Recomended pass through the study plan

Name of the pass: Specialization Audiovisual Technology and Signal Processing -Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering

Department:

Pass through the study plan: Electronics and Communications - Audiovisual Technology and Signal Processing

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
BE2M99ZVT	Audio Technology 1 Libor Husník, Ondřej Jiříček, František Rund František Rund Libor Husník (Gar.)	Z,ZK	6	2P+2L	Z	Р
BE2M31DSPA	Digital Signal Processing Petr Pollák Petr Pollák Petr Pollák (Gar.)	Z,ZK	6	2P+2C	Z	Р
BE2M37OBT	Image Technology Lukáš Krauz, Petr Páta, Karel Fliegel Karel Fliegel Petr Páta (Gar.)	Z,ZK	6	2P+2L	Z	Р
BE2M37MAM	Microprocessors Stanislav Vítek Stanislav Vítek (Gar.)	Z,ZK	6	2P+2L	Z	Р
BEEZM	Safety in Electrical Engineering for a master´s degree Vladimir Kûla, Ivana Nová, Josef Černohous, Radek Havlíček Radek Havlíček Vladimír Kůla (Gar.)	Z	0	2BP+2BC	Z	Р
BE2M31SYN	Synthesis of Audio Signals Roman Čmejla Roman Čmejla (Gar.)	Z,ZK	6	2P+2C	Z	Р

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
BE2M37KASA	Compression of Images and Signals František Rund, Karel Fliegel, Stanislav Vítek, Václav Vencovský Karel Fliegel Stanislav Vítek (Gar.)	Z,ZK	6	2P+2C	L	Р
BE2M31ZRE	Speech Processing Petr Pollák Petr Pollák (Gar.)	Z,ZK	6	2P+2C	L	Р
BE2M32BTSA	Wireless Technologies Zdeněk Bečvář, Lukáš Vojtěch, Zbyněk Kocur, Pavel Mach Ján Kučerák Zdeněk Bečvář (Gar.)	Z,ZK	6	2P + 2L	Z,L	Р
2018_MEKEPV2	Compulsory subjects of the programme BE2M37MOTA,BE2M37ZV2A, (see the list of groups below)	Min. cours. 5 Max. cours. 5	Min/Max 30/30			PV

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
BE2MPROJ6	Project František Rund, Zdeněk Bečvář, Jan Šístek, Pavel Máša, Ivan Pravda, Lubor Jirásek František Rund František Rund (Gar.)	Z	6	0p+6s		Р
2018_MEKEPV2	Compulsory subjects of the programme BE2M37MOTA,BE2M37ZV2A, (see the list of groups below)	Min. cours. 5 Max. cours. 5	Min/Max 30/30			PV
2018_MEKEVOL	Elective subjects	Min. cours.	Min/Max 0/999			V

Number of semester: 4

Code

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_MEKEVOL	Elective subjects	Min. cours.	Min/Max			V	
		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 courses and codes of members of this group (for specification see here or below the list of courses)			Com	pletion	Credit	Scope	Semester	Role
2018_ME	KEPV2	Compulsory subjects of the programme			cours. 5 . cours. 5	Min/Ma 30/30			PV	
BE2M37MOTA	Advanced	areas in image and vide BE2M37ZV2A Audio Technology 2			BEAM31BSG Biolog		Biological signals			
BE2M37DTRA	Digital Aud	lio and Video Broadcas BE2M37OBFA Image Photonics			BE0M37	FAV	Physiology an	d modeling of	heari	
2018_MEK	KEVOL		Elective subj	ects	Min.	cours. 0	Min/Ma 0/999			V

List of courses of this pass:

Completion

Credits

Name of the course

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.							
BE0M37FAV Physiology and modeling of hearing and vision	Z,ZK	6					
The primary aim of the course is to study the physiology of sensors and processes of perception of audio and visual information by human subjects as to	wo central and mos	st important					
communication channels, i.e., Human Auditory System (HAS) and Human Visual System (HVS). The course summarizes current knowledge in the field	of human vision a	and hearing					
physiology and, at the same time, presents their description using mathematical models using the latest computational tools and procedures, including	Machine Learning	(ML), Deep					
Learning (DL) and Artificial Intelligence (AI). Emphasis is also placed on current and prospective applications of the mentioned knowledge. The main app	lication area is the	audiovisual					
technology related to human perception, but the direct employment of the acquired knowledge also includes the areas of multimedia technology, control states are also includes the areas of multimedia technology, control states are also includes the areas of multimedia technology, control states are also includes the areas of multimedia technology, control states are also includes the areas of multimedia technology, control states are also includes the areas of multimedia technology, control states are also includes the areas of multimedia technology, control states are also includes the areas of multimedia technology, control states are also includes the areas of multimedia technology, control states are also includes the areas of multimedia technology, control states are also includes the areas of multimedia technology.	•						
safety and security technology, bioinspired systems, etc. At the same time, students gain a general overview of information processing in biological systems. A separate part is the							
objectification of audiovisual information perceived quality, i.e., Quality of Experience (QoE). The course is intended for students of master's degree in technical fields. The exercises							
will be devoted to fundamental experiments to determine the most important characteristics of HAS and HVS, including computational models and simulation of vision and hearing							
processes.							
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 <a href=http://noel.feld.cvut.cz/vyu/be2m31dspa</aegt; .

BE2M31SYN Synthesis of Audio Signals Z,ZK 6 This course introduces the fundamentals of sound synthesis algorithms (everyday, music and speech), digital audio effects and sonification. Multimedia synthetic signals are used in modern digital systems, virtual reality systems, computer animations, games and film. Understanding of theoretical concepts will be consolidated through practical programming assignments in Matlab. BE2M31ZRE Speech Processing Z,ZK The subject is devoted to basis of speech processing addressed to students of master program. Discussed speech technology is currently applied in many systems in different fields (e.g. information dialogue systems, voice controlled devices, dictation systems or transcription of audio-video recordings, support for language teaching, etc.). Students will learn basic algorithms for speech analysis (spectral analysis, LPC, cepstral analysis, pitch, formants, etc.), principles of speech recognition (GMM-HMM, ANN-HMM systems, small and large vocabulary recognizers), speaker recognition (based on VQ and GMM), speech synthesis or speech enhancement. Further information can be found at <:a $href = https://moodle.fel.cvut.cz\> Moodle\ FEL\< /a\>.$ BE2M32BTSA Wireless Technologies Z,ZK 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. BE2M37DTRA Digital Audio and Video Broadcasting Z,ZK The subject makes students familiar with topics related to video and audio transmission. Described are methods of data stream creation, methods of source and channel coding, error correction principles and modulation formats. Attention is paid to transmission systems standards with regard to transmission channel properties. The subject also deals with multimedia data services and with measurement in transmission systems. BE2M37KASA 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 compression 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. Microprocessors 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 BE2M37MOTA Advanced areas in image and video technology 7.7K 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. BE2M37OBFA **Image Photonics** Z.ZK 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. BE2M37OBT Image Technology Z,ZK 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.). Audio Technology 2 Z,ZK BE2M37ZV2A 6 This course deals with advanced topics related to audio technology in recording studios, namely room acoustics, multichannel signal recording and reproduction, digital audio signal processing, its impact on auditory perception, audio signal optimization from the psychoacoustic point of view. BE2M99ZVT Audio Technology 1 The course provides fundamentals of physical acoustics and acoustic measurement, including problems of noise from technical and perceptional point of view. In the second part principles of electroacoustic and electromechanical transducers are explained along with their analysis. Principles of audio compressing systems and spatial sound processing are also treated. BE2MPROJ6 Project 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 Biological signals The course is focused to the native and evoked biosignals used in clinical medicine and current methods of capturing, processing, recording and evaluating in the time and frequency domains. For important biological signals, the students are introduced with their genesis, and nature and physiological characteristics of the signals required for construction of instruments. Students are introduced also with the physical and mathematical models. In laboratory exercises, students have the opportunity to capture their own biological signals and their subsequent processing in MATLAB. **BEEZM** Safety in Electrical Engineering for a master's degree

For updated information see http://bilakniha.cvut.cz/en/f3.html Generated: day 2025-11-29, time 12:50.

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.