Study plan

Name of study plan: Electronics and Communications - Photonics

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	P

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_MEKP3
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
Note on the group: Specializace fotonika

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	P
B2M37MAM	**Microprocessors** *Petr Skalický, Stanislav Vítek* **Stanislav Vítek** *Stanislav Vítek (Gar.)*	Z,ZK	6	2P+2L	Z	P
B2M37OBFA	**Image Photonics** *Lukáš Krauz, Petr Páta* **Petr Páta** *Petr Páta (Gar.)*	Z,ZK	6	2P+2L	Z	P
B2M37OBT	**Image Technology** *Lukáš Krauz, Petr Páta, Miloš Klíma* **Karel Fliegel** *Petr Páta (Gar.)*	Z,ZK	6	2p+2l	Z	P
B2M32OSS	**Optical Systems and Networks** *Ji í Weiss, Leoš Bohá* **Michal Lucki** *Leoš Bohá (Gar.)*	Z,ZK	6	2P + 2L	L	P
B2M31DSP	**Advanced DSP methods** *Pavel Sovka, Petr Pollák* **Pavel Sovka** *Pavel Sovka (Gar.)*	Z,ZK	6	2P+2C	Z,L	P

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	P
B2M17SBS	**Wave Propagation for Wireless Links** *Pavel Pecha* **Pavel Pecha** *Pavel Pecha (Gar.)*	Z,ZK	6	2P+2C	L	P
B2M17VOT	**Fiber Optic Technology** *Jan Šístek, Stanislav Zvánovec, Mat j Komanec* **Stanislav Zvánovec** *Stanislav Zvánovec (Gar.)*	Z,ZK	6	2P+2L	Z	P

Characteristics of the courses of this group of Study Plan: Code=2018_MEKP3 Name=Compulsory subjects of the programme

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.				
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 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.				
B2M37OBFA	Image Photonics		Z,ZK	6
The subject offers a detailed overview of applied imaging photonic elements and systems. The subject deals with fundamentals of optics, Fourier optics and optical computing. Fourier optics. Image sensors - tube, 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 multimedia technology and it is focused mainly on acquisition, processing and reproduction of image information. It covers area of measurements in photometry, radiometry and colorimetry; design of objective lenses, image sensors and displays including their parameters. Further the course deals with cinematography, photography and with other special methods of image reproduction, e.g. polygraphy and digital printing techniques. Studied problems are completed with explanation of advanced methods of image processing (preprocessing, compression, image reconstruction, etc.).				
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 components used in an advanced optical communication systems and networks. Students will learn how to design practical optical fiber link and the network. Students will receive theoretical knowledge for the 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.				
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 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 analyses.				
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 specified by branch department or branch departments. The project will be defended within the framework of a subject. Project list http://www.fel.cvut.cz/en/education/semestral-projects.html				
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.				
B2M17VOT	Fiber Optic Technology		Z,ZK	6
The aim of the course is to introduce mechanisms of propagation of optical waves in optical fibers and fiber components. Furthermore, the optical measuring techniques and measuring methods for the characterization of optical fibers will be presented. Lectures include both the design and methodology of measuring transmission parameters for optical communication systems such as numerical aperture, attenuation, dispersion, and measurement of basic characteristics of active and passive elements of optical communication systems - connectors, splices, couplers, refractive indices etc.				

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_MEKPV3

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 fotonika

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
B2M31AEDA	**Experimental Data Analysis** *Jan Rusz* **Jan Rusz** *Jan Rusz (Gar.)*	Z,ZK	6	2P+2C	Z	PV
B2M17CADA	**CAD in HF Technique** *Zbyn k Škvor* **Zbyn k Škvor** *Zbyn k Škvor (Gar.)*	Z,ZK	6	2P+2C	L	PV

B2M37KASA	**Compression of images and signals** *Stanislav Vítek, Karel Fliegel, František Rund, Václav Vencovský* **Karel Fliegel** *Stanislav Vítek (Gar.)*	Z,ZK	6	2P+2C	L	PV
B2M17MIOA	**Microwave Circuits** *Karel Hoffmann, P emysl Hudec* **P emysl Hudec** *Milan Polívka (Gar.)*	Z,ZK	6	2P+2C	Z	PV
B2M37MOTA	**Advanced areas in image and video technology** *Karel Fliegel* **Karel Fliegel** *Karel Fliegel (Gar.)*	Z,ZK	6	2P+2L	Z	PV
B2M34NANA	**Nanoelectronics and Nanotechnology** *Jan Voves* **Jan Voves** *Jan Voves (Gar.)*	Z,ZK	6	2P+2C	L	PV
B2M34NSV	**VLSI System Design** *Pavel Hazdra, Jakub Jirsa* **Pavel Hazdra** *Pavel Hazdra (Gar.)*	Z,ZK	6	2P+2L	Z	PV
B2M34ZETA	**Custom Electronics Design** *Vít Záhlava* **Vít Záhlava** *Vít Záhlava (Gar.)*	KZ	6	2P+2L	Z	PV
B2M17OPM	**Optical Measurements** *Stanislav Vítek, Stanislav Zvánovec, Mat j Komanec* **Mat j Komanec** *Stanislav Zvánovec (Gar.)*	Z,ZK	6	2P+2L	L	PV
B2M34PIOA	**Planar integrated optics** *Tomáš Martan, Václav Prajzler, Vít zslav Je ábek* **Václav Prajzler** *Václav Prajzler (Gar.)*	Z,ZK	6	2P+2C	Z	PV
B2M32PRSA	**Access Networks** *Tomáš Zeman, Ji í Vodrážka, Pavel Lafata* **Petr Jareš** *Ji í Vodrážka (Gar.)*	Z,ZK	6	2P + 2L	Z	PV

Characteristics of the courses of this group of Study Plan: Code=2018_MEKPV3 Name=Compulsory subjects of the programme

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 evaluation 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.			
B2M17CADA	CAD in HF Technique	Z,ZK	6
Introduction into principles and techniques used in modern microwave circuit design.			
B2M37KASA	Compression of images and signals	Z,ZK	6
The subject deals with compression methods and techniques. Main goal is to introduce basic concepts of lossless and lossy compresion of audiovisual information (entropy, redundancy and irrelevancy). Within the laboratory exercises students will work with implementations of particular algorithms, including objective and subjective methods of quality evaluation.			
B2M17MIOA	Microwave Circuits	Z,ZK	6
Subject is focused on the design of planar passive and active microwave circuits.			
B2M37MOTA	Advanced areas in image and video technology	Z,ZK	6
This course focuses on the state-of-the-art techniques for digital image and video technology. These techniques and their applications cover almost all areas of technical professions dealing with human interaction. A significant part of the course is focused on the methods of image signal processing and main hardware and software functional blocks of related imaging systems. The aim of the laboratory exercises is to familiarize with advanced methods for capturing, processing and reproduction of image information. Due to the fast progress in this area, the content of the lectures and exercises is being continuously updated.			
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 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.			
B2M34NSV	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.			
B2M34ZETA	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.			
B2M17OPM	Optical Measurements	Z,ZK	6
B2M34PIOA	Planar integrated optics	Z,ZK	6
he 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.			
B2M32PRSA	Access Networks	Z,ZK	6
The course covers the area of high-speed transmission of information in the access network level, with emphasis on the use of optical transmission media and its combination with metallic lines (FTTx). In the practical part, students will learn the methods required for the design, modeling, measurement and analysis of transmission media, diagnostics of systems and whole access networks.			

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:

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	**Psychology** *Jan Fiala* **Jan Fiala** *Jan Fiala (Gar.)*	Z,ZK	5	2P+2S	Z,L	V
A003TV	**Physical Education** *Jiří Drnek*	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 influence of technical engineers			
B0M16HSD1	History of economy and social studies	Z,ZK	5
This subject deals with the history of the Czech society in the 19th - 21st centuries. It follows the forming of the Czech political representation, its aims and achieved results as well as the social and cultural development 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 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** *Jiří 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

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 with the history of the Czech society in the 19th - 21th centuries. It follows the forming of the Czech political representation, its aims and achieved results as well as the social and cultural development and coexistence of the various ethnical groups in the Czech countries.		
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 influence of technical engineers		
B0M16PSM	Psychology	Z,ZK	5
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 graws our civilization up.		
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	Z,ZK	6
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.		
B2M17VOT	Fiber Optic Technology	Z,ZK	6
	The aim of the course is to introduce mechanisms of propagation of optical waves in optical fibers and fiber components. Furthermore, the optical measuring techniques and measuring methods for the characterization of optical fibers will be presented. Lectures include both the design and methodology of measuring transmission parameters for optical communication systems such as numerical aperture, attenuation, dispersion, and measurement of basic characteristics of active and passive elements of optical communication systems - connectors, splices, couplers, refractive indices etc.		
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 evaluation 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 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 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 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, 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.		
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 components used in an advanced optical communication systems and networks. Students will learn how to design practical optical fiber link and the network. Students will receive theoretical knowledge for the 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.		
B2M32PRSA	Access Networks	Z,ZK	6
	The course covers the area of high-speed transmission of information in the access network level, with emphasis on the use of optical transmission media and its combination with metallic lines (FTTx). In the practical part, students will learn the methods required for the design, modeling, measurement and analysis of transmission media, diagnostics 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 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.		
B2M34NSV	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.		

Code	Name		Exam	Credits
B2M34PIOA	Planar integrated optics		Z,ZK	6
	he 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.			
B2M34ZETA	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.			
B2M37KASA	Compression of images and signals		Z,ZK	6
	The subject deals with compression methods and techniques. Main goal is to introduce basic concepts of lossless and lossy compresion of audiovisual information (entropy, redundancy and irrelevancy). Within the laboratory exercises students will work with implementations of particular algorithms, including objective and subjective methods of quality evaluation.			
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 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.			
B2M37MOTA	Advanced areas in image and video technology		Z,ZK	6
	This course focuses on the state-of-the-art techniques for digital image and video technology. These techniques and their applications cover almost all areas of technical professions dealing with human interaction. A significant part of the course is focused on the methods of image signal processing and main hardware and software functional blocks of related imaging systems. The aim of the laboratory exercises is to familiarize with advanced methods for capturing, processing and reproduction of image information. Due to the fast progress in this area, the content of the lectures and exercises is being continuously updated.			
B2M37OBFA	Image Photonics		Z,ZK	6
	The subject offers a detailed overview of applied imaging photonic elements and systems. The subject deals with fundamentals of optics, Fourier optics and optical computing. Fourier optics. Image sensors - tube, 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 multimedia technology and it is focused mainly on acquisition, processing and reproduction of image information. It covers area of measurements in photometry, radiometry and colorimetry; design of objective lenses, image sensors and displays including their parameters. Further the course deals with cinematography, photography and with other special methods of image reproduction, e.g. polygraphy and digital printing techniques. Studied problems are completed with explanation of advanced methods of image processing (preprocessing, compression, image reconstruction, etc.).			
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 specified by branch department or branch departments. The project will be defended within the framework of a subject. Project list http://www.fel.cvut.cz/en/education/semestral-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 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.			
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 http://bilakniha.cvut.cz/en/f3.html
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