Recomended pass through the study plan

Name of the pass: Specialization Photonics - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering Department: Pass through the study plan: Electronics and Communications - Photonics 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 semes	ster: 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
B2M37MAM	Microprocessors Petr Skalický, Stanislav Vítek Stanislav Vítek (Gar.)	Z,ZK	6	2P+2L	Z	Ρ
B2M37OBFA	Image Photonics Lukáš Krauz, Petr Páta Petr Páta Petr Páta (Gar.)	Z,ZK	6	2P+2L	Z	Ρ
B2M37OBT	Image Technology Lukáš Krauz, Petr Páta, Miloš Klíma Karel Fliegel Petr Páta (Gar.)	Z,ZK	6	2p+2l	Z	Ρ
B2M31DSP	Advanced DSP methods Pavel Sovka, Petr Pollák Pavel Sovka Pavel Sovka (Gar.)	Z,ZK	6	2P+2C	Z,L	Ρ
B2M17VOT	Fiber Optic Technology Stanislav Zvánovec, Mat j Komanec, Jan Šístek Stanislav Zvánovec Stanislav Zvánovec (Gar.)	Z,ZK	6	2P+2L	Z	Ρ

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 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	Ρ
B2M32OSS	Optical Systems and Networks Ji í Weiss, Leoš Bohá Michal Lucki Leoš Bohá (Gar.)	Z,ZK	6	2P + 2L	L	Ρ
B2M17SBS	Wave Propagation for Wireless Links Pavel Pecha Pavel Pecha Pavel Pecha (Gar.)	Z,ZK	6	2P+2C	L	Р
		Min. cours.				
	Povinn volitelné p edm ty programu B2M31AEDA,B2M17CADA, (see the list of groups below)	5	Min/Max			51
2010_IVIEKPV3		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 Jan Šístek, František Rund, Tomáš Zeman, Ji í Jakovenko, Pavel Máša, Ivan Pravda, Lubor Jirásek, Ladislav Oppl František Rund František Rund (Gar.)	Z	6	0p+6s	Z,L	Р

2018_MEKPV3	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	Credits	Scope	Semester	Role
2018_ME	KPV3	Povinn ve	olitelné p edr	n ty programu	Min. Max.	cours. 5 cours. 5	Min/Ma 30/30	x		PV
B2M31AEDA	Experimen	ital Data Analysis	al Data Analysis B2M17CADA CAD in HF Technique			B2M37K	37KASA Compression of images a			signal
B2M17MIOA	Microwave	Circuits	B2M37MOTA	Advanced areas in image and vide		B2M34N	ANA N	anoelectroni	cs and Nanote	chnolo
B2M34NSV	VLSI Syste	em Design	B2M34ZETA	Custom Electronics Design B2M17OPM		PM C	Optical Measurements			
B2M34PIOA	Planar inte	grated optics	B2M32PRSA	Access Networks			· · · · ·			
2018_ME	KVOL	VoliteIn	é odborné p	edm ty2018	Min.	cours. 0	Min/Ma 0/999	×		V

List of courses of this pass:

Code	Name of the course	Completion	Credits			
B2M17CADA	CAD in HF Technique	Z,ZK	6			
	Introduction into principles and techniques used in modern microwave circuit design.					
B2M17MIOA	Microwave Circuits	Z,ZK	6			
	Subject is focused on the design of planar passive and active microwave circuits.					
B2M17OPM	Optical Measurements		6			
B2M17SBS	Wave Propagation for Wireless Links	Z,ZK	6			
The aim of the cour	se is to study the wireless transmission channel in real environments focusing on wave propagation for planning of terrestrial and satel	lite wireless links.	The syllabus			
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.					
B2M17VOT	Fiber Optic Technology	Z,ZK	6			
The aim of the cour	se is to introduce mechanisms of propagation of optical waves in optical fibers and fiber components. Furthermore, the optical measur	ing techniques and	1 measuring			
methods for the cha	rracterization of optical fibers will be presented. Lectures include both the design and methodology of measuring transmission parame	ters for optical con	nmunication			
systems such as nu	imerical aperture, attenuation, dispersion, and measurement of basic characteristics of active and passive elements of optical commu	nication systems -	connectors,			
	splices, couplers, refractive indices etc.					
B2M31AEDA	Experimental Data Analysis	Z,ZK	6			
In the course of s	subject "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	I solve complex task and present obtained results. The aim of the subject is to introduce practical application of fundamental statistica	al 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 digital signals						
analysis and be able to practically use them. They learn to know the conditions of use of correlation, spectral and coherent analysis of random signals. They will became familiar with						
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methods of signal decomposition and independent component analysis and the time-frequency transformations. Emphasis will be placed on an ability to interpret the results of signal

0	analyses.	·	U
B2M32BTSA	Wireless Technologies	Z,ZK	6
The lectures give overvie	ew of fundamental principles of wireless networks in various areas of their application. Students will understand architecture, pr	inciples and protoc	cols used in
different wireless technol	logies 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
DOMOGOOO	of wireless networks, their operation or development of wireless networks components.	7 71/	0
B2IVI32USS	Optical Systems and Networks	Z,ZK	b odvopood
optical communication	e use of optical radiation for the transmission of mormation. The aim is to acquaint students with the functions of important con on systems and networks. Students will learn how to design practical optical fiber link and the network. Students will receive the	oretical knowledge	for the
implement	tation of a all-optical photonic networks in the future, which will be based on a combination of wavelength multiplex with an all-o	ptical switching.	
B2M32PRSA	Access Networks	7.7K	6
The course covers the a	area of high-speed transmission of information in the access network level, with emphasis on the use of optical transmission me	edia and its combi	nation with
metallic lines (FTTx). In t	he practical part, students will learn the methods required for the design, modeling, measurement and analysis of transmission	media, diagnostics	s of systems
	and whole access networks.		
B2M34NANA	Nanoelectronics and Nanotechnology	Z,ZK	6
The subject is oriented	on the present nanotechnologies in the connection with their electronic, photonic and spintrinic applications. Quantum theory b	asics are used to e	explain the
effects observed in nano	ostructures. Basic nanoelectronic structures are described with their possible applications. Modern computer methods and mode	els, which are able	to simulate
	the operation of handelectronic structures and which are the important tools for their design and optimalisation, are studied		0
BZIVI34INSV	VLSI System Design	Z,ZK	0 Ibsvetoms
Integrated system descri	inting blocks, architecture and design methodologies of advanced VLSI systems. Structure and design of digital and analogue in intion and synthesis using cell libraries and IP cores. Synchronization, power consumption and parasitics reduction issues. Test	ing and reliability of	of integrated
systems. In sen	ninars and labs, the hardware description language VHDL will be explained and used for practical design, synthesis and testing	of a system on ch	ip.
B2M34PIOA	Planar integrated optics	Z.ZK	6
he subject describes theo	pretical and technological principles and design of planar integrated optics and optoelectronics as optical dividers, The students ge	t acquainted with th	ne principles
of the light propagation in	n planar waveguide and with basic devices and structures of integrated optics and optoelectronics as coupling elements, optical r	nicroresonators, p	lanar optical
transmitters an receive	ers with SS-LD, WG-PD . In the course are integrated devices and structures for telecommunication for multiplexing and signal p	rocessing. There a	are optical
I	elements for physical and chemical sensor application and basic important measurement and diagnostic methods.		
B2M34ZETA	Custom Electronics Design	KZ	6
The course deals with t	the design methodology of advanced custom electronics. The aim is to convert theoretical knowledge of previous studies into spanning the sector of the secto	pecific proposals fo	or practical
applications. Student are	getting raminal with the problems encountered in the professional electronic design and manufacturing. This course is based on the	ear experience in c	levelopment
B2M37KASA	Compression of images and signals	7 7K	6
The subject deals with co	ompression methods and techniques. Main goal is to introduce basic concepts of lossless and lossy compression of audiovisual inf	ormation (entropy.	redundancv
and irrelevancy). Within	n the laboratory exercises students will work with implementations of particular algorithms, including objective and subjective m	ethods of quality e	valuation.
B2M37MAM	Microprocessors	Z,ZK	6
The aim is to make stude	ents 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 implementation	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	mbination of
both. After completion	of this subject student should be able to design and implement simpler microprocessor system including connection of necessary	ary peripherals and	software
	design.	7 71/	0
B2M37MOTA	Advanced areas in image and video technology	Z,ZK	b
dealing with human inte	and state-or-line-art techniques for ulgital image and video technology. These techniques and their applications cover almost an eraction. A significant part of the course is focused on the methods of image signal processing and main hardware and software	a functional blocks	of related
imaging systems. The air	m of the laboratory exercises is to familiarize with advanced methods for capturing, processing and reproduction of image inform	ation. Due to the fa	ast progress
0 0 7	in this area, the content of the lectures and exercises is being continuously updated.		1 0
B2M37OBFA	Image Photonics	Z,ZK	6
The subject offers a deta	ailed overview of applied imaging photonic elements and systems. The subject deals with fundamentals of optics, Fourier optics	and optical compu	ting. Fourier
optics. Image sensors - tu	ube, CCD, CMOS. Image displays. Image converters and amplifiers. Photography and holography - sensitometry and densitometry	. Photonic (optical)	computing.
	Electron optics. Image processing in biosystems. Image processing for photonics.		-
B2M37OBT	Image Technology	Z,ZK	6
This course deals with m	ultimedia technology and it is focused mainly on acquisition, processing and reproduction of image information. It covers area of	measurements in	photometry,
other special methods of	image reproduction e.g. polygraphy and digital printing techniques. Studied problems are completed with explanation of advanced	l methods of image	ny and with
	(preprocessing, compression, image reconstruction, etc.).	i notiloto ol intege	proceeding
B2MPROJ6	Project	Z	6
Independent work in the	e 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 specif	ied by branch dep	artment or
branch dep	partments. The project will be defended within the framework of a subject. Project list http://www.fel.cvut.cz/en/education/semest	tral-projects.html	
BDIP25	Diploma Thesis	Z	25
Independent final comp	rehensive 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 by bra	nch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the compreh	ensive final examir	nation.
BEZM	Safety in Electrical Engineering for a master's degree	Z	0
The course provides for	or students of all programs periodic training guidelines for health and occupational safety and gives knowledge of electrical haza	ard of given branch	n 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 2025-07-06, time 01:44.