

# Studijní plán

## Název plánu: Open Informatics - Computer Vision and Image Processing

Sou část VUT (fakulta/ústav/další): Fakulta elektrotechnická

Katedra: katedra kybernetiky

Obor studia, garantovaný katedrou: Poítačové vidění a digitální obraz

Garant oboru studia.: doc. Dr. Ing. Radim Šára

Program studia: Otevřená informatika

Typ studia: Navazující magisterské předání

Předepsané kredity: 89

Kredity z volitelných předání: 31

Kredity v rámci plánu celkem: 120

Poznámka k plánu:

Název bloku: Povinné předání programu

Minimální počet kreditů bloku: 49

Role bloku: P

Kód skupiny: MOIEP

Název skupiny: Compulsory subjects of the programme

Podmínka kredity skupiny: V této skupině musíte získat 18 kreditů

Podmínka předání skupiny: V této skupině musíte absolvovat alespoň 3 předání

Kredity skupiny: 18

Poznámka ke skupině:

Kód	Název předání / Název skupiny předání (u skupiny předání seznam kód jejích členů) Využijte, auto i a garanti (gar.)	Zakonění	Kredity	Rozsah	Semestr	Role
AE4M33PAL	<b>Advanced algorithms</b>	Z,ZK	6	2P+2C	Z	P
AE4M35KO	<b>Combinatorial Optimization</b>	Z,ZK	6	3P+2C	L	P
AE4M01TAL	<b>Theory of Algorithms</b>	Z,ZK	6	3P+1S	L	P

**Charakteristiky předání této skupiny studijního plánu: Kód=MOIEP Název=Compulsory subjects of the programme**

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 předání tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33PAL">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33PAL</a>			
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 předání tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M35KO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M35KO</a>			
AE4M01TAL	Theory of Algorithms	Z,ZK	6
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 předání tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M01TAL">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M01TAL</a>			

Kód skupiny: MDIPE

Název skupiny: Diploma Thesis

Podmínka kredity skupiny: V této skupině musíte získat alespoň 25 kreditů (maximálně 375)

Podmínka předání skupiny: V této skupině musíte absolvovat alespoň 1 předání

Kredity skupiny: 25

Poznámka ke skupině:

Kód	Název předání / Název skupiny předání (u skupiny předání seznam kód jejích členů) Využijte, auto i a garanti (gar.)	Zakonění	Kredity	Rozsah	Semestr	Role
AE0M32DIP	<b>Diploma project</b>	Z	25	0P + 36S	L	P

AE0M14DIP	Diploma Project	Z	25		L	P
AE0M16DIP	Diploma thesis	Z	25	36s	L,Z	P
AE0M37DIP	Diploma Thesis	Z	25	36s	L	P
AE0M13DIP	Diploma Thesis	Z	25	36S	L	P
AE0M33DIP	Diploma Thesis	Z	25	36S	L	P
AE0M34DIP	Diploma Thesis <i>Miroslav Husák</i>	Z	25	36C	L	P
AE0M35DIP	Diploma Thesis	Z	25	36S	L	P
AE0M38DIP	Diploma Thesis	Z	25	0P+36C	L	P
AE0M17DIP	Diploma Thesis	Z	25	36s	L	P
ADIP25	Diplomová práce - Diploma Thesis	Z	25	36s	L	P
AE4M99DIP	Master Thesis	Z	25		L	P
AE0M15DIP	Master's thesis	Z	25	36s	L	P

**Charakteristiky p edmet této skupiny studijního plánu: Kód=MDIPE Název=Diploma Thesis**

AE0M32DIP	Diploma project	Z	25			
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32DIP</a>						
AE0M14DIP	Diploma Project	Z	25			
AE0M16DIP	Diploma thesis	Z	25			
<a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16DIP</a> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16DIP</a>						
AE0M37DIP	Diploma Thesis	Z	25			
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37DIP</a>						
AE0M13DIP	Diploma Thesis	Z	25			
Independent final comprehensive work for the Master's degree study program. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M13DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M13DIP</a>						
AE0M33DIP	Diploma Thesis	Z	25			
AE0M34DIP	Diploma Thesis	Z	25			
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M34DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M34DIP</a>						
AE0M35DIP	Diploma Thesis	Z	25			
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination.						
AE0M38DIP	Diploma Thesis	Z	25			
AE0M17DIP	Diploma Thesis	Z	25			
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination. Diploma projects deals with microwave technique, antennas, propagation, optical communications, EMC, and medical applications. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M17DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M17DIP</a>						
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.						
AE4M99DIP	Master Thesis	Z	25			
AE0M15DIP	Master's thesis	Z	25			
<a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15DIP</a> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15DIP</a>						

Kód skupiny: MOIEPRO

Název skupiny: Project

Podmínka kredity skupiny: V této skupin musíte získat 6 kredit

Podmínka p edm ty skupiny: V této skupin musíte absolvovat 1 p edm t

Kredity skupiny: 6

Poznámka ke skupině:

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
AE4M36SVP	Software or Research Project <i>Sebastian Basterrech</i>	KZ	6		Z,L	P
AE4M33SVP	Software or Research Project	KZ	6		Z,L	P

**Charakteristiky p edmet této skupiny studijního plánu: Kód=MOIEPRO Název=Project**

AE4M36SVP	Software or Research Project	KZ	6
<p>Samostatná práce na problému-projektu pod vedením školitele. V rámci tohoto p edm tu je možné (obvyklé) ešit díl í problém diplomové práce. Proto doporu ujeme zvolit si téma diplomové práce již po átkem 3. semestru a jeho v asný výb r nepodcenit. Absolování p edm tu softwarový a výzkumný projekt musí mít jasn definovaný výstup, například technickou zprávu í programový produkt, který je ohodnocen klasifikovaným zápo tem. D ležitě upozorn í: - Standardn není možné absolvovat více než jeden p edm t tohoto typu. - Výjimku m že ud lit garant hlavního (major) oboru. Možný d vod pro ud lení výjimky je, že práce-projekt má jiné téma a je vedena jiným vedoucím. Typickým p íkladem m že být práce na projektu v zahrani í. Kontaktní email v p ípad dalších dotaz : oi@fel.cvut.cz Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A4M36SVP">http://www.fel.cvut.cz/anketa/aktualni/courses/A4M36SVP</a></p>			
AE4M33SVP	Software or Research Project	KZ	6
<p>Project work. Student is expected to work independently under an advisor supervision. The topic of the project should be relevant to the major branch of the study. The work must have a clearly defined output like a technical report and/or software. More details, including project topics can be found at: <a href="http://cyber.felk.cvut.cz/study/student-projects/">http://cyber.felk.cvut.cz/study/student-projects/</a> The topic may also be negotiated independently. In case of doubts a discussion with the guarantor/director of the major study branch is encouraged. <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SVP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SVP</a> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SVP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SVP</a></p>			

Kód skupiny: MOIEBME

Název skupiny: Safety of the master's studies

Podmínka kredity skupiny:

Podmínka p edm ty skupiny: V této skupin musíte absolvovat alespo 1 p edm t

Kredity skupiny: 0

Poznámka ke skupině:

Kód	Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len ) Vyu ující, auto í a garantí (gar.)	Zakon ení	Kredity	Rozsah	Semestr	Role
AE4M14BP3	Safety in Electrical Engineering 3	Z	0	2+2j	Z	P

Charakteristiky p edmet této skupiny studijního plánu: Kód=MOIEBME Název=Safety of the master's studies

AE4M14BP3	Safety in Electrical Engineering 3	Z	0
<p>The course provides for students of programme Open informatics periodic training guidelines for health and occupational safety and gives knowledge of electrical hazard of given branch of study. Students receive indispensable qualification according to the Directive of the Dean No. 1/2007. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M14BP3">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M14BP3</a></p>			

Název bloku: Povinné p edm ty oboru

Minimální počet kredit bloku: 36

Role bloku: PO

Kód skupiny: MOIEPO3

Název skupiny: Compulsory subjects of the branch

Podmínka kredity skupiny: V této skupin musíte získat 36 kredit

Podmínka p edm ty skupiny: V této skupin musíte absolvovat alespo 6 p edm t

Kredity skupiny: 36

Poznámka ke skupině:

Kód	Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len ) Vyu ující, auto í a garantí (gar.)	Zakon ení	Kredity	Rozsah	Semestr	Role
AE4M39VG	Computational Geometry	Z,ZK	6	2P+2S	Z	PO
AE4M33MPV	Computer Vision Methods	Z,ZK	6	2P+2C	L	PO
AE4M33DZO	Digital image	Z,ZK	6	2P+2C	Z	PO
AE4M33GVG	Geometry of Computer Vision and Graphics	Z,ZK	6	2P+2C	L	PO
AE4M33SAD	Machine Learning and Data Analysis	Z,ZK	6	2P+2C	Z	PO
AE4M33TDV	3D Computer Vision	Z,ZK	6	2P+2C	Z	PO

Charakteristiky p edmet této skupiny studijního plánu: Kód=MOIEPO3 Název=Compulsory subjects of the branch

AE4M39VG	Computational Geometry	Z,ZK	6
<p>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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M39VG...">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M39VG...</a></p>			
AE4M33MPV	Computer Vision Methods	Z,ZK	6
<p>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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33MPV">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33MPV</a></p>			
AE4M33DZO	Digital image	Z,ZK	6
<p>The subject teaches how to process two-dimensional image as a signal without interpretaion. 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33DZO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33DZO</a></p>			

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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33GVG">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33GVG</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SAD">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SAD</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33TDV">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33TDV</a>			

Název bloku: Volitelné p edm ty  
Minimální počet kredit bloku: 4  
Role bloku: V

Kód skupiny: MOIEVOLPRE

Název skupiny: Elective subjects

Podmínka kredity skupiny:

Podmínka p edm ty skupiny:

Kredity skupiny: 0

Poznámka ke skupině: ~Student can choose arbitrary subject of the master's program (EEM - Electrical Engineering, Power Engineering and Management, KME - Communications, Multimedia and Electronics, KYR - Cybernetics and Robotics, OI - Open Informatics) which is not part of his curriculum. Student can choose with consideration of recommendation of the branch guarantee. \\\

Kód	Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejich len ) Vyu uující, auto i a garanti (gar.)	Zakon ení	Kredity	Rozsah	Semestr	Role
AE0M32PST	<b>Advanced Network Technologies</b>	Z,ZK	5	2P + 2L	L	v
AE0M37MOT	<b>Advanced areas in image and video technology</b>	KZ	5	2+2L	Z	v
AE0M13MKV	<b>Advanced Components of Power Electronic</b>	Z,ZK	5	2P+2L	L	v
AE4M33RZN	<b>Advanced Methods for Knowledge Representation</b>	Z,ZK	6	2P+2C	Z	v
AE3M33PRO	<b>Advanced robotics</b>	Z,ZK	6	2P+2L	Z	v
AE0M14AML	<b>Aerodynamics and Mechanics of Flight</b>	Z,ZK	4	2+2s	Z	v
AE3M38ZDS	<b>Analog Signal Processing and Digitalization</b>	Z,ZK	6	2P+2L	Z	v
AE2M17AEK	<b>Antennas and EMC in Radiowave Communication</b>	Z,ZK	5	2+2L	L	v
AE2M32VAD	<b>Applications Development and DSP</b> <i>lyad Khuder, Robert Beš ák Robert Beš ák (Gar.)</i>	Z,ZK	5	2P + 2L	L	v
AE3M33UI	<b>Artificial Intelligence</b>	Z,ZK	6	2P+2C	L	v
AE2M37ZVT	<b>Audio Technology</b>	Z,ZK	5	2+2L	L	v
AE0M37ZV2	<b>Audio Technology 2</b>	Z,ZK	4	2+2L	Z	v
AE1M16LOG	<b>Business Logistics</b>	Z,ZK	5	2+2s	Z	v
AE2M17CAD	<b>CAD and Microwave Circuits</b>	Z,ZK	6	2+2c	Z	v
AE2M37KDK	<b>Coding in digital communications</b>	Z,ZK	5	3+1c	L	v
AE2M32RKP	<b>Communication Processes Control</b>	Z,ZK	5	2P + 2L	L	v
AE0M32KMP	<b>Communications and Media Law</b> <i>Zden k Brabec, Petr Ondrá ek, Ji í Hole ek Ji í Hole ek Zden k Brabec (Gar.)</i>	Z,ZK	4	2P + 2C	Z,L	v
AE2M17PMP	<b>Computer Aided Modeling of Field</b>	Z,ZK	5	2+2c	L	v
AE4M39PGR	<b>Computer Graphics</b>	Z,ZK	6	2P+2C	L	v
AE0M13KTM	<b>Construction and Technology of Microcomputers</b>	Z,ZK	5	2P+2L	Z	v
AE1M15RES	<b>Control of Power Systems</b>	Z,ZK	5	2+2c	L	v
AE3M35RIS	<b>Control Systems</b>	Z,ZK	6	2P+2L	Z	v
AE1M16CTR	<b>Controlling</b>	Z,ZK	6	2+2s	Z	v
AE3M38SPD	<b>Data Acquisition and Transfer</b>	Z,ZK	6	2P+2L	Z	v
AE0M32PRD	<b>Data Communication Means</b>	Z,ZK	5	2P + 2L	Z	v
AE0M34NFO	<b>Design of Photonic Circuits</b>	Z,ZK	4	2P+2L	L	v

AE0M34NNZ	<b>Design of Power Supplies for Electronics</b>	Z,ZK	5	2P+2L	L	v
AE1M16RES	<b>Development of Energy Systems</b>	Z,ZK	5	2+2s	Z	v
AE3M38DIT	<b>Diagnostics and Testing</b>	Z,ZK	7	3P+2L	L	v
AE2M37DKM	<b>Digital communications</b>	Z,ZK	4	3+1s	Z	v
AE2M99CZS	<b>Digital Signal processing</b>	Z,ZK	5	2P+2C	Z	v
AE0M14KSP	<b>Drive Communication Systems</b>	Z,ZK	5	2+2c	L	v
AE0M14DMP	<b>Dynamics of mechanical parts of drives</b>	Z,ZK	4	2+2s	Z	v
AE1M16EKL	<b>Ecology and economy</b> <i>Jaroslav Knápek</i>	Z,ZK	5	3+1s	L	v
AE1M13EMP	<b>Ecology of materials and processes</b>	Z,ZK	5	2P+2L	L	v
AE1M16EUE	<b>Economy of Energy Use</b>	Z,ZK	5	2+2s	L	v
AE0M14KOP	<b>Electric Drive Component Design</b>	Z,ZK	5	2+2L	Z	v
AE1M14RPO	<b>Electric Drive Control</b>	Z,ZK	5	2+2L	L	v
AE0M14DGP	<b>Electric Drive Diagnostics</b>	Z,ZK	5	2+2L	L	v
AE1M14PO2	<b>Electric Drives and Traction 2</b>	Z,ZK	5	2+2L	L	v
AE1M14SP2	<b>Electric Machinery and Apparatus 2</b>	Z,ZK	5	2+2L	Z	v
AE1M15EST	<b>Electrical Light and Heat</b>	Z,ZK	5	2+2c	Z	v
AE0M15EZS	<b>Electrical Sources and Systems</b>	Z,ZK	5	2+2s	Z	v
AE1M13EZF	<b>Electrochemical Sources and Photovoltaics</b>	Z,ZK	5	2P+2L	Z	v
AE0M34EZS	<b>Electronic Security Systems</b> <i>Miroslav Husák Miroslav Husák (Gar.)</i>	Z,ZK	5	2P+2L	Z	v
AE3M35OFD	<b>Estimation, filtering and detection</b>	Z,ZK	6	3P+1C	Z	v
AE1M16FIU	<b>Financial Accounting</b>	Z,ZK	5	2+2s	Z	v
AE1M16FIM	<b>Financial Management</b>	Z,ZK	6	2+2c	L	v
AE0M32ZST	<b>Fundamentals of Network Technologies</b>	Z,ZK	5	2P + 2L	Z	v
AE1M15TVN	<b>High Voltage Engineering</b>	Z,ZK	5	2+2L	L	v
AE2M37OBT	<b>Image Technology</b>	Z,ZK	6	2+2c	Z	v
AE2M31IAS	<b>Implementation of Analog Systems</b>	Z,ZK	6	2P+2S	L	v
AE0M13PRE	<b>Industrial electronics</b>	Z,ZK	5	2P+2L	Z	v
AE2M34SIS	<b>Integrated System Structures</b>	Z,ZK	5	2P+2C	Z	v
AE2M34NIS	<b>Integrated Systems Design</b>	Z,ZK	5	2P+2C	L	v
AE3M33IRO	<b>Intelligent robotics</b>	Z,ZK	7	3P+2C	L	v
BE4M36NLP	<b>Introduction to Natural Language Processing</b>	Z,ZK	6	2P+2C	Z	v
AE4M33SAD	<b>Machine Learning and Data Analysis</b>	Z,ZK	6	2P+2C	Z	v
AE1M14SSE	<b>Machinery structures of power plants</b>	Z,ZK	4	2+2s	Z	v
AE1M16MES	<b>Management and Economics of Power Systems</b>	Z,ZK	6	2+2s	Z	v
AE1M16MEE	<b>Management of Power Production</b>	Z,ZK	5	2+2s	L	v
AE1M13VES	<b>Manufacturing of Electrical Components</b>	KZ	4	2P+2L	Z	v
AE1M13VEZ	<b>Manufacturing of Electronic Equipment</b>	Z,ZK	5	2P+2L	Z	v
AE1M16MAR	<b>Marketing</b>	Z,ZK	5	2+2s	Z	v
AE3M01MKI	<b>Mathematics for Cybernetics</b>	Z,ZK	8	4P+2S	Z	v
AE1M01MPE	<b>Mathematics for Economy</b>	Z,ZK	6	4+2	Z	v
AE0M38MET	<b>Metrology</b>	Z,ZK	5	2+2L	Z	v
AE2M99MAM	<b>Microprocessors and microcomputers</b>	Z,ZK	6	2P+2L	L	v
AE2M34MST	<b>Microsystems</b> <i>Miroslav Husák</i>	Z,ZK	5	2P+2L	Z	v
AE2M34MIM	<b>Microsystems in Multimedia</b>	Z,ZK	5	2P+2C	L	v
AE2M17MOS	<b>Microwave Circuits and Subsystems</b>	Z,ZK	5	2+2c	L	v
AE3M33MKR	<b>Mobile and Collective Robotics</b>	Z,ZK	6	2P+2L	Z	v
AE2M32MKS	<b>Mobile Communication Networks</b>	Z,ZK	4	2P + 2L	Z	v
AE2M32MDS	<b>Modeling and Dimensioning of Networks</b>	Z,ZK	6	3P + 1L	Z	v
AE3M38MSZ	<b>Modern Sensors and Signal Processing</b>	Z,ZK	6	2P+2L	L	v
AE2M34NAN	<b>Nanoelectronics and Nanotechnology</b>	Z,ZK	5	2P+2C	L	v
AE3M35NES	<b>Nonlinear Systems and Chaos</b>	Z,ZK	6	3P+1C	Z	v

AE1M16OVY	<b>Operations Research</b>	Z,ZK	5	2+2c	L	v
AE2M32OSS	<b>Optical Systems and Networks</b>	Z,ZK	5	2P + 2L	L	v
AE3M35ORR	<b>Optimal and robust control</b>	Z,ZK	6	3P+1C	L	v
AE1M16VEN	<b>Power and Heat Production</b>	KZ	5	2+2s	Z	v
AE1M14VE2	<b>Power Electronics 2</b>	Z,ZK	5	2+2L	Z	v
AE1M14ESZ	<b>Power Machine Equipment</b>	Z,ZK	4	2+2c	Z	v
AE1M15ENY	<b>Power Plants</b>	Z,ZK	5	2+2c	Z	v
AE1M16DES	<b>Power Transport Systems</b>	Z,ZK	5	2+2s	Z	v
AE2M01PMS	<b>Probability and Statistics</b>	Z,ZK	8	4+2	Z	v
AE1M01MPS	<b>Probability and Statistics</b>	Z,ZK	8	4+2	Z	v
AE1M16MAV	<b>Production Management</b>	Z,ZK	5	2+2s	L	v
AE1M16PMG	<b>Project Management</b>	KZ	5	2+2s	L	v
AE1M16JAK	<b>Quality management</b>	Z,ZK	5	2+2s	Z	v
AE2M37RSY	<b>Radio systems</b>	Z,ZK	6	2+2L	Z	v
AE3M35PSR	<b>Real-Time Systems Programming</b>	Z,ZK	6	2P+2C	Z	v
AE0M15SZS	<b>Reliability and Security of Power Systems</b>	Z,ZK	5	2+2s	L	v
AE0M37DUP	<b>Satellite navigation systems</b>	Z,ZK	4	2+2L	Z	v
AE0M38SPP	<b>Signal Processors in Practice</b>	Z,ZK	5	2P+2L	Z	v
AE2M31SMU	<b>Signals in multimedia</b>	Z,ZK	5	2P+2C	L	v
AE1M14SOP	<b>Simulation and Optimization in Drives</b>	Z,ZK	5	2+2L	Z	v
AE0M14MDS	<b>Simulation of dynamic systems</b>	Z,ZK	4	2+2s	L	v
AE1M13SVS	<b>Simulation of Production Sytems</b>	Z,ZK	5	2P+2C	Z	v
AE2M31ZRE	<b>Speech processing</b>	Z,ZK	6	2P+2C	L	v
AE2M31RAT	<b>Speech technology in telecommunications</b>	Z,ZK	6	2P+2C	L	v
AE1M16STA	<b>Statistical methods in economics</b>	Z,ZK	5	2+2c	L	v
AE0M37SEK	<b>Synchronization and Equalization in Digital Communications</b>	Z,ZK	4	3P+1S	Z	v
AE1M16SIR	<b>System Analysis and Decision Making</b>	Z,ZK	5	2+2c	Z	v
AE3M99PTO	<b>Team Work</b>	KZ	6	1P+3C	L	v
AE1M13TPR	<b>Technological Project Planning</b>	Z,ZK	5	2P+2S	L	v
AE0M13TKS	<b>Technology of Cables and Optical waveguides</b>	Z,ZK	5	2P+2L	L	v
AE1M32TSY	<b>Telecommunication Systems</b>	Z,ZK	4	2P + 2L	Z	v
AE2M17PDS	<b>Terrestrial and Satellite Radio Links</b>	Z,ZK	6	2+2c	Z	v
AE3M35TDS	<b>Theory of Dynamical Systems</b>	Z,ZK	8	4P+2C	Z	v
AE1M15PRE	<b>Transmission and Distribution of Electricity</b>	Z,ZK	5	2+2s	L	v
AE3M38VBM	<b>Videometry and Contactless Measurement</b>	Z,ZK	6	2P+2L	L	v
AE0M38VIP	<b>Virtual Instruments</b>	Z,ZK	5	2P+2L	Z	v
AE3M38VIP	<b>Virtual Instruments</b>	Z,ZK	6	2P+2L	Z	v
AE0M34NSV	<b>VLSI System Design</b> <i>Pavel Hazdra Pavel Hazdra Pavel Hazdra (Gar.)</i>	Z,ZK	4	2P+2L	Z	v

**Charakteristiky p edmet této skupiny studijního plánu: Kód=MOIEVOLPRE Název=Elective subjects**

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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SAD">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SAD</a>			
AE0M32PST	Advanced Network Technologies	Z,ZK	5
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32PST">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32PST</a>			
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.			
AE0M13MKV	Advanced Components of Power Electronic	Z,ZK	5
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M13MKV">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M13MKV</a>			

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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33RZN">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33RZN</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33PRO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33PRO</a>			
AE0M14AML	Aerodynamics and Mechanics of Flight	Z,ZK	4
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.			
AE3M38ZDS	Analog Signal Processing and Digitalization	Z,ZK	6
The course is dedicated to methods for preprocessing, digitalization and reconstruction of continuous 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.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17AEK">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17AEK</a>			
AE2M32VAD	Applications Development and DSP	Z,ZK	5
The subject makes familiar with selected parts of the digital signal processing in communication. The digital image processing is emphasized. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32VAD">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32VAD</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33UI">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33UI</a>			
AE2M37ZVT	Audio Technology	Z,ZK	5
The course deals with topics from electro acoustics, sound reinforcement, related signal processing in conjunction with psychoacoustic aspects. It prepares experts for studio practice, design of sound reinforcement and specialized field in signal processing. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37ZVT">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37ZVT</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37ZV2">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37ZV2</a> english			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16LOG">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16LOG</a>			
AE2M17CAD	CAD and Microwave Circuits	Z,ZK	6
This course provides its students with principles and techniques used in modern microwave circuits as well as with basic design methods used in such systems. Basic overview of elements and detailed information on selected circuit design is provided. Students gain design experience during exercises. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17CAD">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17CAD</a>			
AE2M37KDK	Coding in digital communications	Z,ZK	5
The course extends and deepens the topics of the basic DKM course in the following main areas. 1) The information theory builds a fundamental framework for thorough understanding the principles of the channel coding, adaptation, sharing, and diversity/multiplexing of the MIMO systems. 2) We develop advanced coding technique, particularly turbo-codes, LDPC codes and space-time codes for MIMO. 3) We explain essential principles of iterative decoding methods for turbo and LDPC codes. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37KDK">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37KDK</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32RKP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32RKP</a>			
AE0M32KMP	Communications and Media Law	Z,ZK	4
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.			
AE2M17PMP	Computer Aided Modeling of Field	Z,ZK	5
The subject prepares students for independent work with professional software tools for design of elements of radio communication systems on the base of state of art. Knowledge of numerical methods and methods of optimization are parts of the education. The subject also gives the knowledge of the maths for RF radio communication systems and introduces some modern parts on maths together with design of radio communications subsystems. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17PMP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17PMP</a>			
AE4M39PGR	Computer Graphics	Z,ZK	6
Graphical libraries are used for realistic rendering of 3D scenes. The main goal of this course is to introduce students to the Application Programming Interface (API) for 3D graphics and learn them how to program a simple interactive OpenGL based 3D graphical applications. Naturally, the course describes the fundamentals of computer graphics such as rendering pipeline, geometric transformations, texturing, scene modeling, shading and illumination models, etc. Lectures also cover advanced modeling techniques (parametric curves and surfaces) and selected topics related to the scientific visualization. Practices are focused on the work on given tasks and individual projects that help students to get practical experience with the OpenGL graphics library. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M39PGR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M39PGR</a>			
AE0M13KTM	Construction and Technology of Microcomputers	Z,ZK	5
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.			

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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15RES">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15RES</a>			
AE3M35RIS	Control Systems	Z,ZK	6
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35RIS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35RIS</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16CTR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16CTR</a>			
AE3M38SPD	Data Acquisition and Transfer	Z,ZK	6
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.			
AE0M32PRD	Data Communication Means	Z,ZK	5
uding 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.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M34NFO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M34NFO</a>			
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.			
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.			
AE3M38DIT	Diagnostics and Testing	Z,ZK	7
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.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37DKM">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37DKM</a>			
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 <a href="http://noel.feld.cvut.cz/vyu/ae2m99czs">http://noel.feld.cvut.cz/vyu/ae2m99czs</a> . Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M99CZS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M99CZS</a>			
AE0M14KSP	Drive Communication Systems	Z,ZK	5
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M14KSP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M14KSP</a>			
AE0M14DMP	Dynamics of mechanical parts of drives	Z,ZK	4
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.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16EKL">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16EKL</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13EMP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13EMP</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16EUE">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16EUE</a>			

AE0M14KOP	Electric Drive Component Design	Z,ZK	5
Theoretical principles and pragmatic procedures in main types electric drives for transport, automatization and manipulating technics design. Selection, dimensioning and realisation of drives components: power supply, switching devices, protection, semiconductor converter, electric motor. Project, verification of dimensioning and testing of drive components, realisation of selected part on model drive, experimental parameters examination. Semestrial project optionally fixed on the theoretical design, realisation or experimental parameters verification			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14RPO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14RPO</a>			
AE0M14DGP	Electric Drive Diagnostics	Z,ZK	5
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			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14PO2">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14PO2</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14SP2">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14SP2</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15EST">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15EST</a>			
AE0M15EVS	Electrical Sources and Systems	Z,ZK	5
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15EVS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15EVS</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13EZF">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13EZF</a>			
AE0M34EVS	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.			
AE3M35OFD	Estimation, filtering and detection	Z,ZK	6
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 problem formulation principles of rational behaviour under uncertainty will be analysed and used to develop 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 Carlo 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35OFD">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35OFD</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16FIU">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16FIU</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16FIM">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16FIM</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32ZST">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32ZST</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15TVN">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15TVN</a>			

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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37OBT">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37OBT</a>			
AE2M31IAS	Implementation of Analog Systems	Z,ZK	6
The aim of this subject is to present new ways and principles of analog circuit design, especially with respect to the analog signal conditioning for digital processing and transmission systems. A special attention is devoted to design procedures and their implementation in application-specific integrated circuits (ASICs). The subject deals with analog and sampled-data functional blocks, including their modeling and simulation. Specifically, circuits for the design of amplifiers, filters, and data converters are focused as the main point of interest. Concurrent design trends are discussed, introducing the testing issues of analog and mixed-signal ASICs. Electronic system design essentials are presented, taking into account up-to-date technology aspects demonstrated in professional software for modern ASIC design.			
AE0M13PRE	Industrial electronics	Z,ZK	5
Electronic components , resistors, capacitors, HF coils, transformers Semiconductor devices Mounting technologies Senzore, regulating equipments Power converters.HF heating equipments. Electromagnetic compatibility in power electronic.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34SIS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34SIS</a>			
AE2M34NIS	Integrated Systems Design	Z,ZK	5
Main tasks of integrated circuits designer; design abstraction levels - Y chart. Definitions of specification, feasibility study, criteria for technology and design kits selection. Integrated systems design and simulation methodologies. Main features of full custom design, gate array, standard cells, programmable array logic. Design aspects of RF and mobile low power systems. Verilog-A, Verilog-AMS, VHDL-A. Logic and physical synthesis. Front End and Back End design. Floorplanning, place and route, layout, parasitic extraction, time analysis, testbenches design and verification. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34NIS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34NIS</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33IRO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33IRO</a>			
BE4M36NLP	Introduction to Natural Language Processing	Z,ZK	6
V p edm tu se studenti seznámí se standardními, základními, p evážn statistickými, metodami v oblasti zpracování p irozeného jazyka (NLP). Studenti si po teoretické i implementa ní stránce osvojí pot ebné techniky a seznámí se jak se základními komponentami jako jsou korpusy a jazykové modely, tak s komplexními koncovými aplikacemi NLP, nap íklad strojovým p ekladem.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14SSE">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14SSE</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MES">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MES</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MEE">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MEE</a>			
AE1M13VES	Manufacturing of Electrical Components	KZ	4
Technologie elektronických sou ástek, jejich ozna ování, standardizace. Základní užívané technologie. Typy sou ástek: rezistory, kondenzátory, vf. cívy a transformátory. Životní cykly sou ástek, ekologické aspekty výroby sou ástek. Electromechanické sou ástky . Polovodi ové sou ástky, výroba vertikálních a horizontálních struktur, pouzdr ení sou ástek Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13VES">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13VES</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13VEZ">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13VEZ</a>			
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 contraction policy, communication, distribution. Controlling and audit. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MAR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MAR</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M01MKI">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M01MKI</a>			
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.			
AE0M38MET	Metrology	Z,ZK	5
Po stru ném vysv tlení úlohy nejd ležit ějších 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 ícím 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.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M99MAM">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M99MAM</a>			

<b>AE2M34MST</b>	<b>Microsystems</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34MST">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34MST</a>			
<b>AE2M34MIM</b>	<b>Microsystems in Multimedia</b>	Z,ZK	5
The subject solves systems working in interdisciplinary areas, the most frequently in the energy interface - optical, thermal, mechanical, electrical). There are explained physical principles of any sensors, especially of optical and mechanical quantities, principle of biometric pick-up information, principle of tactile display, etc. There re solved the basic methods of the signal pre-processing. Basic principles of actuators are described, ones are using for the control in instruments and systems of multimedia applications. The attention is focused on MEMS elements and systems and their applicability in modern instrument technology. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34MIM">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34MIM</a>			
<b>AE2M17MOS</b>	<b>Microwave Circuits and Subsystems</b>	Z,ZK	5
The subject provides wide theoretical and practical knowledge both for scientific-research work and carrier profession in the field of rf. and microwave region. It makes students familiar with rf. and microwave passive and active circuits realized in planar and monolithic structures - lines, directional couplers, power dividers, resonant circuits, filters and CAD tools for design of rf. and microwave circuits. It also contains basis of microwave transistors, bipolar, MESFET and HEMPT, design of low noise, power, narrow band and wideband amplifiers, diode and transistor oscillators, detectors, mixer and frequency multipliers. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17MOS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17MOS</a>			
<b>AE3M33MKR</b>	<b>Mobile and Collective Robotics</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33MKR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33MKR</a>			
<b>AE2M32MKS</b>	<b>Mobile Communication Networks</b>	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.			
<b>AE2M32MDS</b>	<b>Modeling and Dimensioning of Networks</b>	Z,ZK	6
The aim of the course is to present an overlook of dimensioning of service systems in telecommunications networks on the basis of results of the queuing theory (QT). Introduce possibilities of simulation and modelling service systems and its networks both from the point of view of grade of service GoS and quality of service QoS. Results of the QT are applied on different service systems and telecommunication networks deploying and operating at time being. It is shown that models derived for telecommunications systems can be utilized for dimensioning of service systems in real life. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32MDS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32MDS</a>			
<b>AE3M38MSZ</b>	<b>Modern Sensors and Signal Processing</b>	Z,ZK	6
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M38MSZ">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M38MSZ</a>			
<b>AE2M34NAN</b>	<b>Nanoelectronics and Nanotechnology</b>	Z,ZK	5
The subject is oriented on the present nanotechnologies in the connection with their electronic, photonic and spintronic applications. Quantum theory basics are used to explain the effects observed in nanostructures. Basic nanoelectronic structures are described with their possible applications. Modern computer methods and models, which are able to simulate the operation of nanoelectronic structures and which are the important tools for their design and optimalisation, are studied. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34NAN">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34NAN</a>			
<b>AE3M35NES</b>	<b>Nonlinear Systems and Chaos</b>	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.			
<b>AE1M16OVY</b>	<b>Operations Research</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16OVY">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16OVY</a>			
<b>AE2M32OSS</b>	<b>Optical Systems and Networks</b>	Z,ZK	5
The course deals with the use of optical radiation for the transmission of information. The aim is to acquaint students with the functions of important components used in an advanced optical communication systems and networks. Students will learn how to design practical optical fiber link and the network. Students will receive theoretical knowledge for the implementation of a all-optical photonic networks in the future, which will be based on a combination of wavelength multiplex with an all-optical switching. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32OSS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32OSS</a>			
<b>AE3M35ORR</b>	<b>Optimal and robust control</b>	Z,ZK	6
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&#8734; norm shifts the focus to robustness against uncertainties in the model. ?-synthesis is an extensions to the H&#8734; 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35ORR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35ORR</a>			
<b>AE1M16VEN</b>	<b>Power and Heat Production</b>	KZ	5
Power sources, energy processes, general power plant, power balance and charakteristic 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 charakteristic curves and calculations, operation, control. Enviromental effects of power generating and actions of their minimization. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16VEN">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16VEN</a>			

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			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14ESZ">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14ESZ</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15ENY">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15ENY</a>			
AE1M16DES	Power Transport Systems	Z,ZK	5
Economic 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			
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.			
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.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MAV">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MAV</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16PMG">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16PMG</a>			
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			
AE2M37RSY	Radio systems	Z,ZK	6
Radio systems and their parameters, radar and position determination systems especially. Principles, properties, parameters and applications. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37RSY">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37RSY</a>			
AE3M35PSR	Real-Time Systems Programming	Z,ZK	6
Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35PSR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35PSR</a>			
AE0M15SZS	Reliability and Security of Power Systems	Z,ZK	5
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15SZS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15SZS</a>			
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.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M38SPP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M38SPP</a>			
AE2M31SMU	Signals in multimedia	Z,ZK	5
Course brings information about methods of signal processing used in multimedia including 2-D analysis and modern methods.			
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.			
AE0M14MDS	Simulation of dynamic systems	Z,ZK	4
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			
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.			
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 <a href="http://noel.feld.cvut.cz/vyu/a2m31zre">http://noel.feld.cvut.cz/vyu/a2m31zre</a> and at <a href="http://moodle.kme.feld.cvut.cz">http://moodle.kme.feld.cvut.cz</a> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M31ZRE">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M31ZRE</a>			

AE2M31RAT	Speech technology in telecommunications	Z,ZK	6
The subject is devoted to basis of speech processing addressed to students of master program with special focus on communication applications as speech technology has currently many applications in communication systems. Further information can be found at <a href="http://noel.feld.cvut.cz/vyu/ae2m31rat">http://noel.feld.cvut.cz/vyu/ae2m31rat</a> . Detailed information for registered students can be found at teaching portal <a href="http://moodle.kme.feld.cvut.cz">http://moodle.kme.feld.cvut.cz</a> .			
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 index 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.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37SEK">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37SEK</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16SIR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16SIR</a>			
AE3M99PTO	Team Work	KZ	6
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M99PTO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M99PTO</a>			
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.			
AE0M13TKS	Technology of Cables and Optical waveguides	Z,ZK	5
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.			
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: <a href="https://www.fel.cvut.cz/anketa/aktualni/courses/AE1M32TSY">https://www.fel.cvut.cz/anketa/aktualni/courses/AE1M32TSY</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17PDS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17PDS</a>			
AE3M35TDS	Theory of Dynamical Systems	Z,ZK	8
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35TDS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35TDS</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15PRE">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15PRE</a>			
AE3M38VBM	Videometry and Contactless Measurement	Z,ZK	6
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.			
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.			
AE3M38VIP	Virtual Instruments	Z,ZK	6
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.			
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.			

Kód skupiny: MOIEHEM

Název skupiny: Humanities, economically-management subjects

Podmínka kredity skupiny: V této skupin musíte získat alespo 4 kredity (maximáln 40)

Podmínka p edm ty skupiny: V této skupin musíte absolvovat alespo 1 p edm t

Kredity skupiny: 4

Poznámka ke skupině:

Kód	Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len ) Vyu uující, auto i a garantí (gar.)	Zakon ení	Kredity	Rozsah	Semestr	Role
AE0B16EPD	<b>Business economics</b>	KZ	4	2+2s	Z,L	v
A0M16EKE	<b>Ekonomika elektroenergetiky</b>	KZ	4	2+2s	Z,L	v
A0M16FI2	<b>Filozofie II</b>	Z,ZK	4	2+2s	L	v
A0M16HT2	<b>Historie v dy a techniky 2</b>	Z,ZK	4	2+2s	L	v
A0M16MGM	<b>Management</b> Jaroslav Knápek, Milana Hrubá Jaroslav Knápek (Gar.)	Z,ZK	5	2P+2S	Z,L	v
A0M16MPS	<b>Manažerská psychologie</b>	Z,ZK	4	2+2s	Z,L	v
A003TV	<b>T lesná výchova</b>	Z	2	0+2	L,Z	v
A0M16TE1	<b>Teologie</b>	Z,ZK	4	2+2s	L	v

**Charakteristiky p edmet této skupiny studijního plánu: Kód=MOIEHEM Název=Humanities, economically-managment subjects**

AE0B16EPD	Business economics	KZ	4
A0M16EKE	Ekonomika elektroenergetiky Základy financí energetických podniků. Struktura nákladů ve výrobě, p enosu a distribuci elektřiny. Ceny a tarifní soustavy v energetice. Ekonomické hodnocení investic a podnikatelských záměrů v energetice. Obnovitelné zdroje energie a externí náklady výroby elektřiny. Energetická politika a nová energetická legislativa v ČR. Liberalizace trhu s elektřinou v rámci Evropské unie. Aktuální otázky energetiky v ČR. Výsledek studentské ankety p edmet tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AD0M16EKE">http://www.fel.cvut.cz/anketa/aktualni/courses/AD0M16EKE</a> Výsledek studentské ankety p edmet tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16EKE">http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16EKE</a>	KZ	4
A0M16FI2	Filozofie II Kurs je zaměřen na filozofické aspekty v dy a techniky. Rozebírají se transdisciplinární aspekty filozofie, informatiky, fyziky, matematiky, biologie. Výsledek studentské ankety p edmet tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AD0M16FI2">http://www.fel.cvut.cz/anketa/aktualni/courses/AD0M16FI2</a> Výsledek studentské ankety p edmet tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16FI2">http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16FI2</a>	Z,ZK	4
A0M16HT2	Historie v dy a techniky 2 P edmet se zaměřuje na vystižení historického vývoje elektrotechnických oborů ve sv t a v ešských zemích. Jeho cílem je vzbudit zájem o historii a tradice studovaného oboru s p íhlédnutím k vývoji technického školství, k formování v ídeckého života v ešských zemích a k pochopení vlivu techniky na fungování společnosti. Výsledek studentské ankety p edmet tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AD0M16HT2">http://www.fel.cvut.cz/anketa/aktualni/courses/AD0M16HT2</a> Výsledek studentské ankety p edmet tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16HT2">http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16HT2</a>	Z,ZK	4
A0M16MGM	Management Manažerské nástroje a techniky pro efektivní a moderní řízení firmy v konkurenčním prostředí. BB Výsledek studentské ankety p edmet tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16MGM">http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16MGM</a>	Z,ZK	5
A0M16MPS	Manažerská psychologie Studenti se seznámí se základními psychologickými východiskami pro manažerskou praxi a personální řízení. Pochopí základy kognitivního a behaviorálního p ístupu, d íležitost osobnosti manažera, jeho vnitřních postojů, chování, interakce a komunikace. Seznámí se s teoriemi osobnosti, inteligence, motivace, kognitivními a afektivními procesy. Vybrané techniky si procvičí p í praktických cvičeních. V domostí získané v rámci p edmet tu lze uplatnit v budoucím zaměstnání i v b žném životě. Podkladem kurzu je psychologie jako moderní v ída, nikoli jako soubor povrchních klišé a pseudo-v ídeckých závěrů, kterými je oblast personální a manažerské psychologie tradičně silně zaplevelena.	Z,ZK	4
A003TV	T lesná výchova	Z	2
A0M16TE1	Teologie P edmet poskytne posluchačům základní orientaci v teologii, p í emž se nevyžaduje žádné zvláštní p edchozí vzdělání. Po krátkém filozofickém úvodu jsou systematickým způsobem probírány základní teologické disciplíny. P edmet je určen nejen v ícím studentům, kte í chtějí svou víru zakotvit na solidních teologických základech, ale p edevším t m, kte í chtějí poznat křesťanství, náboženství, ze kterého vyr ůstá naše civilizace. Výsledek studentské ankety p edmet tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16TE1">http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16TE1</a>	Z,ZK	4

Kód skupiny: METV

Název skupiny: Physical Training

Podmínka kredity skupiny:

Podmínka p edmet y skupiny:

Kredity skupiny: 0

Poznámka ke skupině:

Kód	Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len ) Vyu uující, auto i a garantí (gar.)	Zakon ení	Kredity	Rozsah	Semestr	Role
03TV	<b>T lesná výchova</b>	Z	1	2s	Z,L	v
A0M03TVI	<b>T lesná výchova I</b>	Z	1	2s	Z	v
A0M03TVII	<b>T lesná výchova II</b>	Z	1	2s	L	v
A0M03TVIII	<b>T lesná výchova III</b>	Z	1	2s	Z	v
A0M03TVIV	<b>T lesná výchova IV</b>	Z	1	2s	L	v
A0M03TVK	<b>T lovýchovný kurz</b>	Z	1	7dní	Z,L	v

**Charakteristiky p edmet této skupiny studijního plánu: Kód=METV Název=Physical Training**

03TV	T lesná výchova	Z	1
V bakalářské a inženýrské (magisterské) etapě si může student zapsat (maximálně 7-krát) t lesnou výchovu 03TV. Za absolvování volitelné TV získává student jeden kredit (maximálně 7 za celé studium na FEL). Nabídka sportovních odvětví je shodná s nabídkou pro 03TV1 až 4. Náplň výuky v jednotlivých sportovních odvětvích najdete na : <a href="http://www.Fel.cvut.cz/fee/K303">http://www.Fel.cvut.cz/fee/K303</a> - oddíl t lesné výchovy			

A0M03TVI	T lesná výchova I	Z	1
Cílem výuky t lesné výchovy je zdokonalit a rozšířit pohybové dovednosti získané na školách nižších stupňů, získat v domosti z oblasti kinantropologie, hygieny, rehabilitace. Významný je také přínos k formování zdravého životního stylu studenta a kompenzace sedavého způsobu zaměstnání jako součásti boje proti civilizačním chorobám. Ústav t lesné výchovy a sportu nabízí v rámci výukových programů tato sportovní odvětví: aerobik, aikido, basketbal, beach volejbal, badminton, bowling, bruslení, budo, florbal, fotbal, frisbee, futsal, golf, inline bruslení, kanoistiku, karate, kondiční posilování, lední hokej, lezení na stěně, lukostřelba, lyžování, ninjitsu, plavání, softbal, spinnig, squash, stolní tenis, tenis, turistiku, volejbal a zdravotní TV. Student si vybírá jedno z uvedených odvětví dle svého zájmu a kapacitních možností zvoleného sportu.			
A0M03TVII	T lesná výchova II	Z	1
Cílem výuky t lesné výchovy je zdokonalit a rozšířit pohybové dovednosti získané na školách nižších stupňů, získat v domosti z oblasti kinantropologie, hygieny, rehabilitace. Významný je také přínos k formování zdravého životního stylu studenta a kompenzace sedavého způsobu zaměstnání jako součásti boje proti civilizačním chorobám. Ústav t lesné výchovy a sportu nabízí v rámci výukových programů tato sportovní odvětví: aerobik, aikido, basketbal, beach volejbal, badminton, bowling, bruslení, budo, florbal, fotbal, frisbee, futsal, golf, inline bruslení, kanoistiku, karate, kondiční posilování, lední hokej, lezení na stěně, lukostřelba, lyžování, ninjitsu, plavání, softbal, spinnig, squash, stolní tenis, tenis, turistiku, volejbal a zdravotní TV. Student si vybírá jedno z uvedených odvětví dle svého zájmu a kapacitních možností zvoleného sportu.			
A0M03TVIII	T lesná výchova III	Z	1
Cílem výuky t lesné výchovy je zdokonalit a rozšířit pohybové dovednosti získané na školách nižších stupňů, získat v domosti z oblasti kinantropologie, hygieny, rehabilitace. Významný je také přínos k formování zdravého životního stylu studenta a kompenzace sedavého způsobu zaměstnání jako součásti boje proti civilizačním chorobám. Ústav t lesné výchovy a sportu nabízí v rámci výukových programů tato sportovní odvětví: aerobik, aikido, basketbal, beach volejbal, badminton, bowling, bruslení, budo, florbal, fotbal, frisbee, futsal, golf, inline bruslení, kanoistiku, karate, kondiční posilování, lední hokej, lezení na stěně, lukostřelba, lyžování, ninjitsu, plavání, softbal, spinnig, squash, stolní tenis, tenis, turistiku, volejbal a zdravotní TV. Student si vybírá jedno z uvedených odvětví dle svého zájmu a kapacitních možností zvoleného sportu.			
A0M03TVIV	T lesná výchova IV	Z	1
Cílem výuky t lesné výchovy je zdokonalit a rozšířit pohybové dovednosti získané na školách nižších stupňů, získat v domosti z oblasti kinantropologie, hygieny, rehabilitace. Významný je také přínos k formování zdravého životního stylu studenta a kompenzace sedavého způsobu zaměstnání jako součásti boje proti civilizačním chorobám. Ústav t lesné výchovy a sportu nabízí v rámci výukových programů tato sportovní odvětví: aerobik, aikido, basketbal, beach volejbal, badminton, bowling, bruslení, budo, florbal, fotbal, frisbee, futsal, golf, inline bruslení, kanoistiku, karate, kondiční posilování, lední hokej, lezení na stěně, lukostřelba, lyžování, ninjitsu, plavání, softbal, spinnig, squash, stolní tenis, tenis, turistiku, volejbal a zdravotní TV. Student si vybírá jedno z uvedených odvětví dle svého zájmu a kapacitních možností zvoleného sportu.			
A0M03TVK	T lovýchovný kurz	Z	1

### Seznam předmětů tohoto přechodu:

Kód	Název předmětu	Začetí	Kredity
A03TV	T lesná výchova	Z	1
V bakalářské a inženýrské (magisterské) etapě si může student zapsat (maximálně 7-krát) t lesnou výchovu A03TV. Za absolvování volitelné TV získává student jeden kredit (maximálně 7 za celé studium na FEL). Nabídka sportovních odvětví je shodná s nabídkou pro A03TV1 až 4. Náplň výuky v jednotlivých sportovních odvětvích najdete na: <a href="http://www.Feld.cvut.cz/fee/K303">http://www.Feld.cvut.cz/fee/K303</a> - oddíl t lesné výchovy			
A003TV	T lesná výchova	Z	2
A0M03TVI	T lesná výchova I	Z	1
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A0M03TVII	T lesná výchova II	Z	1
Cílem výuky t lesné výchovy je zdokonalit a rozšířit pohybové dovednosti získané na školách nižších stupňů, získat v domosti z oblasti kinantropologie, hygieny, rehabilitace. Významný je také přínos k formování zdravého životního stylu studenta a kompenzace sedavého způsobu zaměstnání jako součásti boje proti civilizačním chorobám. Ústav t lesné výchovy a sportu nabízí v rámci výukových programů tato sportovní odvětví: aerobik, aikido, basketbal, beach volejbal, badminton, bowling, bruslení, budo, florbal, fotbal, frisbee, futsal, golf, inline bruslení, kanoistiku, karate, kondiční posilování, lední hokej, lezení na stěně, lukostřelba, lyžování, ninjitsu, plavání, softbal, spinnig, squash, stolní tenis, tenis, turistiku, volejbal a zdravotní TV. Student si vybírá jedno z uvedených odvětví dle svého zájmu a kapacitních možností zvoleného sportu.			
A0M03TVIII	T lesná výchova III	Z	1
Cílem výuky t lesné výchovy je zdokonalit a rozšířit pohybové dovednosti získané na školách nižších stupňů, získat v domosti z oblasti kinantropologie, hygieny, rehabilitace. Významný je také přínos k formování zdravého životního stylu studenta a kompenzace sedavého způsobu zaměstnání jako součásti boje proti civilizačním chorobám. Ústav t lesné výchovy a sportu nabízí v rámci výukových programů tato sportovní odvětví: aerobik, aikido, basketbal, beach volejbal, badminton, bowling, bruslení, budo, florbal, fotbal, frisbee, futsal, golf, inline bruslení, kanoistiku, karate, kondiční posilování, lední hokej, lezení na stěně, lukostřelba, lyžování, ninjitsu, plavání, softbal, spinnig, squash, stolní tenis, tenis, turistiku, volejbal a zdravotní TV. Student si vybírá jedno z uvedených odvětví dle svého zájmu a kapacitních možností zvoleného sportu.			
A0M03TVIV	T lesná výchova IV	Z	1
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A0M03TVK	T lovýchovný kurz	Z	1
A0M16EKE	Ekonomika elektroenergetiky	KZ	4
Základy finanční energetických podniků. Struktura nákladů ve výrobě, přenosu a distribuci elektřiny. Ceny a tarifní soustavy v energetice. Ekonomické hodnocení investic a podnikatelských záměrů v energetice. Obnovitelné zdroje energie a externí náklady výroby elektřiny. Energetická politika a nová energetická legislativa v ČR. Liberalizace trhu s elektřinou v rámci Evropské unie. Aktuální otázky energetiky v ČR. Výsledek studentské ankety předmětu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16EKE">http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16EKE</a>			
A0M16FI2	Filozofie II	Z,ZK	4
Kurs je zaměřen na filozofické aspekty vědy a techniky. Rozebírají se transdisciplinární aspekty filozofie, informatiky, fyziky, matematiky, biologie. Výsledek studentské ankety předmětu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AD0M16FI2">http://www.fel.cvut.cz/anketa/aktualni/courses/AD0M16FI2</a>			

A0M16HT2	Historie v dy a techniky 2	Z,ZK	4
P edm t se zame uje na vystižení historického vývoje elektrotechnických obor ve sv t a v eských zemích. Jeho cílem je vzbudit zájem o historii a tradice studovaného oboru s p íhlédnutím k vývoji technického školství, k formování v deckého života v eských zemích a k pochopení vlivu techniky na fungování spole nosti. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AD0M16HT2">http://www.fel.cvut.cz/anketa/aktualni/courses/AD0M16HT2</a> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16HT2">http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16HT2</a>			
A0M16MGM	Management	Z,ZK	5
Manažerské nástroje a techniky pro efektivní a moderní ízení firmy v konkuren ním prost edí. BB Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16MGM">http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16MGM</a>			
A0M16MPS	Manažerská psychologie	Z,ZK	4
Studenti se seznámí se základními psychologickými východisky pro manažerskou praxi a personální ízení. Pochopí základy kognitivního a behaviorálního p ístupu, d ležitost osobnosti manažera, jeho vnit ních postoj , chování, interakce a komunikace. Seznámí se s teoriemi osobnosti, inteligence, motivace, kognitivními a afektivními procesy. Vybrané techniky si procví í p í praktických cvi eních. V domosti získané v rámci p edm tu lze uplatnit v budoucím zam stnání i v b žném život . Podkladem kurzu je psychologie jako moderní v da, nikoli jako soubor povrchních klíše a pseudo-v deckých záv r , kterými je oblast personální a manažerské psychologie tradi n siln zaplevelena.			
A0M16TE1	Teologie	Z,ZK	4
P edm t poskytne poslucha m základní orientaci v teologii, p í emž se nevyžaduje žádné zvláštní p edchozí vzd lání. Po krátkém filozofickém úvodu jsou systematickým zp sobem probírány základní teologické disciplíny. P edm t je ur en nejen v ícím student m, kte í cht jí svou víru zakotvit na solidních teologických základech, ale p edevším t m, kte í cht jí poznat k estanství, náboženství, ze kterého vyr stá naše civilizace. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16TE1">http://www.fel.cvut.cz/anketa/aktualni/courses/A0M16TE1</a>			
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 í katedry. Práce bude obhajována p ed komisí pro státní záv re né zkoušky.			
AE0B16EPD	Business economics	KZ	4
AE0M13DIP	Diploma Thesis	Z	25
Independent final comprehensive work for the Master's degree study program. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M13DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M13DIP</a>			
AE0M13KTM	Construction and Technology of Microcomputers	Z,ZK	5
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.			
AE0M13MKV	Advanced Components of Power Electronic	Z,ZK	5
Power semiconductor device (diodes, BJTs, thyristors, MOSFETs and IGBTs) and integraed 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M13MKV">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M13MKV</a>			
AE0M13PRE	Industrial electronics	Z,ZK	5
Electronic components , resisttors, capacitors, HF coils, transformers Semiconductor devices Mounting technologies Senzore, regulating equipments Power converters.HF heating equipments. Electromagnetic compatibility in power electronic.			
AE0M13TKS	Technology of Cables and Optical waveguides	Z,ZK	5
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.			
AE0M14AML	Aerodynamics and Mechanics of Flight	Z,ZK	4
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.			
AE0M14DGP	Electric Drive Diagnostics	Z,ZK	5
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 quatization, 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			
AE0M14DIP	Diploma Project	Z	25
AE0M14DMP	Dynamics of mechanical parts of drives	Z,ZK	4
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 .			
AE0M14KOP	Electric Drive Component Design	Z,ZK	5
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 theoterical design, realisation or experimental parameters verification			
AE0M14KSP	Drive Communication Systems	Z,ZK	5
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M14KSP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M14KSP</a>			
AE0M14MDS	Simulation of dynamic systems	Z,ZK	4
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			
AE0M15DIP	Master's thesis	Z	25
<a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15DIP</a> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15DIP</a>			

AE0M15EZS	Electrical Sources and Systems	Z,ZK	5
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15EZS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15EZS</a>			
AE0M15SZS	Reliability and Security of Power Systems	Z,ZK	5
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15SZS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M15SZS</a>			
AE0M16DIP	Diploma thesis	Z	25
<a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16DIP</a> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M16DIP</a>			
AE0M17DIP	Diploma Thesis	Z	25
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination. Diploma projects deals with microwave technique, antennas, propagation, optical communications, EMC, and medical applications. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M17DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M17DIP</a>			
AE0M32DIP	Diploma project	Z	25
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32DIP</a>			
AE0M32KMP	Communications and Media Law	Z,ZK	4
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.			
AE0M32PRD	Data Communication Means	Z,ZK	5
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.			
AE0M32PST	Advanced Network Technologies	Z,ZK	5
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32PST">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32PST</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32ZST">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M32ZST</a>			
AE0M33DIP	Diploma Thesis	Z	25
AE0M34DIP	Diploma Thesis	Z	25
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M34DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M34DIP</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M34NFO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M34NFO</a>			
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.			
AE0M35DIP	Diploma Thesis	Z	25
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination.			
AE0M37DIP	Diploma Thesis	Z	25
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37DIP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37DIP</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37SEK">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37SEK</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37ZV2">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M37ZV2</a> english			
AE0M38DIP	Diploma Thesis	Z	25
AE0M38MET	Metrology	Z,ZK	5
Postru 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 ícím metodám a r zným zp sob m vyhodnocování a zvyšování p esnosti m ení. Jsou popsány metody a prost edky použitelné p í esných m eních aktivních i pasivních elektrických velí in.			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M38SPP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE0M38SPP</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13EMP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13EMP</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13EZF">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13EZF</a>			
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 ástek, jejich ozna ování, standardizace. Základní užívané technologie. Typy sou ástek: rezistory, kondenzátory, vf. cívy a transformátory. Životní cykly sou ástek, ekologické aspekty výroby sou ástek. Electromechanické sou ástky . Polovodi ové sou ástky, výroba vertikálních a horizontálních struktur, pouzr ení sou ástek Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13VES">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13VES</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13VEZ">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M13VEZ</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14ESZ">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14ESZ</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14PO2">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14PO2</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14RPO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14RPO</a>			

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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14SP2">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14SP2</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14SSE">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M14SSE</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15ENY">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15ENY</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15EST">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15EST</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15PRE">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15PRE</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15RES">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15RES</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15TVN">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M15TVN</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16CTR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16CTR</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16EKL">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16EKL</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16EUE">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16EUE</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16FIM">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16FIM</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16FIU">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16FIU</a>			
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	<b>Business Logistics</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16LOG">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16LOG</a>			
AE1M16MAR	<b>Marketing</b>	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 contraction policy, communication, distribution. Controlling and audit. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MAR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MAR</a>			
AE1M16MAV	<b>Production Management</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MAV">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MAV</a>			
AE1M16MEE	<b>Management of Power Production</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MEE">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MEE</a>			
AE1M16MES	<b>Management and Economics of Power Systems</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MES">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16MES</a>			
AE1M16OVY	<b>Operations Research</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16OVY">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16OVY</a>			
AE1M16PMG	<b>Project Management</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16PMG">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16PMG</a>			
AE1M16RES	<b>Development of Energy Systems</b>	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	<b>System Analysis and Decision Making</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16SIR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16SIR</a>			
AE1M16STA	<b>Statistical methods in economics</b>	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	<b>Power and Heat Production</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16VEN">http://www.fel.cvut.cz/anketa/aktualni/courses/AE1M16VEN</a>			
AE1M32TSY	<b>Telecommunication Systems</b>	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: <a href="https://www.fel.cvut.cz/cz/anketa/aktualni/courses/AE1M32TSY">https://www.fel.cvut.cz/cz/anketa/aktualni/courses/AE1M32TSY</a>			
AE2M01PMS	<b>Probability and Statistics</b>	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	<b>Antennas and EMC in Radiowave Communication</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17AEK">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17AEK</a>			
AE2M17CAD	<b>CAD and Microwave Circuits</b>	Z,ZK	6
This course provides its students with principles and techniques used in modern microwave circuits as well as with basic design methods used in such systems. Basic overview of elements and detailed information on selected circuit design is provided. Students gain design experience during exercises. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17CAD">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17CAD</a>			
AE2M17MOS	<b>Microwave Circuits and Subsystems</b>	Z,ZK	5
The subject provides wide theoretical and practical knowledge both for scientific-research work and carrier profession in the field of rf. and microwave region. It makes students familiar with rf. and microwave passive and active circuits realized in planar and monolithic structures - lines, directional couplers, power dividers, resonant circuits, filters and CAD tools for design of rf. and microwave circuits. It also contains basis of microwave transistors, bipolar, MESFET and HEMPT, design of low noise, power, narrow band and wideband amplifiers, diode and transistor oscillators, detectors, mixer and frequency multipliers. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17MOS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17MOS</a>			
AE2M17PDS	<b>Terrestrial and Satellite Radio Links</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17PDS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17PDS</a>			
AE2M17PMP	<b>Computer Aided Modeling of Field</b>	Z,ZK	5
The subject prepares students for independent work with professional software tools for design of elements of radio communication systems on the base of state of art. Knowledge of numerical methods and methods of optimization are parts of the education. The subject also gives the knowledge of the maths for RF radio communication systems and introduces			

some modern parts on maths together with design of radio communications subsystems. Výsledek studentské ankety p edm tu je zde:

<http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M17PMP>

AE2M31IAS	<b>Implementation of Analog Systems</b>	Z,ZK	6
The aim of this subject is to present new ways and principles of analog circuit design, especially with respect to the analog signal conditioning for digital processing and transmission systems. A special attention is devoted to design procedures and their implementation in application-specific integrated circuits (ASICs). The subject deals with analog and sampled-data functional blocks, including their modeling and simulation. Specifically, circuits for the design of amplifiers, filters, and data converters are focused as the main point of interest. Concurrent design trends are discussed, introducing the testing issues of analog and mixed-signal ASICs. Electronic system design essentials are presented, taking into account up-to-date technology aspects demonstrated in professional software for modern ASIC design.			
AE2M31RAT	<b>Speech technology in telecommunications</b>	Z,ZK	6
The subject is devoted to basis of speech processing addressed to students of master program with special focus on communication applications as speech technology has currently many applications in communication systems. Further information can be found at <a href="http://noel.feld.cvut.cz/vyu/ae2m31rat">http://noel.feld.cvut.cz/vyu/ae2m31rat</a> . Detailed information for registered students can be found at teaching portal <a href="http://moodle.kme.feld.cvut.cz">http://moodle.kme.feld.cvut.cz</a> .			
AE2M31SMU	<b>Signals in multimedia</b>	Z,ZK	5
Course brings information about methods of signal processing used in multimedia including 2-D analysis and modern methods.			
AE2M31ZRE	<b>Speech processing</b>	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 <a href="http://noel.feld.cvut.cz/vyu/a2m31zre">http://noel.feld.cvut.cz/vyu/a2m31zre</a> and at <a href="http://moodle.kme.feld.cvut.cz">http://moodle.kme.feld.cvut.cz</a> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M31ZRE">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M31ZRE</a>			
AE2M32MDS	<b>Modeling and Dimensioning of Networks</b>	Z,ZK	6
The aim of the course is to present an overlook of dimensioning of service systems in telecommunications networks on the basis of results of the queuing theory (QT). Introduce possibilities of simulation and modelling service systems and its networks both from the point of view of grade of service GoS and quality of service QoS. Results of the QT are applied on different service systems and telecommunication networks deploying and operating at time being. It is shown that models derived for telecommunications systems can be utilized for dimensioning of service systems in real life. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32MDS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32MDS</a>			
AE2M32MKS	<b>Mobile Communication Networks</b>	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.			
AE2M32OSS	<b>Optical Systems and Networks</b>	Z,ZK	5
The course deals with the use of optical radiation for the transmission of information. The aim is to acquaint students with the functions of important components used in an advanced optical communication systems and networks. Students will learn how to design practical optical fiber link and the network. Students will receive theoretical knowledge for the implementation of a all-optical photonic networks in the future, which will be based on a combination of wavelength multiplex with an all-optical switching. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32OSS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32OSS</a>			
AE2M32RKP	<b>Communication Processes Control</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32RKP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32RKP</a>			
AE2M32VAD	<b>Applications Development and DSP</b>	Z,ZK	5
The subject makes familiar with selected parts of the digital signal processing in communication. The digital image processing is emphasized. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32VAD">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M32VAD</a>			
AE2M34MIM	<b>Microsystems in Multimedia</b>	Z,ZK	5
The subject solves systems working in interdisciplinary areas, the most frequently in the energy interface - optical, thermal, mechanical, electrical). There are explained physical principles of any sensors, especially of optical and mechanical quantities, principle of biometric pick-up information, principle of tactile display, etc. There re solved the basic methods of the signal pre-processing. Basic principles of actuators are described, ones are using for the control in instruments and systems of multimedia applications. The attention is focused on MEMS elements and systems and their applicability in modern instrument technology. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34MIM">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34MIM</a>			
AE2M34MST	<b>Microsystems</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34MST">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34MST</a>			
AE2M34NAN	<b>Nanoelectronics and Nanotechnology</b>	Z,ZK	5
The subject is oriented on the present nanotechnologies in the connection with their electronic, photonic and spintronic applications. Quantum theory basics are used to explain the effects observed in nanostructures. Basic nanoelectronic structures are described with their possible applications. Modern computer methods and models, which are able to simulate the operation of nanoelectronic structures and which are the important tools for their design and optimisation, are studied. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34NAN">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34NAN</a>			
AE2M34NIS	<b>Integrated Systems Design</b>	Z,ZK	5
Main tasks of integrated circuits designer; design abstraction levels - Y chart. Definitions of specification, feasibility study, criteria for technology and design kits selection. Integrated systems design and simulation methodologies. Main features of full custom design, gate array, standard cells, programmable array logic. Design aspects of RF and mobile low power systems. Verilog-A, Verilog-AMS, VHDL-A. Logic and physical synthesis. Front End and Back End design. Floorplanning, place and route, layout, parasitic extraction, time analysis, testbenches design and verification. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34NIS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34NIS</a>			
AE2M34SIS	<b>Integrated System Structures</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34SIS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M34SIS</a>			
AE2M37DKM	<b>Digital communications</b>	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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37DKM">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37DKM</a>			

AE2M37KDK	Coding in digital communications	Z,ZK	5
<p>The course extends and deepens the topics of the basic DKM course in the following main areas. 1) The information theory builds a fundamental framework for thorough understanding the principles of the channel coding, adaptation, sharing, and diversity/multiplexing of the MIMO systems. 2) We develop advanced coding technique, particularly turbo-codes, LDPC codes and space-time codes for MIMO. 3) We explain essential principles of iterative decoding methods for turbo and LDPC codes. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37KDK">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37KDK</a></p>			
AE2M37OBT	Image Technology	Z,ZK	6
<p>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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37OBT">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37OBT</a></p>			
AE2M37RSY	Radio systems	Z,ZK	6
<p>Radio systems and their parameters, radar and position determination systems especially. Principles, properties, parameters and applications. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37RSY">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37RSY</a></p>			
AE2M37ZVT	Audio Technology	Z,ZK	5
<p>The course deals with topics from electro acoustics, sound reinforcement, related signal processing in conjunction with psychoacoustic aspects. It prepares experts for studio practice, design of sound reinforcement and specialized field in signal processing. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37ZVT">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M37ZVT</a></p>			
AE2M99CZS	Digital Signal processing	Z,ZK	5
<p>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 <a href="http://noel.feld.cvut.cz/vyu/ae2m99czs">http://noel.feld.cvut.cz/vyu/ae2m99czs</a>. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M99CZS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M99CZS</a></p>			
AE2M99MAM	Microprocessors and microcomputers	Z,ZK	6
<p>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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M99MAM">http://www.fel.cvut.cz/anketa/aktualni/courses/AE2M99MAM</a></p>			
AE3M01MKI	Mathematics for Cybernetics	Z,ZK	8
<p>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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M01MKI">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M01MKI</a></p>			
AE3M33IRO	Intelligent robotics	Z,ZK	7
<p>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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33IRO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33IRO</a></p>			
AE3M33MKR	Mobile and Collective Robotics	Z,ZK	6
<p>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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33MKR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33MKR</a></p>			
AE3M33PRO	Advanced robotics	Z,ZK	6
<p>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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33PRO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33PRO</a></p>			
AE3M33UI	Artificial Intelligence	Z,ZK	6
<p>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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33UI">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M33UI</a></p>			
AE3M35NES	Nonlinear Systems and Chaos	Z,ZK	6
<p>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.</p>			
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 behaviour under uncertainty will be analysed and used to develop 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35OFD">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35OFD</a></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&amp;#8734; norm shifts the focus to robustness against uncertainties in the model. ?-synthesis is an extensions to the H&amp;#8734; 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 theoretical 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35ORR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35ORR</a></p>			

AE3M35PSR	<b>Real-Time Systems Programming</b> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35PSR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35PSR</a>	Z,ZK	6
AE3M35RIS	<b>Control Systems</b> 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35RIS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35RIS</a>	Z,ZK	6
AE3M35TDS	<b>Theory of Dynamical Systems</b> 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35TDS">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M35TDS</a>	Z,ZK	8
AE3M38DIT	<b>Diagnostics and Testing</b> 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.	Z,ZK	7
AE3M38MSZ	<b>Modern Sensors and Signal Processing</b> 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M38MSZ">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M38MSZ</a>	Z,ZK	6
AE3M38SPD	<b>Data Acquisition and Transfer</b> 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.	Z,ZK	6
AE3M38VBM	<b>Videometry and Contactless Measurement</b> 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.	Z,ZK	6
AE3M38VIP	<b>Virtual Instruments</b> 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.	Z,ZK	6
AE3M38ZDS	<b>Analog Signal Processing and Digitalization</b> The course is dedicated to methods for preprocessing, digitalization and reconstruction of continuous 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.	Z,ZK	6
AE3M99PTO	<b>Team Work</b> 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M99PTO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE3M99PTO</a>	KZ	6
AE4M01TAL	<b>Theory of Algorithms</b> 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M01TAL">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M01TAL</a>	Z,ZK	6
AE4M14BP3	<b>Safety in Electrical Engineering 3</b> The course provides for students of programme Open informatics periodic training guidelines for health and occupational safety and gives knowledge of electrical hazard of given branch of study. Students receive indispensable qualification according to the Directive of the Dean No. 1/2007. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M14BP3">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M14BP3</a>	Z	0
AE4M33DZO	<b>Digital image</b> 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33DZO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33DZO</a>	Z,ZK	6
AE4M33GVG	<b>Geometry of Computer Vision and Graphics</b> 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33GVG">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33GVG</a>	Z,ZK	6
AE4M33MPV	<b>Computer Vision Methods</b> 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33MPV">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33MPV</a>	Z,ZK	6
AE4M33PAL	<b>Advanced algorithms</b> 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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33PAL">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33PAL</a>	Z,ZK	6
AE4M33RZN	<b>Advanced Methods for Knowledge Representation</b> 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	Z,ZK	6

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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33RZN">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33RZN</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SAD">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SAD</a>			
AE4M33SVP	Software or Research Project	KZ	6
Project work. Student is expected to work independently under an advisor supervision. The topic of the project should be relevant to the major branch of the study. The work must have a clearly defined output like a technical report and/or software. More details, including project topics can be found at: <a href="http://cyber.felk.cvut.cz/study/student-projects/">http://cyber.felk.cvut.cz/study/student-projects/</a> The topic may also be negotiated independently. In case of doubts a discussion with the guarantor/director of the major study branch is encouraged. <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SVP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SVP</a> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SVP">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33SVP</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33TDV">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M33TDV</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M35KO">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M35KO</a>			
AE4M36SVP	Software or Research Project	KZ	6
Samostatná práce na problému-projektu pod vedením školitele. V rámci tohoto p edm tu je možné (obvyklé) ešit díl í problém diplomové práce. Proto doporu ujeme zvolit si téma diplomové práce již po átkem 3. semestru a jeho v asný výb r nepodcenit. Absolovování p edm tu softwarový a výzkumný projekt musí mít jasn definovaný výstup, nap íklad technickou zprávou í programový produkt, který je ohodnocen klasifikovaným zápo tem. D ležitě upozorn ní: - Standardn není možné absolovat více než jeden p edm t tohoto typu. - Výjimku m že ud lit garant hlavního (major) oboru. Možný d vod pro ud lení výjimky je, že práce-projekt má jiné téma a je vedena jiným vedoucím. Typickým p íkladem m že být práce na projektu v zahrani í. Kontaktní email v p ípad dalších dotaz : <a href="mailto:oi@fel.cvut.cz">oi@fel.cvut.cz</a> Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/A4M36SVP">http://www.fel.cvut.cz/anketa/aktualni/courses/A4M36SVP</a>			
AE4M39PGR	Computer Graphics	Z,ZK	6
Graphical libraries are used for realistic rendering of 3D scenes. The main goal of this course is to introduce students to to the Application Programming Interface (API) for 3D graphics and learn them how to program a simple interactive OpenGL based 3D graphical applications. Naturally, the course describes the fundamentals of computer graphics such as rendering pipeline, geometric transformations, texturing, scene modeling, shading and illumination models, etc. Lectures also cover advanced modeling techniques (parametric curves and surfaces) and selected topics related to the scientific visualization. Practices are focused on the work on given tasks and individual projects that help students to get practical experience with the OpenGL graphics library. Výsledek studentské ankety p edm tu je zde: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M39PGR">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M39PGR</a>			
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: <a href="http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M39VG...">http://www.fel.cvut.cz/anketa/aktualni/courses/AE4M39VG...</a>			
AE4M99DIP	Master Thesis	Z	25
BE4M36NLP	Introduction to Natural Language Processing	Z,ZK	6
V p edm tu se studenti seznámí se standardními, základními, p evážn statistickými, metodami v oblasti zpracování p írozeného jazyka (NLP). Studenti si po teoretické i implementa ní stránce osvojí pot ebné techniky a seznámí se jak se základními komponentami jako jsou korpusy a jazykové modely, tak s komplexními koncovými aplikacemi NLP, nap íklad strojovým p ekladem.			

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

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