

Recommended pass through the study plan

Name of the pass: Knowledge Engineering, in Czech, Presented in Czech, Version 2016-2017

Faculty/Institute/Others:

Department: Department of Applied Mathematics

Pass through the study plan: Knowledge Engineering, in Czech, Presented in Czech, Version 2016 and and 2017

Branch of study guaranteed by the department: Knowledge Engineering

Guarantor of the study branch: doc. Ing. Pavel Kordík, Ph.D.

Program of study: Informatics (in Czech)

Type of study: Follow-up master full-time

Note on the pass:

Coding of roles of courses and groups of courses:

P - compulsory courses of the program, PO - compulsory courses of the branch, Z - compulsory courses, S - compulsory elective courses, PV - compulsory elective courses, F - elective specialized courses, V - elective courses, T - physical training courses

Coding of ways of completion of courses (KZ/Z/ZK) and coding of semesters (Z/L):

KZ - graded assesment, Z - assesment, ZK - examination, L - summer semester, Z - winter semester

Number of semester: 1

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
MI-MPI	Mathematics for Informatics Tomáš Kalvoda, Martin Holeňa, Štěpán Starosta Štěpán Starosta Štěpán Starosta (Gar.)	Z,ZK	7	3P+1R+1C	Z	PP
MI-PAA	Problems and Algorithms Jan Schmidt, Petr Fišer Petr Fišer Jan Schmidt (Gar.)	Z,ZK	5	2P+1R+1C	Z	PP
MI-PDD.16	Data Preprocessing Marcel Jiřina Daniel Vařata Marcel Jiřina (Gar.)	Z,ZK	5	2P+1C	Z	PO
MI-VMM.16	Retrieval from Multimedia Tomáš Skopal Tomáš Skopal Tomáš Skopal (Gar.)	Z,ZK	5	2P+1C	Z	PO
MI-V.2017	Čistě volitelné magisterské předměty, verze 2017 MI-IKM,MI-AFP,..... (see the list of groups below)	Min. cours. 0	Min/Max 0/0			V

Number of semester: 2

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
MI-PDP.16	Parallel and Distributed Programming Pavel Tvrđík Pavel Tvrđík Pavel Tvrđík (Gar.)	Z,ZK	5	2P+2C	L	PP
MI-SPI.16	Statistics for Informatics Daniel Vařata, Pavel Hrabák, Petr Novák Pavel Hrabák Pavel Hrabák (Gar.)	Z,ZK	7	4P+2C	L	PP
MI-ADM.16	Data Mining Algorithms Karel Klouđa, Daniel Vařata, Pavel Kordík Daniel Vařata Pavel Kordík (Gar.)	Z,ZK	5	2P+1C	L	PO
MI-DDW.16	Web Data Mining Milan Dojčinovskí, Jaroslav Kuchař Jaroslav Kuchař Milan Dojčinovskí (Gar.)	Z,ZK	5	2P+1C	L	PO
MI-MVI.16	Computational Intelligence Methods Pavel Kordík, Miroslav Čepeť, Zdeněk Buk Martin Šlapák Martin Šlapák (Gar.)	Z,ZK	5	2P+1C	Z	PO
MI-V.2017	Čistě volitelné magisterské předměty, verze 2017 MI-IKM,MI-AFP,..... (see the list of groups below)	Min. cours. 0	Min/Max 0/0			V

Number of semester: 3

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
MI-MPR	Master Project Miroslav Balík Miroslav Balík (Gar.)	Z	7		Z,L	PP
MI-EDW.16	Stanislav Kuznetsov, Magda Friedjungová, Daniel Arnošt Stanislav Kuznetsov Daniel Arnošt (Gar.)	Z,ZK	5	2P+1C	L	PO
MI-PDB.16	Advanced Database Systems Michal Valenta Michal Valenta Michal Valenta (Gar.)	Z,ZK	5	2P+1C	Z	PO
MI-PV-EM.2016	Povinně volitelné magisterské ekonomicko manažerské předměty, verze 2016 MI-IBE,MI-MPX,..... (see the list of groups below)	Min. cours. 1 Max. cours. 2	Min/Max 2/6			VE
MI-V.2017	Čistě volitelné magisterské předměty, verze 2017 MI-IKM,MI-AFP,..... (see the list of groups below)	Min. cours. 0	Min/Max 0/0			V

Number of semester: 4

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
MI-DIP	Diploma Project Miroslav Balík Miroslav Balík (Gar.)	Z	23		L,Z	PP
MI-PV-HU.2016	Povinně volitelné magisterské humanitní předměty, verze 2016 FI-FIL,MI-HMI2,..... (see the list of groups below)	Min. cours. 1 Max. cours. 2	Min/Max 3/6			VH
MI-V.2017	Čistě volitelné magisterské předměty, verze 2017 MI-IKM,MI-AFP,..... (see the list of groups below)	Min. cours. 0	Min/Max 0/0			V

List of groups of courses of this pass with the complete content of members of individual groups

Kód	Name of the group of courses and codes of members of this group (for specification see here or below the list of courses)	Completion	Credits	Scope	Semester	Role
MI-PV-EM.2016	Povinně volitelné magisterské ekonomicko manažerské předměty, verze 2016	Min. cours. 1 Max. cours. 2	Min/Max 2/6			VE
MI-IBE	Information Security	MI-MPX	Management practice	MI-PCM.16	Project And Change Management	
MI-SEP	World Economy and Business					
MI-PV-HU.2016	Povinně volitelné magisterské humanitní předměty, verze 2016	Min. cours. 1 Max. cours. 2	Min/Max 3/6			VH
FI-FIL	Philosophy	MI-HMI2	History of Mathematics and Infor ...	FI-HTE	History of Technology and Econom ...	
FI-HPZ	Humanities subject from a study ...	MI-KYB.16	Cybernality	FI-MPL	Managerial Psychology	
MIE-STR	Strategy in the ICT industry on ...	FI-KSA	Cultural and Social Anthropology	FI-ULI	Introduction to Linguistics for ...	
FI-GNO	Introduction to Gnoseology					
MI-V.2017	Čistě volitelné magisterské předměty, verze 2017	Min. cours. 0	Min/Max 0/0			V
MI-IKM	Internet and Classification Meth ...	MI-AFP	Applied Functional Programming	MI-APH	Architecture of computer games	
MI-BML	Bayesian Methods for Machine Lea ...	MI-BPS	Wireless Computer Networks	MI-DSP	Database Systems in Practes	
MI-DZO	Digital Image Processing	MI-DDM	Distributed Data Mining	MI-PAM	Efficient Preprocessing and Para ...	
MI-GLR	Games and reinforcement learning	MI-HMI2	History of Mathematics and Infor ...	MI-IVS	Intelligent embedded systems	
MI-IOT	Internet of Things	MI-ATH	Combinatorial Theories of Games	MI-LOM.16	Linear Optimization and Methods	
MI-MSI	Mathematical Structures in Compu ...	MI-MZI	Mathematics for data science	MI-MPC	Modern programming in C ++	
MI-MAI	Multimedia and Internet	MI-OLI	Linux Drivers	MI-ARI	Computer arithmetic	
MI-PVR	Advanced Virtual Reality	MI-IOS	Advanced techniques in iOS appli ...	MI-PVS	Advanced embedded systems	
MI-DNP	Advanced .NET and projective pro ...	MI-PYT	Advanced Python	MI-PRC	Programming in CUDA	
MI-PSL	Enterprise Java	MI-RUB	Programming in Ruby	MI-LCF	Compiler system LLVM	

MI-AIT	Case Studies of IT Business	MI-ROZ.16	Pattern Recognition	MI-RR1	Risk Management in Informatics
MI-SCE1	Computer Engineering Seminar Mas ...	MI-SCE2	Computer Engineering Seminar Mas ...	PI-SCN	Seminars on Digital Design
MI-SCR	Statistical Analysis of Time Ser ...	MI-TS1	Theoretical Seminar Master I	MI-TS2	Theoretical Seminar Master II
MI-TS3	Theoretical Seminar Master III	MI-TS4	Theoretical Seminar Master IV	MI-VEM	Scientific thinking
MI-MCS	Multicore Systems	MI-VYC	Computability	MI-ZS10	Master internship abroad for 10 ...
MI-ZS20	Master internship abroad for 20 ...	MI-ZS30	Master internship abroad for 30 ...		

List of courses of this pass:

Code	Name of the course	Completion	Credits
FI-FIL	Philosophy see A0B16	ZK	2
FI-GNO	Introduction to Gnoseology Předmět studenty uvádí do teorie poznání, systémovým pohledem nahlíží na pole kultury, na vztahy a rozdíly mezi přírodními a humánními obory, vědou a uměním. Rozborem dějin modernismu a myšlenkových proudů 20. století jsou ukázány proměny paradigmat a převrat k postmodernismu, analýzou paralelismů ve vědě a umění odhaleny mechanismy tvůrčích procesů. V návaznosti na teorii přírodních jazyků a sémiotiky je vedena diskuze i o kognitivních procesech, v historickém přehledu nastíněna hlediska estetického vnímání. Samostatnou kapitolou jsou modely spojených přírodních soustav a systémů, v závěru přednášek je pozornost věnována filozofii vědy a otázkám udržitelného rozvoje. Předmět přednáší a garantuje Ing. Ivo Janoušek CSc.	ZK	2
FI-HPZ	Humanities subject from a study abroad A "Humanities subject that has been studied abroad" is covered by the Humanities subject from a study abroad in Compulsory Humanities Module that is required in the curriculum. The substitution is approved by the Vice-Dean for study affairs on behalf of the Dean at the request of the student.	Z	3
FI-HTE	History of Technology and Economics The course introduces the scientific disciplines of history and technology , economic and social history of the Czech lands and Czechoslovakia in comparison with the development of the European region 19 to 21 century .	ZK	2
FI-KSA	Cultural and Social Anthropology The one-semester course aims to acquaint students with the basics of social and cultural anthropology as a scientific discipline dealing with the diversity of the world - examples from anthropological research from our "exotic" cultures (topics: kinship, religion, social exclusion, migration, globalization, , material culture, language, health, history, death, etc ...) will be shown. The course is an interesting alternative to other humanities, taught at FIT.	ZK	2
FI-MPL	Managerial Psychology	ZK	2
FI-ULI	Introduction to Linguistics for Computer This course is presented in Czech.	ZK	2
MI-ADM.16	Data Mining Algorithms The course is suitable for those who want to familiarize themselves with the exceedingly interesting and useful discipline of data mining. The course covers the most useful algorithms that can be easily applied in any field of science.	Z,ZK	5
MI-AFP	Applied Functional Programming This course is presented in Czech. Functional programming represents one of the traditional programming paradigms. Traditional and novel functional programming languages are on the rise nowadays and the functional paradigm becomes an important construct of traditionally imperative languages (C++, C#, Java). As such, mastering this paradigm becomes a necessary competence of a software engineer: the theory and especially the practice.	KZ	5
MI-AIT	Case Studies of IT Business This course is presented in Czech.	ZK	2
MI-APH	Architecture of computer games Students will gain a basic understanding of the various issues in the field of computer games development, especially from a technical point of view. They will have a grasp of component-oriented architecture, game mechanics, decision-making processes and base components that form an integral part of most games. They will also understand the basics of pathfinding, networking and scripting and apply them in practical exercises (labs).	Z,ZK	4
MI-ARI	Computer arithmetic Students will learn various data representations used in digital devices and will be able to design arithmetic operations implementation units.	Z,ZK	4
MI-ATH	Combinatorial Theories of Games This course is presented in Czech.	Z,ZK	4
MI-BML	Bayesian Methods for Machine Learning The subject is focused on practical use of basic Bayesian modeling methods in the dynamically evolving machine learning theory. In particular, it studies the construction of appropriate models providing description of real phenomena, as well as their subsequent use, e.g., for forecasting of future evolution or learning about the hidden variables (true object position from noisy observations etc.). The emphasis is put on understanding of explained principles and methods and their practical adoption. For this purpose, a number of real world examples and applications will be presented to students, for instance, 2D/3D object tracking, radiation source term estimation, or separation in medical imaging. The students will try to solve some of them.	KZ	5
MI-BPS	Wireless Computer Networks Students will learn about the modern technologies, protocols, and standards for wireless networks. They will understand the routing mechanisms in ad-hoc networks, multicast and broadcast mechanisms, and data flow control mechanisms. They will also learn about principles of communication in sensor networks. They get knowledge of security mechanisms for wireless networks and get skills of configuration of wireless network elements and simulation of wireless networks using suitable tools.	Z,ZK	4
MI-DDM	Distributed Data Mining Course focuses on state-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands on experience with large scale data processing framework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations and will be capable to propose approaches to parallelize other algorithms.	KZ	4

MI-DDW.16	Web Data Mining	Z,ZK	5
Students will learn latest methods and technologies for Web data acquisition, analysis and utilization of the discovered knowledge. Students will gain an overview of Web mining techniques for Web crawling and search, Web structure analysis, Web usage analysis, Web content mining and information extraction. Students will also gain an overview of most recent developments in the field of social web and recommendation systems.			
MI-DIP	Diploma Project	Z	23
MI-DNP	Advanced .NET and projective programming	Z,ZK	4
Students acquire a knowledge about advanced design of applications on a .NET platform. They gain skills of WPF (Windows Presentation Foundation), WCF/WebAPI (Windows Communication Foundation) and Entity Framework. They are able to apply these skills on a development and design of advanced .NET applications.			
MI-DSP	Database Systems in Praxes	Z,ZK	4
MI-DZO	Digital Image Processing	Z,ZK	4
This course presents a comprehensive overview of modern methods for processing digital images and video. It mainly deals with practical algorithms used in professional image processing tools that are both easy to implement and have an interesting theoretical basis. Seemingly boring theorems from calculus, discrete mathematics, statistics and computer science come to life in visually attractive applications.			
MI-EDW.16		Z,ZK	5
The Enterprise Data Warehouses course focuses on the area of business intelligence. Students will be introduced to business intelligence methods and will gain practical knowledge not only in designing warehouses and various architectures, but also their deployment and maintenance. This course also includes an introduction to the area of reporting and data visualization.			
MI-GLR	Games and reinforcement learning	Z,ZK	4
The field of reinforcement learning is very hot recently, because of advances in deep learning, recurrent neural networks and general artificial intelligence. This course is intended to give you both theoretical and practical background so you can participate in related research activities. Presented in English.			
MI-HMI2	History of Mathematics and Informatics	ZK	3
This course is presented in Czech.			
MI-IBE	Information Security	ZK	2
Students learn information and IS/ICT security management systems (ISMS), methods for information access control, and basic norms and international standards in this area. They understand methods for management of internal and external security threats, for IS/IT security audits, and for application security testing (e.g., penetration testing).			
MI-IKM	Internet and Classification Methods	Z,ZK	4
This course is presented in Czech.			
MI-IOS	Advanced techniques in iOS applications	KZ	4
MI-IOT	Internet of Things	Z,ZK	4
The subject is focused on the area of hardware and software technologies for the strongly growing computer support of various devices. Its goal is familiarization with available development elements (Raspberry Pi, Arduino Due) and with the language for efficient application development and modification (GNU Forth).			
MI-IVS	Intelligent embedded systems	KZ	4
Intelligent embedded systems course for master's degree is focused on high-level technology embedded systems integrating artificial intelligence. The course is an advance version of the Intelligent embedded system fundamentals course for the bachelor degree. The aim of the course is to teach students humanoid robot programming and advance application development. Lectures provide basis of motion control, sensor reading, application interfaces, robot navigation and development tools. In labs, students develop advanced applications combining knowledge of various courses like nature inspired algorithms, data mining algorithms, image recognition and web technologies			
MI-KYB.16	Cybernality	ZK	5
Students get acquainted with the fundamentals of legislation and international activities in the area of fighting cybercrime. Students will understand the classification of attacks and have an overview of systems for computer surveillance and traffic monitoring in the cyberspace. Students will also familiarize themselves with hacker activities and behavior. The course will also discuss the cooperation of the state agencies and subjects dealing with defence of the cyberspace (especially CSIRT and CERT teams).			
MI-LCF	Compiler system LLVM	Z,ZK	4
MI-LOM.16	Linear Optimization and Methods	Z,ZK	5
Students learn the applications of optimization methods in computer science, economics, and industry. They are aware of practical importance of linear and integer programming. They are able to work with optimization software and are familiar with languages used in programming of that software. They get skills in formalization of optimization problems in computer science (such as scheduling of tasks to processors, analysis of network flows), distribution and allocation of resources (transportation problems, travelling salesman problems, etc.), issues from economics, and modelling of conflicts via the game theory. They get an overview of computational complexity of optimization problems. They get orientation in algorithms in linear programming.			
MI-MAI	Multimedia and Internet	Z,ZK	3
The course will cover principles and technologies for processing and network transmissions of multimedia signals, stereoscopy and visualizations in high definition. Lectures will include application areas of networked multimedia, transmission formats, interfaces, codecs, technologies for acquisition and reproduction of multimedia data and technologies for visualizations and distributed collaboration using networking and immersive environments.			
MI-MCS	Multicore Systems	KZ	4
Students understand architecture of systems based on multicore processors with multiple threads per core, structure and usage of cache hierarchy with shared last level. They learn parallel algorithm classification, parallel programming technics, simulation and monitoring tools for measurement and optimization of parallel algorithms. After this course, students can design MTMD programs (Multiple Threads Multiple Data), measure and analyze latency and throughput of parallel algorithms and optimize them for contemporary multicore systems.			
MI-MPC	Modern programming in C ++	Z,ZK	5
Students learn how to use the modern features of contemporary versions of the C++ programming language for software development. The course focuses on programming effectivity and efficiency in the form of writing maintainable and portable source code and creating correct programs with low memory and processor time requirements.			
MI-MPI	Mathematics for Informatics	Z,ZK	7
Students are introduced to fields of mathematics necessary for better understanding of some topics they will meet in specialized courses later on.			
MI-MPR	Master Project	Z	7
1. At the beginning of the semester, a student reserves her/his final thesis topic and gets together with its supervisor. Together they decide on partial tasks that should be carried out during the semester. If the requirements they agreed upon are met, the supervisor awards the student an assessment for the course MI-MPR at the end of the semester. 2. External Master these (MT) supervisor fills his/her assessment into the paper "Form to award assessment by an external Final theses (FT) supervisor" (for the courses BIE-BAP, MIE-MPR, MIE-DIP). Students, then, ensure that the assessment is registered into the information system (IS) by asking their internal FT opponent to award the assessment to the IS based on the confirmation of the external MT supervisor. In the case the FT opponent is external as well, the assessment will be registered to the IS by the head of the department responsible for the topic of the MT. 3. If the FT topic that the student has reserved is rather general, the immediate tasks the supervisor assigns to the student for the upcoming semester should aim at fine-tuning the FT topic so that the FTT will be complete and approvable at the end of the semester.			
MI-MPX	Management practice	Z	4
The Student can once, within its master's degree graduate (to apply) management practices in the selected subject of practice (business subject) on the operational, tactical or strategic level of management (typically at the position of project manager, middle or top manager). The selected subject of practice and professional filling is assessed well in advance the			

course guarantor. In the selected subject of practice may not have a substantial ownership interest or substantial decision-making influence of the relatives of the student (e.g. as a member of the top management).			
MI-MSI	Mathematical Structures in Computer Science	Z,ZK	4
Mathematical semantics of programming languages. Data types as continuous lattices, Scott topology. Procedures as continuous mappings. Lambda calculus and functional languages. Introduction to category theory.			
MI-MVI.16	Computational Intelligence Methods	Z,ZK	5
Students will understand methods and techniques of computational intelligence that are mostly nature-inspired, parallel by nature, and applicable to many problems. They will learn how these methods work and how to apply them to problems related to data mining, control, intelligent games, optimizations, etc.			
MI-MZI	Mathematics for data science	Z,ZK	4
In this course, students are introduced to those fields of mathematics that are necessary for understanding standard methods and algorithms used in data science. The studied topics include mainly: linear algebra (matrix factorisations, eigenvalues, diagonalization), continuous optimisation (optimisation with constraints, duality principle, gradient methods) and selected notions from probability theory and statistics.			
MI-OLI	Linux Drivers	Z,ZK	4
The Linux operating system is an important operating system for personal computer and also for embedded systems. Systems on chip and combining powerful processors and FPGAs increase the variability of peripheral subsystems requiring specific software drivers. This course is an advanced course in the Linux driver development for master's students. The course provides knowledge of Linux operating system architecture, principles of development of various types drivers, including practical experience.			
MI-PAA	Problems and Algorithms	Z,ZK	5
Students are able to evaluate discrete problems by complexity and by the purpose of optimisation (on-line tasks, multicriterial optimisation). They understand principles and properties of heuristics and exact algorithms and, therefore, are able to select, apply, and experimentally evaluate a suitable heuristics for a practical problem.			
MI-PAM	Efficient Preprocessing and Parameterized Algorithms	Z,ZK	4
There are many optimization problems for which no polynomial time algorithms are known (e.g. NP-complete problems). Despite that it is often necessary to solve these problems exactly in practice. We will demonstrate that many problems can be solved much more effectively than by naively trying all possible solutions. Often one can find a common property (parameter) of the inputs from practice-e.g., all solutions are relatively small. Parameterized algorithms exploit that by limiting the time complexity exponentially in this (small) parameter and polynomially in the input size (which can be huge). Parameterized algorithms also represent a way to formalize the notion of effective polynomial time preprocessing of the input, which is not possible in the classical complexity. Such a polynomial time preprocessing is then a suitable first step, whatever is the subsequent solution method. We will present a plethora of parameterized algorithm design methods and we will also show how to prove that for some problem (and parameter) such an algorithm (presumably) does not exist. We will also not miss out the relations to other approaches to hard problems such as moderately exponential algorithms or approximation schemes.			
MI-PCM.16	Project And Change Management	KZ	3
This course is presented in Czech.			
MI-PDB.16	Advanced Database Systems	Z,ZK	5
Students orient themselves in problems of evaluation and optimization of SQL queries. The next part of the course deals with new concepts of database machines (so called NoSQL databases), with the related new data models (XML, graph databases, column databases) and languages for working with them (XQuery, XPath, CYPHER, Gremlin). The last part of the course deals with performance evaluation of database machines.			
MI-PDD.16	Data Preprocessing	Z,ZK	5
Students learn to prepare raw data for further processing and analysis. They learn what algorithms can be used to extract parameters from various data sources, such as images, texts, time series, etc., and learn the skills to apply these theoretical concepts to solve a specific problem in individual projects - e.g., parameter extraction from image data or from Internet.			
MI-PDP.16	Parallel and Distributed Programming	Z,ZK	5
Due to the development of cloud, web, and communication technologies and due to the shift of the Moore law into parallelization of CPUs, parallel and distributed applications are becoming dominant. Students get acquainted with architectures of parallel and distributed computing systems and their models and with languages and environments for their programming. They learn the pattern designs for parallel and distributed programming and important parallel algorithms.			
MI-PRC	Programming in CUDA	Z,ZK	4
The students gain a good overview of present parallel architectures in GPUs. Students also get hands-on experience with programming these systems.			
MI-PSL	Enterprise Java	Z,ZK	4
The course is on advanced technologies in the Java programming language. The focus is on technologies for development of enterprise information systems which are connected to a database and are accessed through the web interface.			
MI-PVR	Advanced Virtual Reality	KZ	4
The course introduces advanced parts of the virtual reality. It is a continuation of the already running graphic objects, especially the creation of 3D models in Blender, and among other things, it introduces students to their application in virtual reality. Lectures will focus on virtual reality technology, its use in various applications and will also deal with creating applications in available 3D engines (mainly Unity3D). The course is freely connected with the subject VHS (virtual game worlds), students will be able to apply the knowledge gained in this subject in virtual reality, or directly create a complex game for VR.			
MI-PVS	Advanced embedded systems	Z,ZK	4
The course is focused on ARM processors and microcontrollers and their usage in wide range of applications. The course includes a series of advanced topics like security support, working with mass storage devices, motor control, system control and industrial communication. The students obtain both theoretical and also practical experiences with embedded systems.			
MI-PYT	Advanced Python	KZ	4
The goal of this course is to learn various advanced techniques and methods in Python. The course indirectly continues where Programming in Python (BI-PYT) left of. The course is very hands-on and it has only tutorials, everything is demonstrated on examples. Classification is based on work in class as well as semestral coursework. The course is lead by external teachers from Red Hat.			
MI-ROZ.16	Pattern Recognition	Z,ZK	5
The aim of the module is to give a systematic account of the major topics in pattern recognition with emphasis on problems and applications of the statistical approach to pattern recognition. Students will learn the fundamental concepts and methods of pattern recognition, including probability models, parameter estimation, and their numerical aspects.			
MI-RR1	Risk Management in Informatics	ZK	3
Information security is very often considered as one of main objectives to secure targets of information processing. However, to focus on this info security as a matter of protection of IT systems against viruses, malware etc. very often means misunderstanding and underestimating of real threats which are around us and which are more dangerous than viruses and other malware. The necessity to continue with business after disaster is also slightly ignored. International standards which are focused on informatics and information security just during last years started to anticipate necessity of risk management. There is no commonly accepted methodology used for this task. Threats which are currently possible to see worldwide, invoke pressures to prepare plans for business continuity management even in the case of dramatic political changes, natural disasters etc.			
MI-RUB	Programming in Ruby	KZ	4
This course is presented in Czech.			
MI-SCE1	Computer Engineering Seminar Master I	Z	4
The Seminar of Computer Engineering is a (s)elective course for students who want to deal with deeper topics of digital design, reliability and resistance to failures and attacks. Students are approached individually within the subject. Each student or group of students solves some interesting topic with the selected supervisor. Part of the subject is work with scientific			

articles and other professional literature and/or work in KČN laboratories. The capacity of the subject is limited by the possibilities of the seminar teachers. The topics are new for each semester.			
MI-SCE2	Computer Engineering Seminar Master II	Z	4
The Seminar of Computer Engineering is a (s)elective course for students who want to deal with deeper topics of digital design, reliability and resistance to failures and attacks. Students are approached individually within the subject. Each student or group of students solves some interesting topic with the selected supervisor. Part of the subject is work with scientific articles and other professional literature and/or work in KČN laboratories. The capacity of the subject is limited by the possibilities of the seminar teachers. The topics are new for each semester.			
MI-SCR	Statistical Analysis of Time Series	Z,ZK	4
The course deals with the practical use of the basic time series modelling theory in engineering tasks, ranging from economics (stock exchange prices, employment) and industrial problems (modelling of signals and processes) to computer networks (network components load, attacks detection). The students learn to select a convenient process model, estimate its parameters, analyze its properties and use it for forecasting of future or intermediate values. The stress is put on understanding and adoption of the main principles based on practical real-world examples. Both the lab classes and the lectures exploit freely available software packages in order to provide easy and straightforward transfer of students' knowledge from the academic to the real world.			
MI-SEP	World Economy and Business	Z,ZK	4
This course is presented in Czech. However, there is an English variant in the program Informatics (N1801 / 4793). The course introduces students of technical university to the international business. It does that predominantly by comparing individual countries and key regions of world economy. Students get to know about different religions and cultures, necessary for doing business in diverse societies as well as indexes of economic freedom, corruption and economic development, which are needed for the right investment decision. Seminars help to improve on the knowledge in the form of discussions based on individual readings. It is advised to take bachelor level of this course BIE-SEP as a prerequisite.			
MI-SPI.16	Statistics for Informatics	Z,ZK	7
The students will learn the basics of the probability theory, elements of information theory and stochastic processes, and some methods of computational statistics. They will understand the methods for statistical processing of large volumes of data. They will get skills in using computational methods and statistical software for these tasks.			
MI-TS1	Theoretical Seminar Master I	Z	4
Theoretical seminar is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is a work with scientific papers and other scholarly literature. The capacity is limited by the the potentials of the teachers of the seminar.			
MI-TS2	Theoretical Seminar Master II	Z	4
Theoretical seminar is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is a work with scientific papers and other scholarly literature. The capacity is limited by the the potentials of the teachers of the seminar.			
MI-TS3	Theoretical Seminar Master III	Z	4
Theoretical seminar is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is a work with scientific papers and other scholarly literature. The capacity is limited by the the potentials of the teachers of the seminar.			
MI-TS4	Theoretical Seminar Master IV	Z	4
Theoretical seminar is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is a work with scientific papers and other scholarly literature. The capacity is limited by the the potentials of the teachers of the seminar.			
MI-VEM	Scientific thinking	KZ	2
The objective of the course is to get acquainted with scientific methods and discovery of order and laws of the universe, including the aspects of human life. The subject combines scientific methods in natural sciences, mathematics, computer science and humanities. Another aim is to introduce rules and requirements of scientific communication via research papers and posters.			
MI-VMM.16	Retrieval from Multimedia	Z,ZK	5
The student obtains general knowledge regarding interfaces of portals providing multimedia content, the principles of similarity search, the methods of feature extraction from multimedia objects, indexing, and structure of distributed search engines.			
MI-VYC	Computability	Z,ZK	4
Classical theory of recursive functions and effective computability. Recursive functions, Turing machines, and their equivalence. Church's thesis. Universal machine, normal form. Halting Problem and fixed points. Relations to logic: (in)completeness and (un)decidability.			
MI-ZS10	Master internship abroad for 10 credits	Z	10
Each student can once within his / her master's degree have a foreign internship at a foreign university or other foreign scientific and/or research institution. Before the internship the Dean of the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the professional content and extent of the internship. Auxiliary courses MI-ZS10, MI-ZS20, MI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits correspond to 4 weeks of full-time employment with a foreign institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided into two subjects if the internship exceeds the academic year's dead-line.			
MI-ZS20	Master internship abroad for 20 credits	Z	20
Each student can once within his / her master's degree have a foreign internship at a foreign university or other foreign scientific and/or research institution. Before the internship the Dean of the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the professional content and extent of the internship. Auxiliary courses MI-ZS10, MI-ZS20, MI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits correspond to 4 weeks of full-time employment with a foreign institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided into two subjects if the internship exceeds the academic year's dead-line.			
MI-ZS30	Master internship abroad for 30 credits	Z	30
Each student can once within his / her master's degree have a foreign internship at a foreign university or other foreign scientific and/or research institution. Before the internship the Dean of the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the professional content and extent of the internship. Auxiliary courses MI-ZS10, MI-ZS20, MI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits correspond to 4 weeks of full-time employment with a foreign institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided into two subjects if the internship exceeds the academic year's dead-line.			
MIE-STR	Strategy in the ICT industry on case studies	ZK	2
Abstract: The goal of this course is to give students an overview of the most important success factors in a dynamic market of ICT and allow them to think about their own career in the context of real life case studies of contemporary ICT industry. Students will learn the principles of strategic management of companies operating in converging sectors influenced by ICT on real-life case studies discussed directly with entrepreneurs and senior executives of these firms. Two categories of companies will be invited for interactive discussion of their strategy and vision: start-up companies represented by their founders, and the ICT industry's biggest companies such as Google, Microsoft, IBM, Cisco, represented by their senior managers. On the basis of these experiences, students will be able to make their own conclusions on how to succeed in their professional life.			

This subject deals with problems of realization and implementation of digital circuits - both combinational and sequential. Basic means of description of digital circuits and basic logic synthesis and optimization algorithms are described. Basics of EDA (Electronic Design Automation) systems are given, together with combinatorial problems emerging in EDA.

For updated information see <http://bilakniha.cvut.cz/en/FF.html>

Generated: day 25. 06. 2019, time 22:28.