

Doporu ený pr chod studijním plánem

Název pr chodu: Communication Systems - Passage through study

Fakulta: Fakulta elektrotechnická

Katedra: katedra teorie obvod

Pr chod studijním plánem: Communications, Multimedia and Electronics - Communication Systems

Obor studia, garantovaný katedrou: Komunika ní systémy

Garant oboru studia:

Program studia: Komunikace, multimédia a elektronika

Typ studia: Navazující magisterské prezen ní

Poznámka k pr chodu:

Kódování rolí p edm t a skupin p edm t :

P - povinné p edm ty programu, PO - povinné p edm ty oboru, Z - povinné p edm ty, S - povinn volitelné p edm ty, PV - povinn volitelné p edm ty, F - volitelné p edm ty odborné, V - volitelné p edm ty, T - t lovýchovné p edm ty

Kódování zp sob zakon ení predm t (KZ/Z/ZK) a zkratk semestr (Z/L):

KZ - klasifikovaný zápo et, Z - zápo et, ZK - zkouška, L - letní semestr, Z - zimní semestr

íslo semestru: 1

Kód	Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garantí (gar.)	Zakon ení	Kredity	Rozsah	Semestr	Role
AE2M37DKM	Digital communications Miroslav Hekrdla	Z,ZK	4	3+1s	Z	P
AE2M99CZS	Digital Signal processing	Z,ZK	5	2P+2C	Z	P
AE2M34SIS	Integrated System Structures Ji í Jakovenko, Vladimír Janík, Ji í Jakovenko, Ji í Jakovenko (Gar.)	Z,ZK	5	2P+2C	Z	P
AE2M32MKS	Mobile Communication Networks Zden k Be vá	Z,ZK	4	2P + 2L	Z	P
AE2M01PMS	Probability and Statistics	Z,ZK	8	4+2	Z	P
MKMEEEM	Economically-management subjects AE0M32KMP,AE0M16EET,..... (pokra ování viz seznam skupin níže)	Min. p edm. 1	Min/Max 4/18			V

íslo semestru: 2

Kód	Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garantí (gar.)	Zakon ení	Kredity	Rozsah	Semestr	Role
AE2M17AEK	Antennas and EMC in Radiowave Communication Pavel Hazdra, Miloš Mazánek, Hynek Bártík, Pavel Hazdra (Gar.)	Z,ZK	5	2+2L	L	P
AE2M99MAM	Microprocessors and microcomputers	Z,ZK	6	2P+2L	L	P
AE2M32RKP	Communication Processes Control Ján Ku erák	Z,ZK	5	2P + 2L	L	PO
AE2M34MST	Microsystems Miroslav Husák, Adam Bou a Miroslav Husák, Miroslav Husák (Gar.)	Z,ZK	5	2P+2L	Z	PO
AE2M31ZRE	Speech processing	Z,ZK	6	2P+2C	L	PO
MKMEEH	Humanities subjects AE0M16HT2,AE0M16MSO,..... (pokra ování viz seznam skupin níže)	Min. p edm. 1	Min/Max 4/22			V

íslo semestru: 3

Kód	Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garantí (gar.)	Zakon ení	Kredity	Rozsah	Semestr	Role
AE2M37OBT	Image Technology Petr Páta	Z,ZK	6	2+2c	Z	P
AE2M17PDS	Terrestrial and Satellite Radio Links	Z,ZK	6	2+2c	Z	PO
MKMEEPRO	Project AE2M37IND,AE2M17IND,..... (pokra ování viz seznam skupin níže)	Min. p edm. 1 Max. p edm. 1	Min/Max 6/6			P

MKMEEVOLPRE	Elective subjects AE4M33TDV,AE0M02AKA,..... (pokra ování viz seznam skupin níže)	Min. p edm. 0	Min/Max 0/999			V
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íslo semestru: 4

Kód	Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garanti (gar.)	Zakon ení	Kredity	Rozsah	Semestr	Role
ADIP25	Diplomová práce - Diploma Thesis	Z	25	36s	L	P
MKMEEVOLPRE	Elective subjects AE4M33TDV,AE0M02AKA,..... (pokra ování viz seznam skupin níže)	Min. p edm. 0	Min/Max 0/999			V

Seznam skupin p edm t tohoto pr chodu s úplným obsahem len jednotlivých skupin

Kód	Název skupiny p edm t a kódy len této skupiny p edm t (specifikace viz zde nebo níže seznam p edm t)	Zakon ení	Kredity	Rozsah	Semestr	Role
MKMEEEM	Economically-management subjects	Min. p edm. 1	Min/Max 4/18			V
AE0M32KMP	Communications and Media Law	AE0M16EET	Economics of Electro and Telecom ...	AE0M16EKE	Economy of Power Industry	
AE0M16MGM	Management					
MKMEEH	Humanities subjects	Min. p edm. 1	Min/Max 4/22			V
AE0M16HT2	History of science and technolog ...	AE0M16MSO	Managerial sociology	AE0M16FI2	Philosophy II	
AE0M16MPS	Psychology	AE0M16TE1	Theology	A003TV	T lesná výchova	
MKMEEPRO	Project	Min. p edm. 1	Min/Max 6/6			P
AE2M37IND	Individual Project	AE2M17IND	Individual Project	AE2M34IND	Individual Project	
AE2M32IND	Individual Project	AE2M31IND	Project			
MKMEEVOLPRE	Elective subjects	Min. p edm. 0	Min/Max 0/999			V
AE4M33TDV	3D Computer Vision	AE0M02AKA	Acoustic Applications	AE0M32PST	Advaced Network Technologies	
AE4M33PAL	Advanced algorithms	AE0M37MOT	Advanced areas in image and vide ...	AE0M13MKV	Advanced Components of Power Ele ...	
AE4M36PAP	Advanced Computer Architectures	AE0M38PPT	Advanced Instrumentation	AE4M33RZN	Advanced Methods for Knowledge R ...	
AE3M33PRO	Advanced robotics	AE0M38PMZ	Advanced Signal Processing	AE0M14AML	Aerodynamics and Mechanics of Fl ...	
AE0M31ASN	Algorithms and Structures of Neu ...	AE4M39APG	Algorithms of Computer Graphics	AE3M38ZDS	Analog Signal Processing and Dig ...	
AE0M17NKA	Antenna Design and Technology	AE0M31ACS	Architectures of Digital System ...	AE3M33UI	Artificial Intelligence	
AE0M02ASF	Astrophysics	AE0M37ZV2	Audio Technology 2	AE4M33AU	Automatic Reasoning	
AE0M31ZLE	Basics of Medical Electronics	AE4M33BIA	Bio Inspired Algorithms	AE1M16LOG	Business Logistics	
AE4M35KO	Combinatorial Optimization	AE4M39VG	Computational Geometry	AE4M38KRP	Computer Interfaces	
AE4M33MPV	Computer Vision Methods	AE0M13KTM	Construction and Technology of M ...	AE1M15RES	Control of Power Systems	
AE3M35RIS	Control Systems	AE1M16CTR	Controlling	AE3M38SPD	Data Acquisition and Transfer	
AE0M32PRD	Data Communication Means	AE4M39DPG	Data Structures for Computer Gra ...	AE4M33NMS	Design and Modeling of Software ...	
AE0M34NFO	Design of Photonic Circuits	AE0M34NNZ	Design of Power Supplies for Ele ...	AE0M02DCE	Determinism, chaos, evolution	
AE1M16RES	Development of Energy Systems	AE3M38DIT	Diagnostics and Testing	AE4M33DZO	Digital image	
AE0M14KSP	Drive Communication Systems	AE0M14DMP	Dynamics of mechanical parts of ...	AE1M16EKL	Ecology and economy	
AE1M13EMP	Ecology of materials and process ...	AE1M16EUE	Economy of Energy Use	AE0M14KOP	Electric Drive Component Design	
AE1M14RPO	Electric Drive Control	AE0M14DGP	Electric Drive Diagnostics	AE1M14PO2	Electric Drives and Traction 2	
AE1M14SP2	Electric Machinery and Apparatus ...	AE1M15EST	Electrical Light and Heat	AE0M15EZS	Electrical Sources and Systems	
AE1M13EZF	Electrochemical Sources and Phot ...	AE0M31EOF	Electronic Circuits and Filters	AE0M34EZE	Electronic Security Systems	
AE4M38AVS	Embedded Systems Application	AE0M02ZIP	Environmental Science	AE0M02EKE	Environmental Engineering	
AE3M35OFD	Estimation, filtering and detect ...	AE0M33EA	Evolutionary Algorithms	AE1M16FIU	Financial Accounting	
AE1M16FIM	Financial Management	AE0M14FZP	Fundamentals of Electrical Devic ...	AE0M32ZST	Fundamentals of Network Technolo ...	
AE4M33GVG	Geometry of Computer Vision and ...	AE1M15TVN	High Voltage Engineering	AE0M38OSE	Image Sensors	
AE0M37CIR	Implementation of the digital ci ...	AE0M13PRE	Industrial electronics	AE0M35PII	Industrial Informatics and Inter ...	
AE0M33PIS	Industrial Information Systems	AE0M32IBE	Information Security	AE3M33IRO	Intelligent robotics	
AE0M02UFL	Introduction to Laser Physics	AE4M33SAD	Machine Learning and Data Analys ...	AE1M14SSE	Machinery structures of power pl ...	
AE0M38MAP	Magnetic Elements and Magnetic M ...	AE1M16MES	Management and Economics of Powe ...	AE1M16MEE	Management of Power Production	
AE1M13VES	Manufacturing of Electrical Comp ...	AE1M13VEZ	Manufacturing of Electronic Equi ...	AE1M16MAR	Marketing	
AE3M01MKI	Mathematics for Cybernetics	AE1M01MPE	Mathematics for Economy	AE0M17MVK	Measurement of Fiber Optical Com ...	
AE0M38MET	Metrology	AE0M17MMS	Microwave Measurement Systems	AE3M33MKR	Mobile and Collective Robotics	
AE0M02MFK	Modern Physics for Cybernetics	AE3M38MSZ	Modern Sensors and Signal Proces ...	AE4M36MAS	Multiagent Systems	
AE4M39MMA	Multimedia and Computer Animatio ...	AE3M35NES	Nonlinear Systems and Chaos	AE4M35OSP	Open-source programming	

AE1M16OVY	Operations Research	AE3M35ORR	Optimal and robust control	AE0M17TMS	Perspectives in Millimetre and S ...
AE0M02FEN	Physics for Electroenergetics	AE4M36PAH	Planning and game playing	AE1M16VEN	Power and Heat Production
AE1M14VE2	Power Electronics 2	AE1M14ESZ	Power Machine Equipment	AE1M15ENY	Power Plants
AE1M16DES	Power Transport Systems	AE1M01MPS	Probability and Statistics	AE1M16MAV	Production Management
AE1M16PMG	Project Management	AE1M13JAS	Quality and Reliability	AE1M16JAK	Quality management
AE3M35PSR	Real-Time Systems Programming	AE0M15SZS	Reliability and Security of Powe ...	AE0M37DUP	Satellite navigation systems
AE0M02POS	Scientific View of the World	AE4M36AOS	Service Oriented Architectures	AE0M38SPP	Signal Processors in Practice
AE1M14SOP	Simulation and Optimization in D ...	AE0M14MDS	Simulation of dynamic systems	AE0M12MDS	Simulation of dynamic systems
AE1M13SVS	Simulation of Production Sytems	AE4M33TVS	Software Verification and Testin ...	AE0M02FPL	Solid State Physics
AE1M16STA	Statistical methods in economics	AE0M37SEK	Synchronization and Equalization ...	AE1M16SIR	System Analysis and Decision Mak ...
AE4M34ISC	Systems on Chip	AE3M99PTO	Team Work	AE1M13TPR	Technological Project Planning
AE0M13TKS	Technology of Cables and Optical ...	AE1M32TSY	Telecommunication Systems	AE4M01TAL	Theory of Algorithms
AE3M35TDS	Theory of Dynamical Systems	AE0M14TDT	Thermomechanics and fluid dynami ...	AE1M15PRE	Transmission and Distribution of ...
AE4M39NUR	User Interface Design	AE3M38VBM	Videometry and Contactless Measu ...	AE0M38VIP	Virtual Instruments
AE3M38VIP	Virtual Instruments	AE4M39VIZ	Visualization	AE0M34NSV	VLSI System Design
AE4M39WA2	Web Applications Development 2				

Seznam p edm t tohoto pr chodu:

Kód	Název p edm tu	Zakon ení	Kredity
A003TV	T lesná výchova	Z	2
ADIP25	Diplomová práce - Diploma Thesis	Z	25
Samostatná záv re ná práce inženýrského studia komplexního charakteru. Téma práce si student vybere z nabídky témat souvisejících se studovaným oborem, která vypíše oborová katedra i katedry. Práce bude obhajována p ed komisí pro státní záv re né zkoušky.			
AE0M02AKA	Acoustic Applications	KZ	4
Lecture summarize applications in physical acoustics, room and building acoustics, environmental acoustics, noise and vibration control, physiological acoustics, diagnostics, and ultrasound. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M02AKA			
AE0M02ASF	Astrophysics	KZ	4
"Astrophysics" follows up freely the standard lectures from physics. In relatively attractive area then student recapitulates the knowledge of some parts of the physics (mechanics, optics, relativity, quantum mechanics, radiation, differential and integral calculations). Students will become familiar with some numerical methods and some of them will take part in construction of the www pages. The lecture is supplemented with a three-day practical camp course. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M02ASF			
AE0M02DCE	Determinism, chaos, evolution	KZ	2
The subject deals with broader philosophical connections of these concepts. Necessity and chance in natural processes. Determinism in clasical physics and in the theory of relativity. Statistical physics and thermodynamics. Determinism and probability in quantum physics, quantum information. Information and entropy, irreversibility of natural events. Formation of structures, evolution, life, evolution of man.			
AE0M02EKE	Environmetal Engineering	KZ	3
Pozornost je v nována zejména p írodním a fyzikálním složkám životního prost edí nap . p d , vod , slune nímu zá ení, mechanickým, elektrickým, magnetickým polím, excitovaným a ionizovaným ásticím a odpad m. Probírají se m ící systémy, metody m ení a senzory environmentálních velí in. V laborato ích dochází k praktickému procvi ení ady t chto m ících metod. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M02EKE			
AE0M02FEN	Physics for Electroenergetics	Z,ZK	4
Lessons contain selected parts of physics for students of electric power engineering: Physical principles of gas discharges - glow, arc, spark and corona discharges and their applications. The students become acquainted with methods for nuclear fission and fusion energy generation. The introduction to structural properties of matter and its thermal, electrical and magnetic properties. A part of the course is two excursions in Laboratories of Czech Academy of Sciences.			
AE0M02FPL	Solid State Physics	Z,ZK	5
Elementary physics of solids for students of electrotechnology. Dwescription and classification of solids. Thermal properties of solids. Types of bonds in solids. Real crystals, their defects and surfaces. Electrons in solids, the band structure, electrons and holes. Metals, semiconductors, insulators. Transport phenomena, generation and recombination of minority carriers. Magnetism, magnetic properties of solids. Optical phenomena in solids, luminiscence, stimulated emission.			
AE0M02MFK	Modern Physics for Cybernetics	Z,ZK	3
Concepts and problems in the frontiers of physics, computer science, informatics and cybernetics. Information as a physical concept. Connection of space and time, relativistic paradoxes. Evolution of the Universe and its structure. Deterministic chaos, fractals. Quantum phenomena, quantum information, quantum measurement, quantum computation, teleportation, cryptology. Entropy in physics and in information theory. Dissipation of energy. Synenergetics and selforganization.			
AE0M02POS	Scientific View of the World	Z	2
Scientific view of the world in broader relations to human knowledge, philosophy and culture. The subject motivates an interest in new and open problems and deeper philosophical connections. Rationality, mathematics, physics Space-time, gravitation. Structure and evolution of the Universe. Quantum phenomena and their philosophical aspects. Deterministic chaos, fractals. Information and entropy. Evolution, evolution of man. Technology and perspectives.			
AE0M02UFL	Introduction to Laser Physics	KZ	4
Subject covers principles of laser physics, explains basic terms and principles of lasar operation, describes individual types of lasers and their construction. It defines main characteristics of laser radiation and briefly shows techniques of short pulses generation. It presents wide scope of laser applications in metrology, science, industry and medicine and introduces principles of standards for the safe use of lasers. The subject includes seminars, labs and industrial workplaces, too. and their construction. It also attempts to present some of applications of lasers. The subject includes seminars, labs and excursions to various scientific, medical and industrial workplaces, too. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0B02UFL Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M02UFL			
AE0M02ZIP	Environmental Science	ZK	2
Attention is devoted to the basis of ecology, to the growth of human population, to the capitalization of energy and to other resources of the biosphere. The pollution of water, soil, and air together with a waste treatment is evaluated. The impact of mechanic, electric, magnetic fields and chemical components to environment is also discussed. Economy, law and morality in relation to environment are dealt with. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M02ZIP			

AE0M12MDS	Simulation of dynamic systems	Z,ZK	4
AE0M13KTM	Construction and Technology of Microcomputers Microcomputers for control of technological systems, architecture, timing, instructions, basic parts, embedded microprocessors, input/output. Supplementary circuits. Control of technological systems. Microprocessor development system, design of microcomputer and application. Industrial standards. Design of microcomputers - modular and built-in systems, industrial PC. SCADA systems.	Z,ZK	5
AE0M13MKV	Advanced Components of Power Electronic Power semiconductor device (diodes, BJTs, thyristors, MOSFETs and IGBTs) and integrated structures (modules). Structures, function, characteristics and parameters, conditions for reliable operation. Connection of devices in parallel and in series. Operating reliability of power components and equipments. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M13MKV	Z,ZK	5
AE0M13PRE	Industrial electronics Electronic components , resistors, capacitors, HF coils, transformers Semiconductor devices Mounting technologies Senzore, regulating equipments Power converters.HF heating equipments. Electromagnetic compatibility in power electronic.	Z,ZK	5
AE0M13TKS	Technology of Cables and Optical waveguides Basic types of metal cables for electronics, communications and power electrical engineering. Basic types of optical waveguides. Construction and production of cables of different types including optical waveguides. Shielding, joining and ending of cables. Cable sets, installation of cables. Climatic resistivity, measurement of cables.	Z,ZK	5
AE0M14AML	Aerodynamics and Mechanics of Flight Subject clarifies substantial relations and effects of force influence of flowing fluid on surface of airfoil, wing or complete airplane at subsonic or supersonic airspeeds. Further, subject deals with basic tasks of airplane performance and necessary conditions for airplane stability and control.	Z,ZK	4
AE0M14DGP	Electric Drive Diagnostics Power electronics control computer structure, digital signal processor and ALU added features for fast real time calculations. Interrupt system and DMA system, analog signal measurement, fast impulse signal measurement, fast impulse generation support, inter-computer communication, system and power management, programming languages for power systems software development, programming techniques, software development tools (simulators, emulators, monitors), input signal conditioning circuitry, conversion from analog signals to digital processing, time sampling, amplitude quantization, power electronics control block design and implementation, difference equations and control algorithms, fixed and floating point calculations, debugging methods, program parametrization, guides and rules for implementation and application of power system control computers. Real time operating system, scheduler, dispatcher and another features and guides for application	Z,ZK	5
AE0M14DMP	Dynamics of mechanical parts of drives Subject is oriented to mathematical description and solving of dynamic processes in mechanic parts of machines and drives. Dynamics of rotational and general plane motion, effects of inertial forces on body, balancing of rotors. Vector and analytic methods of composing equations of motion of systems and their solving. Vibration in machine set and vibration effects reducing. Stress and deformation in rotating parts, critical speed of rotors. Drives characteristics and transient events in systems with driving aggregates .	Z,ZK	4
AE0M14FZP	Fundamentals of Electrical Devices Switching arc in contact switching apparatus, environmental influence on arc property. Switching ability of switching devices. Electrical contacts. Protecting of electric circuits. Breaking of electric circuits under current limiting. Breaking of special electric circuits. Switching over voltage. Surge arresters, its properties, characteristics and application	Z,ZK	5
AE0M14KOP	Electric Drive Component Design Theoretical principles and pragmatic procedures in main types electric drives for transport, automatization and manipulating technics design. Selection, dimensionning and realisation of drives components: power supply, switching devices, protection, semiconductor converter, electric motor. Project, verification of dimensionning and testing of drive components, realisation of selected part on model drive, experimental parameters examination. Semestrial project optionally fixed on theotetical design, realisation or experimental parameters verification	Z,ZK	5
AE0M14KSP	Drive Communication Systems Electric drive distributed control system - system view, serial communication primer, computer network topology, point-to-point, bus, loop, bus access methods, master-slave, peer-to-peer, CSMA/CD, CSMA/CR, addressed transmission, broadcasting, baud-rate, synchronous and asynchronous transmission, channel bandwidth, transmission synchronization, bit and character stuffing/destuffing, modulation, bit encoding, frame, transfer protocol, protocol overhead, error detection, acknowledged and unacknowledged communication, transmission media and environment , OSI model and other layered models, overview of industrial communication technologies utilized in drives and their features, UART, USART, ProfiBus, HDLC, SDLC, Bitbus, LIN bus, CAN bus, CANOpen, LonWorks, EIB/KNX, Ethernet, TCN-MVB/WTB, Microwire, SPI, I2C, USB. Communication services programming and their implementation inside overall control computer software architecture. Communication development tools, communication services debugging, monitoring and logging. Noise resistance, cabling, connectors Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M14KSP	Z,ZK	5
AE0M14MDS	Simulation of dynamic systems Aim of subject is simulation of nonlinear problems from fields of dynamics of rigid bodies, fluid mechanics, aerodynamics, thermodynamics and their mutual combinations. In scope of subject is given overview of substantial derivations, relations, formulas and numeric methods. Seminars are focused on assembling of numeric models in program Matlab-Simulink	Z,ZK	4
AE0M14TDT	Thermomechanics and fluid dynamics Dynamics of hydraulic systems (transport losses, unsteady phenomena, water impact, hydrodynamic forces). Fundamentals of theory of similitude, dimensional analysis, Buckingham theorem. Thermodynamics of power machines, steam and gas turbines, increasing of efficiency (regeneration). Introduction to dynamics of gas and vapour (critical state, adiabatic flow without and with losses, nozzles and diffusers). Fundamentals of heat transfer, heat exchangers.	Z,ZK	4
AE0M15Ezs	Electrical Sources and Systems The subject is focused on the task of power quality, its operational criteria and improvement possibilities. There are also discussed specific tasks of dispersed generation and electrical systems. The student is then informed about basic electrical energy renewable sources and their connection possibilities to the system. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15Ezs	Z,ZK	5
AE0M15SZS	Reliability and Security of Power Systems The aim of the subject is acquiring basic knowledge of security and reliability of power electrical systems based on the deterministic and mainly probabilistic analysis. After the introductory summarisation and extension of the mathematical tools for probabilistic and statistic calculations, the methodology of evaluation of the reliability of the systems is mainly discussed starting from the reliability of its particular elements in various operation regimes. Attention is also paid to problems of maintenance and mathematical simulation of the destructive tests. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15SZS	Z,ZK	5
AE0M16EET	Economics of Electro and Telecommunication Engineering The basic information about the economical system in information and telecommunication branch. The brief repetition of the basic economics terms from point of view the market behavior of monopoly firm. Problems of the market segmentation, optimal tariffication and the evaluation of business plans efficiency. Legal framework of the enterprise in the informatics and telecommunication branch in Czech Republic in comparison with other developed countries. There are explained categories of economics of business (firm, utility) and branch (industry). There are taken up the systems of firm management (marketing in telecommunication) and there are provided the know how of optimal development of information systems.	Z,ZK	5
AE0M16EKE	Economy of Power Industry Fundamentals of financing of power companies. Cost structure of power generation and distribution. Prices and tariff systems for power, heat and gas production and distribution. Examples of economic evaluation and investment appraisal of the typical project in power sector. Renewable energy sources, externalities. Energy policy and energy law in CR. Liberalization and power market development. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16EKE	KZ	4

AE0M16FI2	Philosophy II The course is oriented on the transdisciplinary aspects of philosophy, informatics, physics, mathematics and biology. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16FI2	Z,ZK	4
AE0M16HT2	History of science and technology 2 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 Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16HT2	Z,ZK	4
AE0M16MGM	Management The methods and procedures of effective management for company leading in competitors area.	Z,ZK	5
AE0M16MPS	Psychology Psychology of personality, psychology of work and organization. Psychology in human resources management. The manager, his role and competencies. Motivation and engagement. Skills development. Communication and conflict resolution. Work group and team, conducting meetings. Time management and delegation. Dealing with stress and emotions. Company culture and organizational change.	Z,ZK	4
AE0M16MSO	Managerial sociology Course is targeted to utilization of methods of social sciences in marketing, management, company reporting, internal and external communication and to definition of target groups. Students will also get information on monitoring contribution of social impacts of entrepreneurship to surrounding communities, management of relations with communities and company strategy in the field of corporate responsibility.	Z,ZK	4
AE0M16TE1	Theology 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 grows our civilization up.	Z,ZK	4
AE0M17MMS	Microwave Measurement Systems The subject dwells on problems of rf. and microwave measurement in frequency band from 10 MHz to 100 GHz. Students are informed about principles and constructions of basic microwave instruments and complex processor controlled measurement systems including applied methods. Generators, synthesizers, power meters, frequency counters, noise figure meters, spectrum, scalar and vector network analyzers, oscilloscopes are browsed on. Sources of measurement errors and correction methods are analyzed. The subject leads to gain professional skills in the field of radiofrequency and microwave measurement including correct choice of measurement instruments, measurement method and measurement results evaluation. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M17MMS	KZ	4
AE0M17MVK	Measurement of Fiber Optical Communications The main aim of this subject is to introduce with measurement techniques and measurement methods for optical fibers. The subject includes methodologies for measurement of constructive and transition parameters of optical communication systems such as numerical aperture, attenuation, dispersion etc. The measurements of principal characteristics of active and passive elements of optical systems are involved as well. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M17MVK	KZ	4
AE0M17NKA	Antenna Design and Technology Basics of practical design of antennas for specific frequency bands, modeling, design and construction of antenna and antenna systems. Antenna measurement methods, practical measurements in antenna laboratory. Modeling on professional software tools for antenna design. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M17NKA	Z,ZK	5
AE0M17TMS	Perspectives in Millimetre and Submillimetre Technology The subject gives practical knowledge dealing with emerging technology in new progressive frequency bands. It gives the basement of millimeter and submillimeter technology and mutual interactions submm and optical technology. In frame of the subject the theoretical principles as well as specific approaches to solution of transmission lines, subsystems and links in mm and submm region are mentioned.	Z,ZK	5
AE0M31ACS	Architectures of Digital Systems Types of processor architectures, singlechip and multichip computers. Processor structures for real-time digital signal processing. Data flow driven computers. Artificial neural nets. Structures designed in accordance with procedures of data processing, architectonical considerations. Design of circuits for digital signal processing and arithmetic operations, design of processors and peripherals, low-power design techniques. Data synchronization and communication between asynchronous clock-domains	Z,ZK	4
AE0M31ASN	Algorithms and Structures of Neurocomputers Information about the basic principles and possibility of the application of the neural informative technology for the signal processing are the main topic. The lectures are devoted to the introduction into the artificial neural networks (NN) theory and applications, to the choice and the optimisation of the structures and the neural network applications at the speech and image processing are investigated in detail. Some neural network applications in the biomedical engineering and hardware realization of the KSOM are described.	Z,ZK	5
AE0M31EOF	Electronic Circuits and Filters Subject deepens and consolidates knowledge in the field of analog electronic circuits and frequency-selection filters. Analytical procedures are the gist that lead from complete models of analog integrated circuit structures, through the simplification, to a deeper understanding of their characteristic. Design fundamental is obtained by the analysis of the dominant influences to the circuit activities. Design and realizations of analog filters is introduced in the next part.	Z,ZK	5
AE0M31ZLE	Basics of Medical Electronics Students will study fundamental principles applied within the modern medical devices and systems, esp. from the point of view of functional blocks and electronic circuits of diagnostical and therapeutical medical equipments including electrocardiographs, electroencephalographs, bedside and central monitors, equipments for anesthesiology, intensive and critical healthcare, equipments for clinical laboratory, electrostimulators, cardiostimulators and defibrilators, blood pressure and flow measurement (including dilution) and pulse oxymetry.	Z,ZK	4
AE0M32IBE	Information Security The Information Security course provides a complete source of information on the field of security of information systems and information technologies. The most of information in today society is created, transferred, stored in electronic form so information security is very important part of it. Technical background for information security is provided by cryptology. Cryptology is a science about constructing and breaking cryptosystems for keeping and delivering private information. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32IBE	KZ	5
AE0M32KMP	Communications and Media Law A complex course dedicated to interdisciplinary problems - the legal aspects of electronic communications (information and communications systems), as well as media from the viewpoint of European and national law. It analyses the areas of informatics, electronic communications, information society services, copyright and general intellectual property rights, the protection of identity, introduction to software law and the Internet as a global communication and information system.	Z,ZK	4
AE0M32PRD	Data Communication Means Using the description of relevant interfaces, protocols and devices. Data interfaces and protocols. Modems and data converters. Communication over various types of lines (xDSL, CATV, PLC). EMC of data transmission systems, influence of interference, impulse noise. Videoconferencing and IPTV services.	Z,ZK	5
AE0M32PST	Advanced Network Technologies The course Advanced Network Technologies extends practical knowledge in the field of data networks design. The course is practically orientated and focused on advanced configuration of switches and routers. The students will master advanced topics like IPv6, MPLS, TCP and BGP. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32PST	Z,ZK	5

AE0M32ZST	Fundamentals of Network Technologies	Z,ZK	5
The course Fundamentals of Network Technologies is focused on principles of data networks. It describes functionality of the three bottom layers of the ISO/OSI network layer model. Students will learn the basics of the configuration of network devices with regards to routing, dynamic routing protocols and addressing in IPv4 including VLSM. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32ZST			
AE0M33EA	Evolutionary Algorithms	Z,ZK	6
The students will get acquainted with various forms of evolutionary algorithms -- optimization metaheuristics that use analogies with natural evolution to solve complex optimization tasks. The subject builds on and extends knowledge from the subject Bio-inspired algorithms. The main goal of this subject is to introduce various forms of evolutionary algorithms along with suitable application areas. In the seminar and lab lectures, the students will get hands-on tutorials and will be obliged to implement their own evolutionary algorithm to solve an optimization task as part of their project.			
AE0M33PIS	Industrial Information Systems	Z,ZK	6
The aim of this course is to make students familiar with IT support of industrial systems controlled and integrated with computational systems, and teach students to consider respective system requirements. The course deals with IT infrastructure support, modeling of business systems, their data flow, functional models and methods for modeling of non-functional requirements, with focus to stability, planning, security and quality management.			
AE0M34Ezs	Electronic Security Systems	Z,ZK	5
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.			
AE0M34NFO	Design of Photonic Circuits	Z,ZK	4
Students obtain practical skills with design of photonics devices and their applications in photonics systems. Students acquaint with BMP, FULL WAVE and TCAD programs. These software allowed design optics structures and devices using for controlling and distribution optical signals. Software TCAD is used for design of injection optical sources. Optoelectronic integrated circuits will be design by ORCAD program. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M34NFO			
AE0M34NNZ	Design of Power Supplies for Electronics	Z,ZK	5
The subject describes the basic principles and concepts of power supplies. The subject explains the behavior of linear stabilizers, basic switching regulators, supplies protections, electrochemical supply cells and trends in power supply designs. The subject is meant for diploma project students designing the switching power supplies. It treats the switching power supply design programs and switching regulators component using PC. A special attention is devoted to EMC requirements in switch-mode power supplies as well as to the cost versus operational efficiency ratio. Design of a switch-mode power supply.			
AE0M34NSV	VLSI System Design	Z,ZK	4
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.			
AE0M35PII	Industrial Informatics and Internet	Z,ZK	6
The use of Internet technologies in informatics and industry. Communication protocols in the Internet distributed applications, database systems and their management, enterprise management systems. Web services, mobile network, security and reliability, critical applications. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M35PII			
AE0M37CIR	Implementation of the digital circuits in Radio	Z,ZK	5
The course is base for student, which want practically designed circuits of the digital signal processing with the signal processors and specialised circuits. Attention is concentration to realisation of the modulators and circuit of the numerical conversion of the signal, algorithms coding/decoding, which contains in the communication chain. Dominantly is concentration to effective realization with minimal computing power.			
AE0M37DUP	Satellite navigation systems	Z,ZK	4
Existing, future and past radio satellite navigation systems. Course is addressed to students without knowledge of radio engineering. Attention is paid to measurements and practical tasks in laboratory and to experimental receiver programming.			
AE0M37MOT	Advanced areas in image and video technology	KZ	5
This course presents 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. The content of lectures is being updated rapidly and continuously according to a remarkable progress in this field. The course deals with the principal functional blocks of mentioned systems both hardware and software implemented.			
AE0M37SEK	Synchronization and equalization in digital communications	Z,ZK	4
We explain principles of the receiver signal processing (synchronization and equalization) for the parametric channel including variety of the implementation possibilities. We focus on the essential particular forms of the channel phase, frequency and timing parameterization, channels with multipath propagation and MIMO channels. We develop the ideas of synchronization and equalization in the context of the data decoding in the parametric channel. All basic categories of the CSE algorithms are targeted: feed-forward, feed-back, iterative and recursive, including the theoretical background of the parameter estimation theory, and theory of the feed-back and iterative systems. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37SEK			
AE0M37ZV2	Audio Technology 2	Z,ZK	4
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. Measuring methods related to these topics are also presented. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37ZV2 english			
AE0M38MAP	Magnetic Elements and Magnetic Measurements	Z,ZK	5
Measurement of magnetic field, geomagnetism, NMR. Typical soft and hard magnetic materials. Measurement of properties of soft and hard magnetic materials. DC and AC magnetised circuits, circuits with permanent magnet. Current and voltage instrument transformers, current comparators. Sources of magnetic field. Magnetic shielding.			
AE0M38MET	Metrology	Z,ZK	5
Po stru něm vysv tlení úlohy nejd ležit jších tuzemských i zahrani ních metrologických organizací a institucí je výklad zam en na problematiku jednotek fyzikálních velí in a možnosti jejich definování, realizace, uchovávání nebo reprodukce pomocí etalon . Pozornost je dále v nována m ícim metodám a r zným zp sob m vyhodnocování a zvyšování p esnosti m ení. Jsou popsány metody a prost edky použitelné p í p esných m eních aktivních i pasivních elektrických velí in.			
AE0M38OSE	Image Sensors	Z,ZK	5
This course explains the topics of optoelectronic image sensors, especially CCD and CMOS sensors, optical system, illuminators and their application in the computer vision.			
AE0M38PMZ	Advanced Signal Processing	Z,ZK	5
The course introduces advanced signal processing methods and their applications and implementation in information systems. In the labs real application using Matlab and digital signal processor will be developed (de-noising, multimedia effects, telecommunication). Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M38PMZ			
AE0M38PPT	Advanced Instrumentation	Z,ZK	5
The course is dedicated to principle, properties and applications of measuring instruments used for precise measurement, measuring of extremely low signals, HF measurement etc. Above the knowledge obtained in basic course Sensors and Measurement. Labs are focused to their optimum usage both in standard and less frequent applications.			

AE0M38SPP	Signal Processors in Practice	Z,ZK	5
Basic architecture of digital signal processors, main features and properties, description of important processor blocks (ALU, MAC). Development and supporting tools for design and debug. Fundamental method of digital signal processing including practise implementation on digital signal processor (DSP). Demonstration of HW design with application of DSP. Within laboratory exercises, realisation of scheduled or own complex project. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M38SPP			
AE0M38VIP	Virtual Instruments	Z,ZK	5
A subject deals with programming virtual instruments based on standardized interfaces (PCI, PXI, VXI). Lectures are focused on application of up-to-date standards for data acquisition systems programming (VXIplug&play, VISA, IVI) and selected software techniques in Windows, Linux and Phar Lap operating systems. Assigned software tasks in laboratories are solved using C/C++ language or LabVIEW environment.			
AE1M01MPE	Mathematics for Economy	Z,ZK	6
Aim of this subject is to give the basic informations about probability, mathematical statistics and Markov chains and to show their applications, mainly in insurance mathematics. At the end of the course, bases of cluster analysis will be shown.			
AE1M01MPS	Probability and Statistics	Z,ZK	8
The course covers probability and basic statistics. First classical probability is introduced, then theory of random variables is developed including examples of the most important types of discrete and continuous distributions. Next chapters contain moment generating functions and moments of random variables, expectation and variance, conditional distributions and correlation and independence of random variables. Statistical methods for point estimates and confidence intervals are investigated.			
AE1M13EMP	Ecology of materials and processes	Z,ZK	5
Electrical Technology from the perspective of ecology. Environmental assessment of the various types of surface protection. Environmental aspects of protective systems used in electronics. Environmental impacts of electrical production. Ekodesign proposal of the electrical product. Principles of the proposal product for a difficult operating environment. Disposal of electrical waste. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13EMP			
AE1M13EZF	Electrochemical Sources and Photovoltaics	Z,ZK	5
Photovoltaic sources. Operating principles, characteristics. Solar modules, construction and technology. Basic types of photovoltaic systems and their applications. Electrochemical sources of the electric power - overview. Primary cells and accumulators. Methods of accumulator charging. Sources for electrochemical production processes and their control. Automotive applications. Environmental aspects of the electrochemical sources and production processes. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13EZF			
AE1M13JAS	Quality and Reliability	Z,ZK	5
Terminology and definitions from the area of quality and reliability and their control, philosophy of quality, systems of quality control in the world. Reliability as a part of quality. Basic definitions from the area of reliability, basic distributions used in reliability and their basic characteristics. Back-up using a warm and cold standby, types of warm and cold standbys. Reliability of components and systems, calculation of reliability using composition and decomposition. and using a method of a list. Basic statistical methods and tools joined with quality control, managerial tools for quality control. Techniques FMEA and QFFD, house of quality. Capability of a process. Taguchi loss function. Audits. Statistical inspection. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13JAS			
AE1M13SVS	Simulation of Production Systems	Z,ZK	5
The course is focused at methods of static and dynamic models of processes and systems forming. Basic types of models are described and characterized. Models are built up using an analytical way on the basis of knowledge of relationships between parameters, or using an experimental way. Factorial experiments for qualitative variables are presented. Computer aided generation of mathematical models and simulation of dynamic behavior of processes and systems are described. Basic methods of component models compilation, assembly of a complete model are presented. The application on computer modeling and simulation of electrical, thermal and mechanical systems in power electrical engineering completes the lectures.			
AE1M13TPR	Technological Project Planning	Z,ZK	5
What is a project management? What is a life cycle of product and project? Project phases: Initial, Construct, Delivery and Support. Organisational structure. SWOT, PEST and 5P analyses. Workflow and business processes. Schedule, GANTT, PERT. Enterprise and project modelling. Management of documentation, recourses, quality and knowledge. Standards for exchange of product and business data. Enterprise ontology.			
AE1M13VES	Manufacturing of Electrical Components	KZ	4
Technologie elektronických sou částek, jejich označování, standardizace. Základní užívané technologie. Typy sou částek: rezistory, kondenzátory, vf. cívy a transformátory. Životní cykly sou částek, ekologické aspekty výroby sou částek. Electromechanické sou částky. Polovodičové sou částky, výroba vertikálních a horizontálních struktur, pouzdrů sou částek Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13VES			
AE1M13VEZ	Manufacturing of Electronic Equipment	Z,ZK	5
Mechanical and electrical design. The electric contact. Joining of conductors. Cooling of components and equipment Printed circuit boards fabrication. Soldering in electronics. Electromagnetic compatibility of electronic equipment. Protection of components and equipment, sensitive on electrostatic field. Certification, accreditation, quality control and quality assurance. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13VEZ			
AE1M14ESZ	Power Machine Equipment	Z,ZK	4
Analysis of basic functions and operational accidents for power engineering. Quantitative and qualitative balance energy of machine equipment. Analysis of influence breakdowns of machine equipment, modes of regulation power output of power machine equipment. Operating optimisation. Operation properties of power machine equipment of power plant. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14ESZ			
AE1M14PO2	Electric Drives and Traction 2	Z,ZK	5
Electro mobiles and hybrid cars. Tire train and rolling resistance. Adhesion. Traction power. Locomotive traction power calculation for defined train load and track. Mass transportation vehicles. Tramway with resistive control, pulse control and induction motors. Tramway power-electronic converters. Trolley-busses. Metro. Electric locomotives - various designs. Locomotive power-converters. DC, AC and multi-system locomotives. AC motor locomotives. Diesel-electric locomotives Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14PO2			
AE1M14RPO	Electric Drive Control	Z,ZK	5
Controlled electric drive, control computer of electric drive - system view, modulation methods, scalar control, quantity transformation, FOC control, DTC control, compatible rectifier, servo-drives, digital signal processing, discrete function, difference equation, digital filters, digital controllers, PSD controller, derivation and difference equation coefficients calculation, fixed point and floating point calculations, relative units and quantity normalization, digital signal processors, modulator hardware support, control algorithm implementation, microprocessor control system hardware implementation, protection circuitry, debugging, testing and monitoring Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14RPO			
AE1M14SOP	Simulation and Optimization in Drives	Z,ZK	5
Models of dynamical systems. Methods and process of simulation. Program Pspice. Matlab/Simulink environment. State models of systems and solutions. Control circuits, controllers, and determination of parameters. Circuit models of power converters. Dynamical models in average values of power electronic converters. Models of converters and machines for high frequencies. Method of finite elements and use for optimization of magnetic field in electric machine. Process and SW tools for design of main types of electric machines.			
AE1M14SP2	Electric Machinery and Apparatus 2	Z,ZK	5
Contacts and semiconductor switching apparatus in LV networks. Basic topology of 3-phase switches and power load of its components. Power switches and systems with progressive semiconductor devices and its control circuits. Protective circuits of semiconductor switching devices. Electric apparatus testing. Continue. Fundamentals of general theory of electric machine. Magnetic field. Fundamentals of commutation. Transformer, efficiency, volt drop. Transient phenomena - switch to the network, cut-off. Mathematical model of synchronous and induction machine. Rotating magnetic field. Induction machine, starting and speed control. Magnetic field harmonics and their influence. Single-phase induction motor. Operation			

of the synchronous machine on the network. Torque, stability, overload capacity. Transient phenomena, cut-off Výsledek studentské ankety p edm tu je zde:

<http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14SP2>

AE1M14SSE	Machinery structures of power plants	Z,ZK	4
The aim of subject is to acquaint with natural relations of energy conversions at power-producing premises, to describe functions of power-producing equipment, their structure, properties and characteristics. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14SSE			
AE1M14VE2	Power Electronics 2	Z,ZK	5
Rectifiers with active load, discontinuous and continuous current, multiple commutation, three-phase AC/AC converters, electrostatic separators, welding rectifiers, battery chargers, superconductive magnetic energy reservoir, induction heating, reactive power compensation, contactless switches, softstarters, resistor pulse control, cathodic prevention, power transistor in switching mode, snubbers, structure and control principles of modern controlled drive, pulse width modulation methods, principles of vector control and direct control, pulse width modulated rectifiers, matrix converters, converter protection against current overload and against overvoltage			
AE1M15ENY	Power Plants	Z,ZK	5
The subject introduces power plants of all kinds dimensioning and functions. It describes diagrams topologies, operational modes, control and safety problems solutions. It models dynamics and control of main part in all power plants types. It evaluates and describes control qualities and programmes. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15ENY			
AE1M15EST	Electrical Light and Heat	Z,ZK	5
The aim of the first part of the course is to make students acquainted with most frequent applications of optical radiation, modern photometric and colorimetric devices used in practice, fundamentals of light control and design of dynamic lighting including new trends in light sources and luminaire progress. The aim of the second part of the course is to become students acquainted with heat transfer laws, heat pumps and problems of global optimization on electrical power engineering. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15EST			
AE1M15PRE	Transmission and Distribution of Electricity	Z,ZK	5
The subject gives a complex overview about the electricity transmission and distribution task. It deals with particular elements technical parameters and gives information about the total behaviour in steady and transient states. Students are informed about supporting devices enabling safe and reliable operation. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15PRE			
AE1M15RES	Control of Power Systems	Z,ZK	5
The subject introduces electrification system physical and economical characteristics and models. It deals with modes optimization, active and reactive power control in isolated and interconnected systems, extraordinary states solving and reliability evaluation. It describes also the current situation of the energy market liberalization and sources operation in it. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15RES			
AE1M15TVN	High Voltage Engineering	Z,ZK	5
The subject introduces students with high voltage technique from the point viewpoint of its application in power engineering. It brings information about high voltage testing sources and the possibilities of measuring high voltages and big currents. It informs about high voltage insulation systems and methods for determining their states. There are explained particular types of electrical discharges and the possibilities of their elimination. Practical seminars are based on measurements in the high voltage laboratory. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15TVN			
AE1M16CTR	Controlling	Z,ZK	6
Course primary objective is in introducing the Management Control (Controlling) as the up-to-date approach to management of the organization (enterprise, institution). To explain its changing role in management on its development in past decades from functional form, over reporting period, to integral concept of the management control of the organization. Both points of view - the recent theoretical bibliography and context of advanced practice are considered. The course focuses on key linkages among functional areas, key processes and activities in management control system. The course deals with managerial methods and other managerial tools to be applied in management of single entities of management control system and in their interrelated actions. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16CTR			
AE1M16DES	Power Transport Systems	Z,ZK	5
Economical aspects of energy transport. Electricity transportation through lines. Heat, gas and oil lines. There are ment also universal transport systems as railway, roads and ships with considering of energy transport. After technical introduction it is dealt with problems of economical design of transport lines and economical operation			
AE1M16EKL	Ecology and economy	Z,ZK	5
Development of environmental protection. Sustainable development. Global environmental problems and their aspects. Greenhouse effect and climate changes. Fossil fuels, nuclear fuel cycle and environmental impacts. Support schemes for renewable energy sources utilization. Economic effectiveness of renewable energy sources projects. Regulatory and economic instruments for economic activities regulation. Externalities. Environmental indicators. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16EKL			
AE1M16EUE	Economy of Energy Use	Z,ZK	5
Organization and energy management of company, buildings or energy systems. Energy need and consumption, energy balance. Energy characterization of aggregate, secondary energy sources. Energy audit and feasibility study, optimization of energy management of energy systems. Prices and tariffs, economy and financial analysis. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16EUE			
AE1M16FIM	Financial Management	Z,ZK	6
Principles of finance, present value and alternative cost of capital, net present value, valuation of bonds and stocks, investment decision and net present value, risk and alternative cost of capital, risk and return, lease or buy, taxes, inflation and return, financial and real options, option valuation and application, hedging, short term finance, cash flow management. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16FIM			
AE1M16FIU	Financial Accounting	Z,ZK	5
Principles of accounting. Assets, inventory and financial investment book keeping. Debt and equity capital. Cost, revenues and profit. Tax system and accounting. Balance sheet, profit and loss account. Cash flow statement. Analysis of company's financial position. International accounting standards. Auditing, consolidated statements. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16FIU			
AE1M16JAK	Quality management	Z,ZK	5
Concept of Quality, History of quality management (QM), Current approaches to QM, Approach to quality in EU and CR, Quality management system (QMS) based on ISO 9001, Process management, Quality planning, Metrology in QM, Control of documents and records, Internal audits of QMS, Continual improvement of QMS, Integrated management, Statistic methods in QM, Accreditation and certification			
AE1M16LOG	Business Logistics	Z,ZK	5
Logistics as an integrated system in the structure of business management. Logistics as a part of business strategy. Fundamentals of modern concepts and approaches in logistics. Management, cooperation in supply chain logistics, integrated control systems. Methods applied to flow control and evaluation of elementary parameters of logistics. Logistics market. Logistics integration including its legal, ecological and economical aspects. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16LOG			
AE1M16MAR	Marketing	Z,ZK	5
The role and functions of the marketing management. Marketing research and marketing information system. Concepts of marketing strategy. The use of product life cycle and portfolio. Marketing-mix. Product and service policy, pricing and contractation policy, communication, distribution. Controlling and audit. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MAR			

AE1M16MAV	Production Management	Z,ZK	5
The role of production process in promoting the marketing concept of the firm and the competitive advantage. The system of operational planning with respect to production typology. Standardized basis of production management, standardization. Controlling, production management methods. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MAV			
AE1M16MEE	Management of Power Production	Z,ZK	5
Power plants and mining industry management and economics, energy balances and costs calculations of power production - electricity, steam, hot water, coal, liquid fuels, gas, economic loading of power plants, cost analysis Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MEE			
AE1M16MES	Management and Economics of Power Systems	Z,ZK	6
This course will give an overview of the various aspects of power supply with special emphasis on power management. The course characterises energy costs and marginal costs for determination of prices and tariffs. Energy market principles and operational decision making are integral parts of the course as well. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MES			
AE1M16OVY	Operations Research	Z,ZK	5
Art of modeling and elements of decision models, Linear programming, Transportation problem, Integer linear programming, Introduction to graphs theory, Nonlinear programming, Dynamic programming, Monte Carlo simulation, Project management (CPM, PERT) Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16OVY			
AE1M16PMG	Project Management	KZ	5
Processes and techniques for the preparation of entrepreneurial projects. Principles and methods of planning and operating of projects realization. Operating of the integration and project area. Operating of time, costs, sources, duality, human sources, communication, risks. Case study in the program Microsoft Project. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16PMG			
AE1M16RES	Development of Energy Systems	Z,ZK	5
In this subject the basic questions of power stations design is solved. This design is discussed from viewpoint of ecology and level of used technology. Special focus is on future importance of classical and renewable energy resources. These kinds of energy resources are considered as the most important factor of future development of appropriate power industry systems. The subject provides overview of practical application of modern technologies to guarantee the development of energetic systems.			
AE1M16SIR	System Analysis and Decision Making	Z,ZK	5
System approach and decision making, Decision models, Games theory, Decision making under uncertainty and risk, Decisions with multiple objectives, Stochastic programming, Expert systems, Cluster analysis Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16SIR			
AE1M16STA	Statistical methods in economics	Z,ZK	5
Basic Concepts. Statistical series. Assortment. Distributions of frequencies. One-dimensional descriptive characteristics. Measures of variables, coefficient of skewness, coefficient of excess. Points estimates of basic characteristics. Interval estimates of basic characteristics. Hypothesis testing of basic characteristics. Individual indexes number. Aggregative indexes. Variable-structure indexes. Multifactor indexes . Correlation and regression, basic Concepts. Measurement of dependence intensity. Time series, concepts, qualities. Chronological average . Time series - trends and extrapolation.			
AE1M16VEN	Power and Heat Production	KZ	5
Power sources, energy processes, general power plant, power balance and characteristic curves. Review of energy production technologies (conventional and non conventional) - electricity, steam, hot water, coal, liquid fuels, gas. Power generation stations, their basic parts, their basic operational characteristic curves and calculations, operation, control. Enviromental effects of power generating and actions of their minimization. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16VEN			
AE1M32TSY	Telecommunication Systems	Z,ZK	4
The subject discusses principles of telecommunication systems - mainly digital transmission systems and digital switching systems. The subject will provide students with the overview of the entire telecommunication domain, so that they can solve particular problems related to network traffic. They will also obtain basic knowledge of technologies that are used in modern wired and wireless networks. Results of the survey (students' opinions) concerning the subject can be found here: https://www.fel.cvut.cz/cz/anketa/aktualni/courses/AE1M32TSY			
AE2M01PMS	Probability and Statistics	Z,ZK	8
The course covers probability and basic statistics. First classical probability is introduced, then theory of random variables is developed including examples of the most important types of discrete and continuous distributions. Next chapters contain moment generating functions and moments of random variables, expectation and variance, conditional distributions and correlation and independence of random variables. Statistical methods for point estimates and confidence intervals are investigated.			
AE2M17AEK	Antennas and EMC in Radiowave Communication	Z,ZK	5
Student obtains the knowledge of basic analysis and design of the individual type of the antennas (wire, planar, reflector and lens antennas, and radomes) and antenna arrays. He obtains the basic experience in antenna and communication technique, antenna measurement technique including training in specialized antenna anechoic laboratory. He also obtains the basic knowledge in the field of electromagnetic compatibility - electromagnetic interference and susceptibility including testing methods and criteria of selecting of antennas for given fixed, mobile, ground and satellite service. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17AEK			
AE2M17IND	Individual Project	KZ	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. Projects deals with microwave technique, antennas, propagation, optical communications, EMC, and medical applications. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17IND			
AE2M17PDS	Terrestrial and Satellite Radio Links	Z,ZK	6
The goal of the course is to teach the student to design basic types of wireless links from the antennas and propagation point of view, including interference analyses for both fixed links and radio networks and frequency coordination. The design principles are primarily based on international ITU-R recommendations. In addition, the attention is given to prospective wireless systems as well, e.g., intelligent antenna systems. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17PDS			
AE2M31IND	Project	KZ	6
The subject is an individual work in the form of a project. A student will choose a topic from a range of topics related to his or her field of study, which will be specified by branch department or branch departments. The project will be defended within the framework of a subject. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M31IND			
AE2M31ZRE	Speech processing	Z,ZK	6
The subject is devoted to basis of speech processing addressed to students of master program with special focus on multimedia applications. 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.). Further information can be found at http://noel.feld.cvut.cz/vyu/a2m31zre and at http://moodle.kme.feld.cvut.cz Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M31ZRE			
AE2M32IND	Individual Project	KZ	6
Independent work in the form of a master project. A student will choose a topic from a range of topics related to his/her branch of study, which will be specified by branch department. The result of the student's survey can be found here: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32IND/			
AE2M32MKS	Mobile Communication Networks	Z,ZK	4
The lectures introduce principles and functionalities of mobile networks with special focus on currently deployed technologies and future mobile networks. Furthermore, architecture and fundamental principles of GSM, UMTS, LTE and LTE-A will be explained. Then, selected key technologies for future mobile networks (e.g., 5G) will be explained.			

AE2M32RKP	Communication Processes Control	Z,ZK	5
Subject Telecommunication Processes Control presents review of solution principles for switching systems. It contains solutions for switching fields, control systems and review of signalisations for switching control (in central office as well in networks). Deals mainly with digital switching systems with circuit commutation as well as transport of IP packets. Also contains basic consideration about convergence of voice and data services and networks including functional principles of new generation networks with respect to philosophy and services of intelligence network. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32RKP			
AE2M34IND	Individual Project	KZ	6
Independent work in the form of a project. A student will choose a topic related to his or her branch of study, which will be specified department or branch departments. The project will be defended within the framework of a subject. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34IND			
AE2M34MST	Microsystems	Z,ZK	5
The subject solves the system integration in the design of the digital as well as analogue systems with help of an system engineering, one solves a connection of a different types of the modern electronic systems on-chip as well as a external. There are showed the new possibilities of a realisation and the application of the integrated elements operated by the different principles in the subject. Integrated elements are designed primarily in MEMS technologies. The subject involves a reliability of the systems. There are introduced the modern elements - microactuators operated on the different principles including the basic applications in the industry, medicine, control, automotive, etc. The basic nanotechnology elements and structures for the electronics are discussed. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34MST			
AE2M34SIS	Integrated System Structures	Z,ZK	5
Design methodologies of analog, digital and optoelectronics integrated systems. Description of integrated circuits fabrication process; CMOS technologies and its modern sub-micron trends; design rules and layout design. Design and fabrication process of micro-electro-mechanical systems (MEMS); polymer based technologies; optical and optoelectronic integrated circuits, fabrication process and technologies, materials, design and testing. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34SIS			
AE2M37DKM	Digital communications	Z,ZK	4
The course focuses on the area of digital modulation, coding and physical layer signal processing in communication systems. The exposition is systematically built along the theoretical line which allows to reveal all inner connections and principles. This allows the students to develop the knowledge in an active way and use it in a design and construction of the communication systems. In a broad area of the digital communications, we focus on the essential principles. Those are further extended in the optional courses. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37DKM			
AE2M37IND	Individual Project	KZ	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. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37IND			
AE2M37OBT	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.). Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37OBT			
AE2M99CZS	Digital Signal processing	Z,ZK	5
The subject gives overview about basic methods of digital signal processing and their applications (examples from speech and biological signal processing): discrete-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/ae2m99czs . Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M99CZS			
AE2M99MAM	Microprocessors and microcomputers	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. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M99MAM			
AE3M01MKI	Mathematics for Cybernetics	Z,ZK	8
The goal is to explain basic principles of complex analysis and its applications. Fourier transform, Laplace transform and Z-transform are treated in complex field. Finally random processes (stacinary, markovian, spectral density) are treated. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M01MKI			
AE3M33IRO	Intelligent robotics	Z,ZK	7
The subject teaches principles allowing to build robots perceiving surrounding world and activities in it including the abilities to modify it. Various architectures of robots with cognitive abilities and their realizations will be studied. Students will experiment with robots in practical assignments. Studied material is applicable more widely while building intelligent machines. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33IRO			
AE3M33MKR	Mobile and Collective Robotics	Z,ZK	6
The course introduces basic mobile robot structure design together with control methods aimed to achieve autonomous and collective behaviors for robots. Methods and tool s for data acquisition and processing are presented herein with the overall goal to resolve the task of autonomous navigation for mobile robots comprising the tasks of sensor fusion, environmental modeling including Simultaneous Localization And Mapping (SLAM) approaches. Besides sensor-processing related tasks, methods for robot trajectory planning will be introduced. The central topic of the course stands in specific usage of the afore methods capable of execution with groups of robots and taking the advantage of their cooperation and coordination in groups. Labs and seminars are organized in a form of an Open Laboratory whereas the students will resolve the given problem in simulated environments as well as with a real robot HW. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33MKR			
AE3M33PRO	Advanced robotics	Z,ZK	6
We will explain and demonstrate techniques for modelling, analyzing and identifying robot kinematics. We will explain more advanced principles of the representation of motion in space and the robot descriptions suitable for identification of kinematic parameters from measured data. We will explain how to solve the inverse kinematic task of 6DOF serial manipulators and how it can be used to identify its kinematic parameters. Theory will be demonstrated on simulated tasks and verified on a real industrial robot. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33PRO			
AE3M33UI	Artificial Intelligence	Z,ZK	6
The course is aimed at providing theoretically deeper knowledge in the area of Artificial Intelligence in the extent needed to study the branch of study Robotics. It is organized around several topics: pattern recognition and machine learning, theory of multi-agent systems and artificial life. The linkage between the theoretical and practical applications is rather stressed. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33UI			
AE3M35NES	Nonlinear Systems and Chaos	Z,ZK	6
This advanced course will cover modern methods in nonlinear systems theory and applications. Basic feature of nonlinear systems theory is that state space approach is prevailing and frequency response methods are not generally applicable. The course will cover the topic: state model of nonlinear dynamical systems and its analysis, Lyapunov's stability, asymptotic stability and Lyapunov's methods, control synthesis via approximate linearization, high gain observers, gain scheduling. The main stress is on the so-called structural methods for the nonlinear control design, i.e. study of the system structural properties allowing easier applications of known control methods. That would consist of basics of differential geometry, Lie derivative, various types of exact feedback linearization, input-output linearization, zero dynamics, minimum phase systems, MIMO systems, decoupling. Last but not least, the course will provide verz basci information about chaotic systems including some motivating examples.			

AE3M35OFD	Estimation, filtering and detection	Z,ZK	6
<p>This course will cover description of the uncertainty of hidden variables (parameters and state of a dynamic system) using the probability language and methods for their estimation. Based on bayesian prblem formulation principles of rational behsavour under uncertainty will be analysed and used to develp algorithms for estimation of parameters of ARX models and Kalman filtering including the extensions. We will demonstrate numerically robust implementation of the algorithms applicable in real life problems for the areas of industrial process control, robotics and avionics. We will extend the methods for linear gaussian systems to a more generic problems using Monte Calro approach. The course will also cover multimodel approach and its use for the fault detection and isolation and introduction to adaptive control. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35OFD</p>			
AE3M35ORR	Optimal and robust control	Z,ZK	6
<p>This advanced course will cover modern methods for optimal and robust control design. Emphasis will be put on practical computational design skills and realistic application problem formulations. Unifying concept of this course is that of minimizing a system norm. Depending on which norm is minimized, different properties of the resulting controller are guaranteed. Minimizing the H2 system norm leads to the celebrated LQ/LQG optimal control trading off the performance and the effort, while minimizing H∞; norm shifts the focus to robustness against uncertainties in the model. H_∞-synthesis is an extensions to the H∞; optimal control design methodology than takes the structure of the uncertainty into consideration. Methods for time-optimal and suboptimal control will be presented as well as they proved useful in applications with strict time constraints like positioning of a hard disk drive RW head. As a self-contained add-on to the course, introduction to the topic of semidefinite programming and linear matrix inequalities (LMI) will be made, as these constitute a very elegant theoretial and a powerful computational tool for solving all the previously introduced tasks in optimal and robust control. Methods for reduction of model and controller order complete the course. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35ORR</p>			
AE3M35PSR	Real-Time Systems Programming	Z,ZK	6
<p>Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35PSR</p>			
AE3M35RIS	Control Systems	Z,ZK	6
<p>Process control using industrial control systems, programmable logic controllers, visualisation of technological processes. Hierarchical control systems, industrial communications for factory and process automation. Open software technologies, safety and reliability of control applications. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35RIS</p>			
AE3M35TDS	Theory of Dynamical Systems	Z,ZK	8
<p>The purpose of this course is to introduce mathematical tools for the description, analysis, and partly also synthesis, of dynamical systems. The focus will be on linear time-invariant multi-input multi-output systems and their properties such as stability, controllability, observability and state realization. State feedback, state estimation, and the design of stabilizing controllers will be explained in detail. Partially covered will be also time-varying and nonlinear systems. Some of the tools introduced in this course are readily applicable to engineering problems such as the analysis of controllability and observability in the design of flexible space structures, the design of state feedback in aircraft control, and the estimation of state variables. The main motivation, however, is to pave the way for the advanced courses of the study program. The prerequisites for this course include undergraduate level linear algebra, differential equations, and Laplace and z transforms. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35TDS</p>			
AE3M38DIT	Diagnostics and Testing	Z,ZK	7
<p>The course introduces the fundamentals of the fault-diagnosis and testing systems, machine condition monitoring, vibrodiagnostics and advanced signal processing methods, non-destructive testing and testing of analog and digital circuits. In laboratory will be demonstrated selected diagnostic tools, and solved an individual project related to diagnostics and/or testing.</p>			
AE3M38MSZ	Modern Sensors and Signal Processing	Z,ZK	6
<p>The course is aimed to broaden the sensors basics by topics necessary for design of sensors and sensor systems. Prospective sensor types are covered as well as methods of the processing of the sensor signal. Sensors and sensor systems are shown in applications and by case design studies. The labs are concentrated to the complex measurement of the sensor parameters and to FEM modeling and its experimental verification. Optical sensors and their applications are covered in detail by following course "Videometry". Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M38MSZ</p>			
AE3M38SPD	Data Acquisition and Transfer	Z,ZK	6
<p>Subject is devoted to distributed and centralized DAQ systems and to the design of their elements. Selected industrial interfaces and buses (CAN, Profibus, HART, Modbus, Ethernet), VXI/PXI systems, USB and wireless sensor networks (ZigBee, WiFi) are presented in detail in order to provide information required for efficient design of their components. Project-oriented laboratories provide students with practical experience in the implementation of modern DAQ systems.</p>			
AE3M38VBM	Videometry and Contactless Measurement	Z,ZK	6
<p>This course explains the topics of optoelectronic sensors, especially CCD sensors, and their application in the videometry based contactless measurements. The problems of CCD line and area sensors, design of measuring cameras and the methods of signal processing are presented.</p>			
AE3M38VIP	Virtual Instruments	Z,ZK	6
<p>A subject deals with programming virtual instruments based on standardized interfaces (PCI, PXI, VXI). Lectures are focused on application of up-to-date standards for data acquisition systems programming (VXIplug&play, VISA, IVI) and selected software techniques in Windows, Linux and Phar Lap operating systems. Assigned software tasks in laboratories are solved using C/C++ language or LabVIEW environment.</p>			
AE3M38ZDS	Analog Signal Processing and Digitalization	Z,ZK	6
<p>The course is dedicated to methods for preprocessing, digitalization and reconstruction of continuis signals. It is focused to the methods for achieving of high precision of transmission and suppression of spurious components. The laboratory exercises are divided into two parts: the first part is classical tasks; the second one is individual project of design of typically data acquisition system. The teaching is supported by the CAD system for measuring circuits.</p>			
AE3M99PTO	Team Work	KZ	6
<p>The aim of this course is to get the students knowledgeable to work in teams. How to manage the team and methodology of the team work will be guided by specialists from the industry during lectures. Students will be working on real problems during labs. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M99PTO</p>			
AE4M01TAL	Theory of Algorithms	Z,ZK	6
<p>The course brings several algorithms from the theory of graphs and cryptography. Stress is put on the analysis of time complexity of the algorithms presented. Further, basics of the theory of complexity are given. Next an example of randomized algorithms is given, it is the Miller-Rabin?s algorithm. When dealing with time complexity of specific algorithms suitable data structures will be given. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M01TAL</p>			
AE4M33AU	Automatic Reasoning	Z,ZK	6
<p>Theorem proving is no more restricted to mathematics, but it is ever more often used in situations, when one needs to make sure that the suggested procedure meets the initial requirements it is used in deductive databases as well as for verification of SW or HW components. The process of proof construction has to be automated for that purpose. The course reviews current systems of 1st order theorem proving and their practical applications. There are explained underlying theoretical principles (model checking, resolution, tableaux) together with their practical and theoretical constraints. Special attention is devoted to gaining experience in choosing the best tool to solve a specific problem, in identification of mistakes in input or in strengthening the obtained results. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33AU</p>			
AE4M33BIA	Bio Inspired Algorithms	Z,ZK	6
<p>The students will learn some of the unconventional methods of computational intelligence aimed at solving complex tasks of classification, modeling, clustering, search and optimization. Bio-inspired algorithms take advantage of analogies to various phenomena in the nature and society. The main topics of the subject are artificial neural networks and evolutionary algorithms. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33BIA</p>			

AE4M33DZO	Digital image	Z,ZK	6
The subject teaches how to process two-dimensional image as a signal without interpretation. Image acquisition, linear and nonlinear preprocessing methods and image compression will be studied. Studied topics will be practised on practical examples in order to obtain also practical skills. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33DZO			
AE4M33GVG	Geometry of Computer Vision and Graphics	Z,ZK	6
We will explain fundamentals of image and space geometry including Euclidean, affine and projective geometry, the model of a perspective camera, image transformations induced by camera motion, and image normalization for object recognition. Then we will study methods of calculations with geometrical objects in images and space, estimating geometrical models from observed data, and for calculating geometric and physical properties of observed objects. The theory will be demonstrated on practical task of creating mosaics from images and determining camera positions in space. We will build on linear algebra, probability theory and numerical mathematics and lay down foundation for other subjects such as computational geometry, computer vision, computer graphics, digital image processing and recognition of objects in images. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33GVG			
AE4M33MPV	Computer Vision Methods	Z,ZK	6
The course covers selected computer vision problems: search for correspondences between images via interest point detection, description and matching, image stitching, detection, recognition and segmentation of objects in images and videos, image retrieval from large databases and tracking of objects in video sequences. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33MPV			
AE4M33NMS	Design and Modeling of Software Systems	Z,ZK	6
The subject introduces to the design process of a software system from requirements gathering to a detailed object-oriented design. It is based on existing development methodologies, especially object-oriented, and the UML language will be used as a dominant formalism. The subject is oriented mainly on reliability analysis and formal and informal methods to reduce error rate in design phases.			
AE4M33PAL	Advanced algorithms	Z,ZK	6
The advanced course of algorithms construction and analysis is dedicated to the students which have an interest to be able to evaluate in a experienced way effective and complex algorithms. The aim of the course is to acquaint with advanced algorithms such as advanced search and sorting algorithms, hash tables, tree structures used in searching, text searching, syntax analysis, Internet search algorithms principles (page-ranking), parallel algorithms. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33PAL			
AE4M33RZN	Advanced Methods for Knowledge Representation	Z,ZK	6
This course aims to deepen understanding of knowledge representation principles beyond the predicate logic formalism. Firstly, the course presents ontologies and description logic, the principle elements of semantic web. Then, attention will be paid to statements whose validity varies in time. Uncertainty makes the next issue to be discussed. Modal logic extends the classical logic with additional modalities, namely, possibility, probability, and necessity. Probabilistic graphical models associate the classical probabilistic theory with the graph theory. Fuzzy sets allow to represent vagueness. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33RZN			
AE4M33SAD	Machine Learning and Data Analysis	Z,ZK	6
The class is taught jointly in English with M33SAD. See the latter for course info. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SAD			
AE4M33TDV	3D Computer Vision	Z,ZK	6
This course introduces methods and algorithms for 3D geometric scene reconstruction from images. The student will understand these methods and their essence well enough to be able to build variants of simple systems for reconstruction of 3D objects from a set of images or video, for inserting virtual objects to video-signal source, or for computing ego-motion trajectory from a sequence of images. The labs will be hands-on, the student will be gradually building a small functional 3D scene reconstruction system. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33TDV			
AE4M33TVS	Software Verification and Testing	Z,ZK	6
This course will introduce the theoretical foundations and mathematical concepts necessary for rigorous software testing, including the definitions of fundamental system characteristics, such as reliability, robustness and correctness of the software system. We will emphasize the techniques and abstract tools necessary for validation of the correctness and reliability characteristics of the software. In the first part of the course, we will introduce the existing techniques and paradigms for system testing (black/white box, formal methods, structural analysis), including the methods for test number reduction and automation. The second part of the course will concentrate on formal methods for system verification. We will introduce the formal frameworks necessary for the dynamic description of system properties (Z-notation, temporal logic) and the applicable verification methods (model checking, theorem proving) working on these representations.			
AE4M34ISC	Systems on Chip	Z,ZK	6
Main responsibilities of integrated circuits designer; design abstraction levels - Y chart. Specification designation, feasibility study, criteria for technology and design kits selection. Analogue and digital integrated systems design and simulation methodologies. Main features of application specific ICs - full custom design, gate arrays, standard cells, programmable array logic. Design aspects mobile and low power systems. Hardware Description languages (HDL). Logic and physical synthesis. Front End and Back End design. Floorplanning, place and route, layout, parasitic extraction, time analysis, testbenche construction and verification. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M34ISC			
AE4M35KO	Combinatorial Optimization	Z,ZK	6
The goal is to show the problems and algorithms of combinatorial optimization (often called discrete optimization; there is a strong overlap with the term operations research). Following the courses on linear algebra, graph theory, and basics of optimization, we show optimization techniques based on graphs, integer linear programming, heuristics, approximation algorithms and state space search methods. We focus on application of optimization in stores, ground transportation, flight transportation, logistics, planning of human resources, scheduling in production lines, message routing, scheduling in parallel computers. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M35KO			
AE4M35OSP	Open-source programming	Z,ZK	6
The subject provides insight into world of open-source projects and techniques proved to be usefull for larger applications and operating systems development. Reasons leading to the founding of GNU project is discussed and possible advantages of this approach for cooperation even for commercial subjects is shown. Usual tools used for development, debugging and source code control and functional testing are described. Description of POSIX type operating system structure and introduction to the driver development, user-space libraries and user graphics environments comes next. The last topic is introduction how to use earlier described techniques and support for embedded applications development and real-time control. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M35OSP			
AE4M36AOS	Service Oriented Architectures	Z,ZK	6
The lecture focuses on service-oriented computing (SOC) and service-oriented architecture (SOA). Basic concepts of SOC will be explained on the service level (service description, discovery and invocation) and process level (business process formalization, service composition, transaction mechanisms) with respect to SOC utilization for flexible business applications implementation in (semi-)open environment (intra- i inter-enterprise). Besides basic web-services specifications and technologies (SOAP, WSDL, UDDI, BPEL) the up-to-date technologies for semantic web-services will be introduced. Great emphasis will be put on representation and modeling formalisms (RDF, RDFS, OWL). Open environment operation aspects will be also presented (reputation, trust, quality-of-service, privacy). The goal of the course is to bring general overview, but particular SOA platforms and tools (Sun Glassfish, JBoss) will be also introduced including comparison to older distributed systems architectures (CORBA, DCOM) and related domain of multi-agent systems. The design methodology, implementation, and deployment will be explained with relation to existing business processes and organizational structures. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M36AOS			
AE4M36MAS	Multiagent Systems	Z,ZK	6
This course provides foundations of multi-agent systems and agent technologies. It provides a formal model of an agent, the concept of reactive, deliberative and deductive agent, BDI architecture, basics of inter agent communication and coordination. Introduction to distributed decision making and game theory will be also provided. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M36MAS			

AE4M36PAH	Planning and game playing	Z,ZK	6
Klasické plánovací metody (linární a nelineární), metody grafového plánování, metody kategorie SAT. Metody dvou (a více) hráčových her. Metody prohledávání herních stromů (jako například minimax a alfa-beta pro ezávání) Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M36PAH Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/A4M36PAH			
AE4M36PAP	Advanced Computer Architectures	Z,ZK	6
This course extends knowledge of modern computer architecture. Mainly the architecture of nowadays processors utilizing instruction and/or thread level parallelism and advanced pipelining is in the center of our attention. A special emphasis will be devoted to the implementation of parallelism in hardware, parallel program design, and advanced instruction scheduling and execution. https://cw.fel.cvut.cz/wiki/courses/a4m36pap Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M36PAP			
AE4M38AVS	Embedded Systems Application	Z,ZK	6
This subject presents applications of typical embedded systems, and way, how optimise its design. There are presented blocks and functions embedded system and their use in typical applications (consumer, industrial, automotive,...).			
AE4M38KRP	Computer Interfaces	Z,ZK	6
Students are acquainted with common computer interfaces and design of peripherals. Selected PC interfaces (USB, PCI, PCI Express, IEEE1394, ExpressCard), metallic and wireless networks (IEEE802.x standards) and industrial interfaces (EIA-485, EIA-232, CAN) are explained in detail. Project-oriented laboratories are focused on design and implementation of selected communication interface.			
AE4M39APG	Algorithms of Computer Graphics	Z,ZK	6
In this course you will get acquainted with basic problems and their solutions in computer graphics. The main topic of the course are graphics primitives in 2D and 3D for modeling and rendering, color models, image representations, and basic photorealistic rendering algorithms. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M39APG			
AE4M39DPG	Data Structures for Computer Graphics	Z,ZK	6
This course provides you with the fundamentals of data structures commonly used in computer graphics. In contrast to standard binary search trees used in one dimension, the presented theory focuses on multidimensional data used to describe 3D scenes. In addition to the theory, the course emphasizes individual and team projects, where the importance and advantages of multidimensional data are demonstrated on practical examples. The students will gain practical experience through their own individual projects.			
AE4M39MMA	Multimedia and Computer Animation	Z,ZK	6
P edm t je zam en na výklad metod používaných v oblasti počítačové animace. Studenti získají přehled o algoritmech a metodách reprezentace typických problémů v oblasti počítačové animace (inverzní kinematika, animace lidské postavy, dynamika aj.) část p edm tu je též zam ena na principy kreativních postupů i vytváření zvuku jako součástí audio-vizuálních projektů. V p edm tu zazní i několik přednášek popisujících vybrané problémy z oblasti technologií pro filmovou produkci (MOCAP, Stereoskopie, trikové postupy). Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/A4M39MMA			
AE4M39NUR	User Interface Design	Z,ZK	6
Studenti se v rámci p edm tu seznámí hlouběji s teoretickými základy návrhu a vyhodnocování uživatelských rozhraní. Bude prezentováno široké spektrum formálních metod popisu uživatelských rozhraní a modelů uživatele. Zvládnutím těchto prostědek získají studenti základ jak pro praktické inovace p i návrhu a vyhodnocování uživatelských rozhraní tak i pro samostatnou výzkumnou činnost v daném oboru. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/A4M39NUR			
AE4M39VG	Computational Geometry	Z,ZK	6
The goal of computational geometry is analysis and design of efficient algorithms for determining properties and relations of geometric entities. The lecture focuses on geometric search, point location, convex hull construction for sets of points in d-dimensional space, searching nearest neighbor points, computing intersection of polygonal areas, geometry of parallelograms. New directions in algorithmic design. Computational geometry is applied not only in geometric applications, but also in common database searching problems. Výsledek studentské ankety p edm tu je zde: http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M39VG...			
AE4M39VIZ	Visualization	Z,ZK	6
In this course, you will get the knowledge of theoretical background for visualization and the application of visualization in real-world examples. The visualization methods are aimed at exploiting both the full power of computer technologies and the characteristics (and limits) of human perception. Well-chosen visualization methods can help to reveal hidden dependencies in the data that are not evident at the first glance. This in turn enables a more precise analysis of the data, or provides a deeper insight into the core of the particular problem represented by the data.			
AE4M39WA2	Web Applications Development 2	Z,ZK	6
This course provides description and practical usage of application servers and frameworks for developing web applications. It will provide description of application servers, their basics and design rules, persistence frameworks for database connections and integration with application servers. For developing web applications, we will describe properties of different web frameworks, both server and client side. Introduction to the quality analysis and optimization of web applications and introduction into web security will be also provided.			

Aktualizace výše uvedených informací naleznete na adrese <http://bilakniha.cvut.cz/cs/f3.html>

Generováno: dne 10. 08. 2020 v 12:30 hod.