Recomended pass through the study plan

Name of the pass: Specialization Electronics - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering
Department:
Pass through the study plan: Electronics and Communications - Electronics
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
BE2M31DSPA	**Digital Signal Processing** *Petr Pollák **Petr Pollák** Petr Pollák (Gar.)*	Z,ZK	6	2P+2C	Z	P
BE2M34SIS	**Integrated System Structures** *Jiří Jakovenko, Vladimír Janíček **Jiří Jakovenko** Jiří Jakovenko (Gar.)*	Z,ZK	6	2P+2C	Z	P
BE2M37MAM	**Microprocessors** *Stanislav Vítek **Stanislav Vítek** Stanislav Vítek (Gar.)*	Z,ZK	6	2P+2L	Z	P
BEEZM	**Safety in Electrical Engineering for a master´s degree** *Vladimír Kůla, Ivana Nová, Josef Černohous, Radek Havlíček **Radek Havlíček** Vladimír Kůla (Gar.)*	Z	0	2BP+2BC	Z	P
BE2M34SST	**Solid State Physics** *Jan Voves **Jan Voves** Jan Voves (Gar.)*	Z,ZK	6	3P+1L	Z	P
BE2M34NSV	**VLSI System Design** *Pavel Hazdra **Pavel Hazdra** Pavel Hazdra (Gar.)*	Z,ZK	6	2P+2L	Z	P

Number of semester: 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
BE2M17CADA	**CAD in HF Technique** *Zbyněk Škvor **Zbyněk Škvor** Zbyněk Škvor (Gar.)*	Z,ZK	6	2P+2C	L	P
BE2M34NIS	**Design of Integrated Circuits** *Vladimír Janíček **Vladimír Janíček** Jiří Jakovenko (Gar.)*	Z,ZK	6	2P+2C	L	P
BE2M34MST	**Microsystems** *Miroslav Husák, Alexandr Laposa, Adam Bouřa **Miroslav Husák** Miroslav Husák (Gar.)*	Z,ZK	6	2P+2L	L	P
BE2M34NANA	**Nanoelectronics and Nanotechnology** *Jan Voves **Jan Voves** Jan Voves (Gar.)*	Z,ZK	6	2P+2C	L	P
BE2M32BTSA	**Wireless Technologies** *Zdeněk Bečvář, Lukáš Vojtěch, Zbyněk Kocur, Pavel Mach **Ján Kučerák** Zdeněk Bečvář (Gar.)*	Z,ZK	6	2P + 2L	Z,L	P

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
BE2M34ZETA	**Custom Electronics Design** *Vladimír Janíček **Vladimír Janíček** Vladimír Janíček (Gar.)*	KZ	6	2P+2L	Z	P
BE2M34EZSA	**Electronic Security Systems** *Miroslav Husák, Tomáš Teplý **Miroslav Husák** Miroslav Husák (Gar.)*	Z,ZK	6	2P+2C	Z	P

BE2M34PIOA	**Planar Integrated Optics** *Vítězslav Jeřábek, Václav Prajzler* ***Václav Prajzler*** *Václav Prajzler (Gar.)*	Z,ZK	6	2P+2C	Z	P
BE2MPROJ6	**Project** *Zdeněk Bečvář, Jan Šístek, Pavel Máša, Ivan Pravda, Lubor Jirásek, František Rund* ***František Rund*** *František Rund (Gar.)*	Z	6	0p+6s		P
2018_MEKEVOL	**Elective subjects**	Min. cours. 0	Min/Max 0/999			V

Number of semester: 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	P
2018_MEKEVOL	**Elective subjects**	Min. cours. 0	Min/Max 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)	Completion	Credits	Scope	Semester	Role
2018_MEKEVOL	**Elective subjects**	**Min. cours.** **0**	**Min/Max** 0/999			V

List of courses of this pass:

Code	Name of the course	Completion	Credits
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.			
BE2M17CADA	CAD in HF Technique	Z,ZK	6
Introduction into principles and techniques used in modern microwave circuit design.			
BE2M31DSPA	Digital Signal Processing	Z,ZK	6
The subject gives overview about basic methods of digital signal processing and their applications (examples from speech and biological signal processing): disrete-time signals and systems, signal characteristics in time and frequency domain, Fourier transform, fast algorithms for DFT computation, introduction to digital filter design, digital filtering in time and frequency domain, decimation and interpolation and their usage in filter banks, basics of LPC analysis. Further details can be found at http://noel.feld.cvut.cz/vyu/be2m31dspa .			
BE2M32BTSA	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.			
BE2M34EZSA	Electronic Security Systems	Z,ZK	6
The subject describes the system design, electronic solutions, conception characteristics, reliability and its increasing of electronic security and safety systems. It reports solutions of electronic sensor systems and methods of security system design, usage of modern electronic components and microprocessors. It offers practical applications suitable for safety systems of houses, cars, industry companies.			
BE2M34MST	Microsystems	Z,ZK	6
The course deals with system integration applied in the design of digital and analog systems. It demonstrates the new possibilities of implementation and application of integrated microelectronic devices based on various physical and biochemical principles. It presents primarily MEMS technology that increases reliability with all its attributes. The course presents the modern action elements and microactuators, whose operation is based on fundamental physical and biochemical principles, including basic applications in micromanipulation, microrobots, microdrives, microsurgery, multimedia, medical, industrial control, automotive, etc. In the course are presented the principles of touch screens, microgenerators of electrical energy. There are mentioned basic elements of the use of nanotechnology and nanoelectronic structures and basic microsystem technologies.			
BE2M34NANA	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 basics are used to explain the effects observed in nanostructures. Basic nanoelectronic structures are described with their possible applications. Modern computer methods and models, which are able to simulate the operation of nanoelectronic structures and which are the important tools for their design and optimalisation, are studied.			
BE2M34NIS	Design of Integrated Circuits	Z,ZK	6
Main tasks of integrated circuits designer; design abstraction levels - Y chart. Definitions of specification, feasibility study, criteria for technology and design kits selection. Integrated systems design and simulation methodologies. Main features of full custom design, gate array, standard cells, programmable array logic. Design aspects of RF and mobile low power			

	systems. Verilog-A, Verilog-AMS, VHDL-A. Logic and physical synthesis. Frond End and Back End design. Floorplanning, place and route, layout, parasitic extraction, time analysis, testbenches design and verification.		
BE2M34NSV	VLSI System Design	Z,ZK	6
	Introduction to basic building blocks, architecture and design methodologies of advanced VLSI systems. Structure and design of digital and analogue integrated circuit subsystems. Integrated system description and synthesis using cell libraries and IP cores. Synchronization, power consumption and parasitics reduction issues. Testing and reliability of 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 chip.		
BE2M34PIOA	Planar Integrated Optics	Z,ZK	6
	The subject describes theoretical and technological principles and design of planar integrated optics and optoelectronics as optical dividers, The students get acquainted with the principles of the light propagation in planar waveguide and with basic devices and structures of integrated optics and optoelectronics as coupling elements, optical microresonators, planar optical transmitters an receivers with SS-LD, WG-PD . In the course are integrated devices and structures for telecommunication for multiplexing and signal processing. There are optical elements for physical and chemical sensor application and basic important measurement and diagnostic methods.		
BE2M34SIS	Integrated System Structures	Z,ZK	6
	Student learn main design methodologies of analog, digital and optoelectronic integrated systems; Detailed description of the technological process for the IC production; CMOS technologies and its advanced sub-micron trends; IC chip topology, layout and design rules; Technology of micro-electro-mechanical systems MEMS.		
BE2M34SST	Solid State Physics	Z,ZK	6
	The subject is aimed on solid state physics including some parts of statistical physics.		
BE2M34ZETA	Custom Electronics Design	KZ	6
	The course deals with the design methodology of advanced custom electronics. The aim is to convert theoretical knowledge of previous studies into specific proposals for practical applications. Student are getting familiar with the problems encountered in the professional electronic design and manufacturing. This course is based on real experience in development and production, showing the latest technological trends and component base.		
BE2M37MAM	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 external circuit to the processor 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 combination of both. After completion of this subject student should be able to design and implement simpler microprocessor system including connection of necessary peripherals and software design.		
BE2MPROJ6	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 specified by branch department or branch departments. The project will be defended within the framework of a subject. List of possible topics: http://www.fel.cvut.cz/en/education/semestral-projects.html		
BEEZM	Safety in Electrical Engineering for a master´s degree	Z	0
	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 of study. Students receive indispensable qualification according to the current Directive of the Dean.		

For updated information see http://bilakniha.cvut.cz/en/f3.html
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