii	reless lechnologies			2	.,ZK	6	
The lectures give overview of	f fundamental principles of wireless networks in various areas of their application. Stud	ents will understa	and archite	cture, princip	les and proto	cols used in	
different wireless technologie	es and learn how these technologies can be exploited in real world applications. The goa	al is to teach stud	lents how to	o solve probl	ems related to	o deployment	
of wireless networks, their op	peration or development of wireless networks components.						
B2M37DKM Dig	jital communications			Z	"ZK	6	
The course provides fundam	entals of digital communications theory: modulation, classical coding, channel models,	and basic princip	oles of deco	oding. The ex	position is sy	stematically	
built along the theoretical line	es which allow to reveal all inner connections and principles. This allows students to de	velop the knowle	dge and us	e it in an act	ive way in a d	esign and	
construction of the communic	cation systems. The course provides a necessary fundamental background for subsequents	uent more advand	ced commu	inications the	eory courses.		
B2M37MAM Mic	croprocessors			Z	"ZK	6	
The aim is to make students	acquainted with the properties of microprocessor systems, make students familiar with	on-chip periphe	rals, conne	ct external c	rcuit to the pi	ocessor bus,	
and with implementation of th	ne memory or I/O space address extension. Next, taught the students to make simple p	program in the as	sembly lan	guage, C lar	guage and c	ombination of	
both. After completion of this	subject student should be able to design and implement simpler microprocessor syste	m including conn	ection of n	ecessary pe	ripherals and	software	
design.		Ū					
B2M17MIOA Mic	crowave Circuits			Z	.ZK	6	
Subject is focused on the des	sign of planar passive and active microwave circuits.			1	, 1	-	
B2M31DSP Adv	vanced DSP methods			7	7K	6	
The course follows the basic	course in signal processing and introduces advanced methods of analysis and digital si	ianal processing	Graduates	will learn the	methods of	diaital signals	
analysis and be able to pract	ically use them. They learn to know the conditions of use of correlation, spectral and co	pherent analysis	of random	signals They	will became	familiar with	
methods of signal decompos	ition and independent component analysis and the time-frequency transformations. En	nnhasis will be nl	aced on an	ability to int	ernret the res	ults of signal	
analyses				donity to int		and of orginal	
B2MPRO I6 Dro	niect				7	6	
Independent work in the form	Jour a of a project. A student will choose a tonic from a range of tonics related to his or her h	aranch of study y	hich will be	 s specified b	L	U artment or	
hranch departments The pro	here will be defended within the framework of a subject. Droject list http://www.fol.out.c	z/en/education/s	emestral.o	ojects html	y branch dep		
braiter departments. The project will be defined within the namework of a subject. Project list http://www.iei.cvut.cz/en/education/semestial-project.html							
	ive Fropagation for Wileless Links		4 4 - 1 - 1	Z	.,∠n	0 This sufface	
I ne aim of the course is to sti	udy the wireless transmission channel in real environments focusing on wave propagation	on for planning of	terrestrial a	and satellite	wireless links	i ne syllabus	
includes both deeper theoreti	cal loundations of radio wave propagation in the atmosphere as well as ITU-R design pro-	cedures for terres	unai and sa	leilite, fixed a	nd mobile cor	ninunications	
in various frequency bands.							

## Name of the block: Compulsory elective courses Minimal number of credits of the block: 30 The role of the block: PV

Code of the group: 2018\_MEKPV7 Name of the group: Compulsory subjects of the programme Requirement credits in the group: In this group you have to gain 30 credits Requirement courses in the group: In this group you have to complete 5 courses Credits in the group: 30 Note on the group: Specializace radiové systémy

Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their Code Completion Credits Scope Semester Role members) Tutors, authors and guarantors (gar.) **Experimental Data Analysis** B2M31AEDA Z,ZK 2P+2C Ζ 6 P٧ Jan Rusz Jan Rusz Jan Rusz (Gar.) CAD in HF Technique Zbyn k Škvor Zbyn k Škvor (Gar.) B2M17CADA Z,ZK 6 2P+2C L P٧ **Digital Video and Audio Broadcasting** B2M37DTRA Z,ZK 2P+2L Ζ 6 ΡV Karel Ulovec, Martin Bernas Karel Ulovec (Gar.) Coding in digital communications Jan Sýkora Jan Sýkora Jan Sýkora (Gar.) B2M37KDKA Z,ZK 6 3P+1C L P٧

B2M17MIMA	Microwave Measurements Karel Hoffmann, P emysl Hudec Viktor Adler P emysl Hudec (Gar.)	Z,ZK	6	2P+2L	L	PV	
B2M32MKSA	Mobile Networks Zden k Be vá, Pavel Mach, Robert Beš ák Pavel Mach Zden k Be vá (Gar.)	Z,ZK	6	2P + 2L	Z	PV	
B2M17NKA	Antennas Design and Technology Pavel Hazdra, Miloš Mazánek, Milan Polívka, Milan Švanda <b>Milan Švanda</b> Milan Polívka (Gar.)	Milan Švanda Z,ZK 6 2P+2L					
B2M34NSV VLSI System Design Pavel Hazdra, Jakub Jirsa Pavel Hazdra Pavel Hazdra (Gar.) Z,ZK 6 2P+2L Z PV							
B2M99RAD	Radar systems Pavel Ková, Pavel Puri er, Tomáš Ko ínek Tomáš Ko ínek (Gar.)	Z,ZK	6	2P+2L	Z	PV	
B2M37RNVA	Radio Navigation Pavel Ková Pavel Ková (Gar.)	Z,ZK	6	2P+2L	L	PV	
Characteristics of the	courses of this group of Study Plan: Code=2018 MEKPV7 Na	me=Compuls	sory sub	iects of tl	he progr	amme	
	vorimental Data Analysis		Sory Sub			6	
In the course of subject "Exp	arimental Data Analysis", students will acquire knowledge regarding fundamental met	hode for data and	lycic and m	→   Achine learn	,∠r\   ing for evalu	U uation and	
interpretation of data. In the c	ourse of practical lectures, students will solve individual tasks using real data from sign		neuroscien		In the course	se of semestral	
project student will solve con	poley task and present obtained results. The aim of the subject is to introduce practice	l application of fu	Indomental	etatistical me	thode as w		
students to use critical thinkin	in and to acquire additional knowledge in solution of practical tasks		inuamentai	Statistical me			
	D in HE Tochnique			7	71/	6	
	d techniques used in modern microwave circuit design			2	,21	0	
	ital Video and Audio Propaganting			7	71/	6	
The subject makes students f	ital VIUED allu AUUD DIDaucastilly	data stream crea	tion metho	∠   ∠ ds of source	,∠r\   and channe	U al coding error	
correction principles and mod	ulation formate. Attention is paid to transmission systems standards with regard to trans-		I properties	The subject	also doals y	vith multimedia	
data services and with measu	irement in transmission systems	Simission channe	i piopei iles.	The Subject		an manneala	
	ling in digital communications			7	71/	6	
This course extends and deep	pens the topics of the basic communication theory courses in the following main areas	1) Advanced info	ormation the		, and Netwo	ork Information	
Theory develop a framework	for understanding the principles of the channel coding in single-user and multi-node/mu	ulti-user scenario	s. 2) The alc	ebraic codin	a presents (	classical topics	
of block and convolutional co	des. 3) Advanced coding technique focuses on turbo, LDPC, Space-Time codes and V	Vireless Network	Coding. 4)	Advanced de	coding tech	nique, namely	
iterative and multi-user decod	ling is a fundamental tool for decoding capacity approaching channel codes.		υ,		0		
B2M17MIMA Mic	rowave Measurements			Z	.ZK	6	
Fast development of wireless	radio data communications (both mobile and stationary) also results in requirements	for measurement	of numero	us related ele	ectrical para	meters in	
frequency band ranging from	hundreds of MHz to tens of GHz. The "Microwave measurements" subject brings desc	ription of all impo	rtant measu	rement instr	uments and	measurement	
methods used in this field. Ins	tructions devoted to measurement devices also cover detailed inner structures, principle	es of operation, c	ommon me	asurement se	etups and op	otimum setting.	
Even relatively complex measured	surement instruments and setups are discussed, for example those used for measure	ment of noise and	d non-linea	parameters.	Exercises a	are focused on	
practical measurements comr	nonly performed in the wireless communication field. Besides modern measurement ins	struments, studen	its also lear	n a number of	typical RF	and microwave	
components, circuits, subsys	tems and digitally modulated signals.						
B2M32MKSA Mo	bile Networks			Z	,ZK	6	
The lectures introduce princip	oles and functionalities of mobile networks with special focus on currently deployed tec	chnologies and fu	iture mobile	networks. F	urthermore,	architecture	
and fundamental principles of	f GSM, UMTS, LTE/LTE-A, and 5G will be explained. Then, selected key technologies	for future mobile	networks (	SG) will be ex	plained.		
B2M17NKA Ant	ennas Design and Technology			Z	,ZK	6	
Basics of practical antenna de	esign for selected frequency bands and communication, identification and radar service	es. Modelling (full	-wave analy	vsis), design i	relationship	s and specifics	
of antenna construction using	professional software tools. Design and manufacture of antenna sample. Practical mi	easurements.					
B2M34NSV VLS	SI System Design			_ Z	,ZK	6	
Introduction to basic building	blocks, architecture and design methodologies of advanced VLSI systems. Structure a	and design of dig	ital and ana	logue integra	ated circuit	supsystems.	
Integrated system description and synthesis using cell libraries and IP cores. Synchronization, power consumption and parasitics reduction issues. Testing and reliability of integrated							
	s, the hardware description language who's will be explained and used for practical de	esign, synthesis a	and testing			6	
					,∠r.	0	
BZM3/RNVA Rad	Dio Navigation		المحادمة وال	<u>ک</u>	,∠K	6	
i ne course introduces studer	its to the terrestrial and satellite radio navigation and radar systems. Students get kno	wiedge of the rac	alo navigatio	on systems, a	and of the s	tructure of	
Students get knowledge of pr	and meanous of their processing. They become familiar with coordinate systems, funda actical applications and the integration of navigation systems.	mentals of celest	iai mechani	us, and meth	ous of posit	ion estimation.	
Gradenis ger knowledge of pi	מסווסמו מאטיויס מויט וויב ווונצומוטרו טו וומיוצמווטון שאונדוווס.						

Name of the block: Elective courses Minimal number of credits of the block: 0 The role of the block: V

Code of the group: 2018\_MEKH Name of the group: Humanities subjects Requirement credits in the group: Requirement courses in the group: Credits in the group: 0 Note on the group:

					r 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
B0M16FIL	Peter Zamarovský Peter Zamarovský Peter Zamarovský (Gar.)	Z,ZK	5	2P+2S	Z,L	V
B0M16HVT	History of science and technology 2 Marcela Efmertová, Jan Mikeš Marcela Efmertová Marcela Efmertová (Gar.)	Z,ZK	5	2P+2S	Z,L	V
B0M16HSD1	History of economy and social studies Marcela Efmertová	Z,ZK	5	2P+2S	Z,L	V
B0M16PSM	<b>Psychology</b> Jan Fiala <b>Jan Fiala</b> Jan Fiala (Gar.)	Z,ZK	5	2P+2S	Z,L	V
A003TV	Physical Education <i>Ji í Drnek</i>	Z	2	0+2	L,Z	V
B0M16TEO	Theology Vladimír Sláme ka Vladimír Sláme ka Vladimír Sláme ka (Gar.)	Z,ZK	5	2P+2S	Z,L	V

## Characteristics of the courses of this group of Study Plan: Code=2018\_MEKH Name=Humanities subjects

B0M16FIL		Z,ZK	5				
B0M16HVT	History of science and technology 2	Z,ZK	5				
This subject traces historical developments in electrical engineering branches in the world and in the Czech Lands. Its ultimate goal is to stimulate students' interest in the history and							
traditions of the subject,	while highlighting the developments in technical education and professional organizations, the process of shaping scientific	life and the influe	nce of technical				
engineers							
B0M16HSD1	History of economy and social studies	Z,ZK	5				
This subject deals with i	the history of the Czech society in the 19th - 21th centuries. It follows the forming of the Czech political representation, its ain	ns and achieved r	esults as well as				
the social and cultural d	evelopment and coexistence of the various ethnical groups in the Czech countries.						
B0M16PSM	Psychology	Z,ZK	5				
A003TV	Physical Education	Z	2				
B0M16TEO	Theology	Z,ZK	5				
This subject provides to students the basic orientation in christian theology and requires no special previous education. After short philosophic lecture the basic theologic disciplines							
are gone through. The subject is determined not only to believer students who want to know the reliable theologic grounding but also above all to ones who want to get know Christianity							
- religion from which gra	- religion from which graws our civilization up.						
- religion from which graws our civilization up.							

## Code of the group: MTV

Name of the group: Physical education

Requirement credits in the group:

Requirement courses in the group:

Credits in the group: 0

Note on the group:

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
TVV	Physical education	Z	0	0+2	Z,L	V
A003TV	Physical Education Ji í Drnek	Z	2	0+2	L,Z	V
TV-V1	Physical education	Z	1	0+2	Z,L	V
TVV0	Physical education	Z	0	0+2	Z,L	V
TVKLV	Physical Education Course	Z	0	7dní	L	V
TVKZV	Physical Education Course	Z	0	7dní	Z	V

#### Characteristics of the courses of this group of Study Plan: Code=MTV Name=Physical education

A003TV	Physical Education	Z	2
TVV	Physical education	Z	0
TV-V1	Physical education	Z	1
TVV0	Physical education	Z	0
TVKLV	Physical Education Course	Z	0
TVKZV	Physical Education Course	Z	0

Code of the group: 2018\_MEKVOL Name of the group: Elective subjects Requirement credits in the group: Requirement courses in the group: Credits in the group: 0 Note on the group: ~Nabío

~Nabídku volitelných předmětů uspořádaných podle kateder najdete na webových stránkách http://www.fel.cvut.cz/cz/education/volitelne-predmety.html\\

# List of courses of this pass:

Code	Name of the course	Completion	Credits			
A003TV	Physical Education	Z	2			
B0M16FIL		Z,ZK	5			
B0M16HSD1	History of economy and social studies	Z,ZK	5			
This subject deals	vith the history of the Czech society in the 19th - 21th centuries. It follows the forming of the Czech political representation, its aims a the social and cultural development and coexistence of the various ethnical groups in the Czech countries.	nd achieved result	s as well as			
B0M16HVT	History of science and technology 2	Z,ZK	5			
This subject traces	historical developments in electrical engineering branches in the world and in the Czech Lands. Its ultimate goal is to stimulate stude	ents' interest in the	history and			
traditions of the sul	oject, while highlighting the developments in technical education and professional organizations, the process of shaping scientific life engineers	and the influence	of technical			
B0M16PSM	Psychology	Z,ZK	5			
B0M16TEO	Theology	Z,ZK	5			
This subject provid are gone through. T	les to students the basic orientation in christian theology and requires no special previous education. After short philosophic lecture t he subject is determined not only to believer students who want to know the reliable theologic grounding but also above all to ones who - religion from which graws our civilization up.	he basic theologic o want to get know	disciplines Christianity			
B2M17ANT	Antennas	Z,ZK	6			
Student will get strong knowledge about theory of electromagnetic field radiation and basic principles of antenna design. Methods of analysis are demonstrated on various 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	CAD in HF Technique Introduction into principles and techniques used in modern microwave circuit design.	Z,ZK	6			
B2M17MIMA	Microwave Measurements	Z,ZK	6			
Fast developmen	t of wireless radio data communications (both mobile and stationary) also results in requirements for measurement of numerous rela	ited 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 measurement	nt setups and optin	num setting.			
Even relatively com	plex measurement instruments and setups are discussed, for example those used for measurement of noise and non-linear parameters	ters. Exercises are	focused on			
practical measurem	ents commonly performed in the wireless communication field. Besides modern measurement instruments, students also learn a numb components, circuits, subsystems and digitally modulated signals.	er of typical RF and	microwave			
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 a	antenna design for selected frequency bands and communication, identification and radar services. Modelling (full-wave analysis), des	ign relationships a	nd specifics			
D01470D0	of antenna construction using professional software tools. Design and manufacture of antenna sample. Practical measurement					
B2M1/SBS	Wave Propagation for Wireless Links	Z,ZK lite wireless links T	6 be svilabus			
includes both deepe	er theoretical foundations of radio wave propagation in the atmosphere as well as ITU-R design procedures for terrestrial and satellite fixe	ed and mobile com	munications			
	in various frequency bands.					
B2M31AEDA	Experimental Data Analysis	Z,ZK	6			
In the course of s	ubject "Experimental Data Analysis", students will acquire knowledge regarding fundamental methods for data analysis and machine	e learning for evalu	ation and			
interpretation of dat	a. In the course of practical lectures, students will solve individual tasks using real data from signal processing in neuroscience resea	rch. In the course of	of semestral			
project, student wil	solve complex task and present obtained results. The aim of the subject is to introduce practical application of fundamental statistical statis	al methods as well	as to teach			
B2M31DSP	Advanced DSP methods	7 7K	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	aital signals			
analysis and be ab	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 of	lecomposition and independent component analysis and the time-frequency transformations. Emphasis will be placed on an ability to analyses.	o interpret the resu	lts of signal			
B2M32BTSA	Wireless Technologies	Z,ZK	6			
The lectures give of	verview of fundamental principles of wireless networks in various areas of their application. Students will understand architecture, pr	inciples and protoc	ols used in			
different wireless te	chnologies and learn how these technologies can be exploited in real world applications. The goal is to teach students how to solve p	roblems related to	deployment			
	of wireless networks, their operation or development of wireless networks components.	7 71/				
B2M32MKSA	Mobile Networks	Z,ZK	6 rehitesture			
and fundar	nace principles and functionalities of mobile networks with special locus on currently deployed technologies and future mobile networks (if mental principles of GSM_LIMTS_LTE/LTE-A_ and 5G will be explained. Then, selected key technologies for future mobile networks (if	KS. Furthermore, a SG) will be explain				
B2M34NSV	VI SI System Design	7 7K	6			
Introduction to bas	sic building blocks, architecture and design methodologies of advanced VLSI systems. Structure and design of digital and analogue in	ntegrated circuit su	bsvstems.			
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. I	n 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 v	vith the architecture of the radio receivers and transmitters and software radio. The student s familiarize with the design and the mode	ern methods of opt	imization of			
the radio receiver	s and transmitters' functional blocks and with the phenomena related with frequency conversion, noise sources and noise analyses.	They learn concep	tual radio			
receiver and tran	smitter design, including the level and frequency plans and their optimization. The course also deals with the digital signal processing	blocks of the moo	tern radio			
	receivers and their practical implementation.					

B2M37DKM	Digital communications	Z,ZK	6		
The course provide	es fundamentals of digital communications theory: modulation, classical coding, channel models, and basic principles of decoding. Th	he exposition is sys	stematically		
built along the the	oretical lines which allow to reveal all inner connections and principles. This allows students to develop the knowledge and use it in a	an active way in a c	lesign and		
construction	of the communication systems. The course provides a necessary fundamental background for subsequent more advanced communi	ications theory cou	irses.		
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 so	urce and channel o	oding, error		
correction principle:	s and modulation formats. Attention is paid to transmission systems standards with regard to transmission channel properties. The sub	ject also deals with	n 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	oding and Network	Information		
Theory develop a fr	amework for understanding the principles of the channel coding in single-user and multi-node/multi-user scenarios. 2) The algebraic c	oding presents cla	ssical topics		
of block and convol	utional codes. 3) Advanced coding technique focuses on turbo, LDPC, Space-Time codes and Wireless Network Coding. 4) Advance	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 extern	al circuit to the pro	cessor bus,		
and with implement	ation of the memory or I/O space address extension. Next, taught the students to make simple program in the assembly language, C	Clanguage and cor	mbination of		
both. After compl	etion of this subject student should be able to design and implement simpler microprocessor system including connection of necessa	ary peripherals and	d 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 syst	tems, and of the st	ructure of		
navigation and rada	r signals and methods of their processing. They become familiar with coordinate systems, fundamentals of celestial mechanics, and r	nethods 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 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 specil	fied by branch dep	artment or		
branc	h departments. The project will be defended within the framework of a subject. Project list http://www.fel.cvut.cz/en/education/semes/	tral-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	ner branch of study	, which will		
be specified b	y branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the compreh	ensive final examir	nation.		
TV-V1	Physical education	Z	1		
TVKLV	Physical Education Course	Z	0		
TVKZV	Physical Education Course	Z	0		
TVV	Physical education	Z	0		
TVV0	Physical education	Z	0		

For updated information see <u>http://bilakniha.cvut.cz/en/f3.html</u> Generated: day 2025-06-02, time 21:48.