Study plan

Name of study plan: Bachelor Specialization Computer Networks and Internet, in Czech, 2024

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch: Program of study: Informatika Type of study: Bachelor full-time

Required credits: 153

Elective courses credits: 27 Sum of credits in the plan: 180

Note on the plan: Tato verze studijního plánu je ur ena pro ro níky, které byly p ijaty ke studiu od

akademického roku 2024/2025 do prezen ní formy studia bakalá ského programu. . Garant: Ing. Jan Fesl,

Ph.D., email: jan.fesl@fit.cvut.cz

Name of the block: Compulsory courses in the program

Minimal number of credits of the block: 106

The role of the block: PP

Code of the group: BI-PP.21

Name of the group: Compulsory Courses of Bachelor Study Program Informatics, presented in Czech, version

2021

Requirement credits in the group: In this group you have to gain 106 credits

Requirement courses in the group: In this group you have to complete 20 courses

Credits in the group: 106

Note on the group:

If you plan to profile the specialization Information Security, Management Informatics, Computer Networks and Internet, Computer Systems and Virtualization, Software Engineering, or Web Engineering, enroll in the course BI-PSI.21 in your 2nd semester of study. If you plan to profile the specialization Computer Graphics, Computer Engineering, Computer Science, or Artificial Intelligence, enroll in the course BI-PSI.21 in your 4th semester of study. If you plan to profile yourself in the Artificial Intelligence specialization, enroll in the course BI-PSI.21 in your 3rd semester of study. Otherwise, enroll in the course BI-PSI.21 in your 5th semester of study. Otherwise, enroll in the course BI-PSI.21 in your 3rd semester of study. Otherwise, enroll in the course BI-PSI.21 in your 3rd semester of study.

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
BI-AG1.21	Algorithms and Graphs 1 Dušan Knop, Michal Opler, Ond ej Suchý, Tomáš Valla, Radek Hušek Dušan Knop Dušan Knop (Gar.)	Z,ZK	5	2P+2C	Z	PP
BI-AAG.21	Automata and Grammars Jan Holub, Jan Janoušek Jan Holub Jan Holub (Gar.)	Z,ZK	5	2P+2C	Z	PP
BI-BAP.21	Bachelor Thesis Zden k Muziká Zden k Muziká Zden k Muziká (Gar.)	Z	14		L,Z	PP
BI-BPR.21	Bachelor project Zden k Muziká Zden k Muziká (Gar.)	Z	1	0P+0C	Z,L	PP
BI-DBS.21	Database Systems Michal Valenta, Jan Blizni enko, Ji í Hunka, Monika Borkovcová, Jan Matoušek, Pavel K íž, Št pán Pechman, Dominik Roudný, Jan Bittner, Ji í Hunka Michal Valenta (Gar.)	Z,ZK	5	2P+2R+1L	L	PP
BI-DML.21	Discrete Mathematics and Logic Ji ina Scholtzová, Daniel Dombek, Jan Sp vák Daniel Dombek Jan Sp vák (Gar.)	Z,ZK	5	2P+1R+1C	Z	PP
BI-KAB.21	Cryptography and Security Ivana Trummová, Tomáš Rabas, Tomáš Zahradnický, Ji í Bu ek, Martin Jure ek, Josef Kokeš, Róbert Lórencz, Julia Plotnikova, David Pokorný, Róbert Lórencz Róbert Lórencz (Gar.)	Z,ZK	5	2P+2C	L	PP
BI-LA1.21	Linear Algebra 1 Lud k Kleprlík, Jakub Krásenský, Karel Klouda Lud k Kleprlík Karel Klouda (Gar.)	Z,ZK	5	2P+1R+1C	Z	PP

BI-MA1.21	Mathematical Analysis 1 Pavel Hrabák, Tomáš Kalvoda, Ivo Petr, Petr Olšák, Pavel Paták Tomáš Kalvoda Tomáš Kalvoda (Gar.)	Z,ZK	5	2P+1R+1C	L	PP
BI-MA2.21	Mathematical Analysis 2 Pavel Hrabák, Tomáš Kalvoda, Ivo Petr, Petr Olšák, Pavel Paták Tomáš Kalvoda Tomáš Kalvoda (Gar.)	Z,ZK	6	3P+2C	Z	PP
BI-OSY.21	Operating Systems Petr Zemánek, Ji í Kašpar, Michal Štepanovský, Jan Trdli ka, Pavel Tvrdík, Ladislav Vagner Pavel Tvrdík Michal Štepanovský (Gar.)	Z,ZK	5	2P+1R+1L	L	PP
BI-PSI.21	Computer Networks Viktor erný, Michal Hažlinský, Vladimír Smotlacha, Yelena Trofimova, Jan Fesl, Josef Koumar, Petr Hoda, Josef Zápotocký, Michal Polák, Jan Fesl Jan Fesl (Gar.)	Z,ZK	5	2P+1R+1C	L	PP
BI-PST.21	Probability and Statistics Kamil Dedecius, Pavel Hrabák, Jitka Hrabáková, Petr Novák, Jana Vacková Pavel Hrabák Pavel Hrabák (Gar.)	Z,ZK	5	2P+2C	Z	PP
BI-PA1.21	Programming and Algorithmics 1 Radek Hušek, Jan Trávní ek, Miroslav Balík, Josef Vogel, Ladislav Vagner Jan Trávní ek Jan Trávní ek (Gar.)	Z,ZK	7	2P+2R+2C	Z	PP
BI-PA2.21	Programming and Algorithmics 2 Radek Hušek, Jan Trávní ek, Josef Vogel, Ladislav Vagner Jan Trávní ek Jan Trávní ek (Gar.)	Z,ZK	7	2P+1R+2C	L	PP
BI-SAP.21	Computer Structure and Architecture Hana Kubátová, Jaroslav Borecký, Petr Fišer, Martin Kohlík Hana Kubátová Hana Kubátová (Gar.)	Z,ZK	5	2P+1R+2C	L	PP
BI-TZP.21	Technological Fundamentals of Computers Jan ezní ek, Jaroslav Borecký, Robert Hülle, Martin Kohlík, Vojt ch Miškovský, Martin Novotný, Matúš Olekšák Martin Novotný Martin Novotný (Gar.)	Z,ZK	5	2P+2C	Z	PP
BI-GIT.21	SW Development Technologies Petr Pulc, Robin Ob rka Robin Ob rka Petr Pulc (Gar.)	Z	3	2P	Z	PP
BI-TDP.21	Documentation and Presentation Ond ej Guth, Petra Pavlí ková, Dana Vynikarová, Alena Libánská, Tomáš Nová ek Dana Vynikarová Dana Vynikarová (Gar.)	KZ	3	2P+2C	Z,L	PP
BI-UOS.21	Unix-like Operating Systems Zden k Muziká, Petr Zemánek, Viktor erný, Michal Hažlinský, Jakub Jan i ka, Miroslav Prágl, Michal Šoch, Jan Trdli ka, Yelena Trofimova, Zden k Muziká Zden k Muziká (Gar.)	KZ	5	2P+2C	Z	PP

Characteristics of the courses of this group of Study Plan: Code=BI-PP.21 Name=Compulsory Courses of Bachelor Study Program Informatics, presented in Czech, version 2021

BI-AG1.21 Algorithms and Graphs 1 Z,ZK 5
The course covers the basics of efficient algorithm design, data structures, and graph theory, belonging to the core knowledge of every computing curriculum. It links and partially develops the knowledge from the course BI-DML.21, in which students acquire the knowledge and skills in combinatorics necessary for evaluating the time and space complexity of algorithms. The course also follows up knowledge from BI-MA1.21, the practical usage of asymptotic mathematics, in particular, the asymptotic notation.

BI-AAG.21 Automata and Grammars

Students are introduced to basic theoretical and implementation principles of the following topics: construction, use and mutual transformations of finite automata, regular expressions, and regular grammars, context-free grammars, construction and use of pushdown automata, and translation grammars and transducers. They know the hierarchy of formal languages

 BI-BAP.21
 Bachelor Thesis
 Z
 14

 BI-BPR.21
 Bachelor project
 Z
 1

and they understand the relationships between formal languages and automata. They are introduced to the Turing machine and complexity classes P and NP.

1. At the beginning of the semester, the student reserves the topic of the bachelor's thesis and connects with the supervisor. He / she will arrange the partial tasks that he / she will perform during the semester to process the assignment. If he completes these tasks, the supervisor will award him a credit from the subject BI-BPR at the end of the semester. 2. The external supervisor enters the information on granting the credit using the form "Granting credit from the external supervisor of the final thesis" (http://fit.cvut.cz/student/studijni/formulare). The completed and signed form must be delivered in person or by email to the SZZ coordinator, who will arrange for the credit to be granted. 3. If the topic of the work that the student has reserved is formulated more generally, the tasks assigned to him by the supervisor for the semester should be aimed primarily at fine-tuning the assignment so that the assignment can be supplemented and approved at the end of the semester.

BI-DBS.21 Database Systems Z,ZK 5

Students are introduced to the database engine architecture and typical user roles. They are briefly introduced to various database models. They learn to design small databases (including integrity constraints) using a conceptual model and implement them in a relational database engine. They get a hands-on experience with the SQL language, as well as with its theoretical foundation - the relational database model. They learn the principles of normalizing a relational database schema. They understand the fundamental concepts of transaction processing, controlling parallel user access to a single data source, as well as recovering a database engine from a failure. They are briefly introduced to special ways of storing data in relational databases with respect to speed of access to large quantities of data. This introductory-level course does not cover: Administration of database systems, debugging and optimizing database applications, distributed database systems, data stores.

BI-DML.21 Discrete Mathematics and Logic Z,ZK

Students will get acquainted with the basic concepts of propositional logic and predicate logic and learn to work with their laws. Necessary concepts from set theory will be explained. Special attention is paid to relations, their general properties, and their types, especially functional relations, equivalences, and partial orders. The course also lays down the basics of combinatorics and number theory, with emphasis on modular arithmetics.

BI-KAB.21 Cryptography and Security Z,ZK 5

Students will understand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to use cryptographic keys and certificates in systems based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applications. Within labs, students will gain practical skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic procedures of cryptanalysis.

BI-LA1.21 Linear Algebra 1 Z.ZK 5

We will introduce students to the basic concepts of linear algebra, such as vectors, matrices, vector spaces. We will define vector spaces over the field of real and complex numbers and also over finite fields. We will present the concepts of basis and dimension and learn to solve systems of linear equations using the Gaussian elimination method (GEM) and show the connection with linear manifolds. We define the regularity of matrices and learn to find their inversions using GEM. We will also learn to find eigenvalues and eigenvectors of a matrix. We will also demonstrate some applications of these concepts in computer science.

BI-MA1.21 Mathematical Analysis 1 We begin the course by introducing students to the set of real numbers and its properties, and we note its differences with the set of machine numbers. Then we study real sequences and real functions of a real variable. We gradually introduce the notions of limits of sequences and functions, continuous functions, and derivatives of functions. This theoretical foundation is then applied to root-finding problems (iterative method of bisection and Newtons method), construction of cubic interpolation (spline), and formulation and solution of simple optimization problems (i.e., the issue of finding extrema of functions). The course is closed with the Landaus asymptotic notation and methods of mathematical description of complexity of algorithms. Mathematical Analysis 2 The course completes the theme of analysis of real functions of a real variable initiated in BI-MA1 by introducing the Riemann integral. Students will learn how to integrate by parts and use the substitution method. The next part of the course is devoted to number series, and Taylor polynomials and series. We apply Taylors theorem to the computation of elementary functions with a prescribed accuracy. Then we study the linear recurrence equations with constant coefficients, the complexity of recursive algorithms, and its analysis using the Master theorem. Finally, we introduce the student to the theory of multivariate functions. After establishing basic concepts of partial derivative, gradient, and Hessian matrix, we study the analytical method of localization of local extrema of multivariate functions as well as the numerical descent method. We conclude the course with the integration of multivariate functions. BI-OSY.21 Operating Systems In this course that is a follow-up of the Unix-like operating systems course students deepen their knowledge in areas of OS kernels, process and thread implementations, race conditions, critical regions, thread scheduling, shared resource allocation and deadlocks, management of virtual memory and data storages, file systems, OS monitoring. They are able to design and implement simple multithreaded applications. General principles are illustrated on operating systems Solaris, Linux, or MS Windows. BI-PSI.21 Computer Networks The course introduces students to the principles of computer networking. It covers basic technologies, protocols, and services commonly used in local networks and in the Internet as well. The lectures will be amended by proseminars that introduce students into network programming and demonstrate the abilities of advanced network technologies. Students practically verify configurations and management of network devices in the lab within the environment of the operating systems Linux and Cisco IOS. **Probability and Statistics** Students will learn the basics of probabilistic thinking, the ability to synthesize prior and posterior information and learn to work with random variables. They will be able to apply basic models of random variable distributions and solve applied probabilistic problems in informatics and computer science. Using the statistical induction they will be able to perform estimations of unknown distributional parameters from random sample characteristics. They will also be introduced to the methods for testing statistical hypotheses and determining the statistical dependence of two or more random variables. Programming and Algorithmics 1 Students gain the ability to formulate algorithms for solving basic problems and write them in the C language. They understand data types (simple, structured, pointers), expressions, statements, functions, concept of recursion. They learn to analyse simple cases of algorithm complexity. They know fundamental algorithms for searching, sorting, and manipulating with linked lists and trees BI-PA2.21 Programming and Algorithmics 2 Students know the instruments of object-oriented programming and are able to use them for specifying and implementing abstract data types (stack, queue, enlargeable array, list, set, table). They learn these skills using the C++ programming language and are introduced to all C++ features needed in object-oriented programming (e.g., template programming, copying/moving of objects, operator overloading, inheritance, polymorphism). Computer Structure and Architecture Students will get acquainted with the basic architecture and units of a digital computer, understand the structure, function, and implementation of arithmetic-logic unit, controllers, memory, I/O communication, methods of data transfers between the units. The logic design and the implementation of a program-controlled simple processor is practically implemented in the labs using programmable circuits (FPGA), a single-chip microcomputer, and modern design (EDA) tools. Technological Fundamentals of Computers Students get acquainted with the fundamentals of digital and analog circuits, as well as basic methods of analyzing them. Students learn how computer structures look like at the lowest level. They are introduced to the function of a transistor. They will understand why processors generate heat, why cooling is necessary, and how to reduce the consumption; what the limits to the maximum operating frequency are and how to raise them; why a computer bus needs to be terminated, what happens if it is not; how a computer power supply looks like (in principle). In the labs, students model the behavior of basic electrical circuits in SW Mathematica. BI-GIT.21 **SW Development Technologies** 3 This course is aimed at one of the rudimental team software development technology - version control. To be more specific, we will introduce students to Git, the information manager from hell, as Linus Torvalds nicknamed it, and provide a comprehensive guide into its depths, as well as for day-to-day use. BI-TDP.21 **Documentation and Presentation** ΚZ 3 The course is focused on the basics of creating electronic documentation with emphasis on the creation of technical reports of a larger scope, typically final university theses. Students learn to create text of a technical report in the LaTeX system, process an electronic presentation using the LaTeX Beamer system, and practically present it in front of classmates and exercises of the course, an active approach to the creation of individual parts of the bachelor's thesis is assumed.

the teacher. The course is intended primarily for those students who have chosen the topic of their bachelor's thesis or will choose it within the first 14 days of teaching. Within the

Unix-like Operating Systems

Unix-like operating systems represent a large family mostly open-source codes that kept bringing during the history of computers efficient innovative functions of multiuser operating systems for computers and their networks and clusters. The most popular OS today, Android, has a unix kernel. Students get overview of basic properties of this OS family, such as processes and threads, access rights and user identity, filters, or handling files in a file system. They learn to use practically these systems at the level of advanced users who are not only able to utilize powerful system tools that are available to users, but are also able to automatize routine agenda using the unix scripting interface, called shell.

Name of the block: Compulsory courses in the specialization

Minimal number of credits of the block: 40

The role of the block: PS

Code of the group: BI-PS-PS.21

Name of the group: Compulsory courses for specialization Computer Networks and Internet 2021

Requirement credits in the group: In this group you have to gain 40 credits

Requirement courses in the group: In this group you have to complete 8 courses

Credits in the group: 40 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BI-ADU.21	Unix Administration Zden k Muziká , Petr Zemánek, Miroslav Prágl Zden k Muziká Zden k Muziká (Gar.)	Z,ZK	5	2P+2C	L	PS
BI-APS.21	Architectures of Computer Systems Michal Štepanovský, Pavel Tvrdík Michal Štepanovský Pavel Tvrdík (Gar.)	Z,ZK	5	2P+2C	Z	PS
BI-IOT.21	Internet of Things Viktor erný, Lenka Kosková T ísková Lenka Kosková T ísková (Gar.)	Z,ZK	5	2P+2C	Z	PS
BI-SIP.21	Network Programming Jan Fesl Jan Fesl (Gar.)	Z	5	2P+2C	Z	PS
BI-SPS.21	Administration of Computer Networks and Services Jan Kubr, Libor Dostálek Pavel Tvrdík Libor Dostálek (Gar.)	Z,ZK	5	2P+2S	Z	PS
BI-TPS.21	Computer Networks Technologies Vladimír Smotlacha, Josef Koumar Vladimír Smotlacha Vladimír Smotlacha (Gar.)	Z,ZK	5	2P+2S	Z	PS
BI-VDC.21	Virtualization and Data Centers Ji í Kašpar Ji í Kašpar Ji í Kašpar (Gar.)	Z,ZK	5	2P+2C	L	PS
BI-VPS.21	Selected Topics in Computer Networking Alexandru Moucha, Mohamed Bettaz Pavel Tvrdík Mohamed Bettaz (Gar.)	Z,ZK	5	2P+2C	L	PS

Characteristics of the courses of this group of Study Plan: Code=BI-PS-PS.21 Name=Compulsory courses for specialization Computer Networks and Internet 2021

BI-ADU.21 Unix Administration

Z,ZK 5

Students will learn the internal structure of the UNIX operating system, with the administration of its basic subsystems and with the security principles. They will understand the differences between user and administrator roles. They will get theoretical and practical knowledge of user management and administration, of users access rights, file systems, disk subsystems, processes, memory, network services and remote access, and in the areas of system deployment and virtualization. In the labs, they will verify the knowledge from the lectures on specific examples from practice.

BI-APS.21 Architectures of Computer Systems

Z,ZK

5

Students will learn the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special emphasis is given on the pipelined instruction processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the principles of instruction processing not only in scalar processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the sequential model of the program. The course further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory coherence and consistency in such systems.

BI-IOT.21 Internet of Things

Z,ZK

5

The course focuses on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an overview of sensors and actuators, wireless communication technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectures for different application areas. Within the computer labs, students will gain practical experience with developing simple IoT systems using common development environments (hardware - ARM, ESP, STM; software - Arduino, Raspberry Pi OS).

BI-SIP.21 Network Programming

Z

5

The course covers fundamental topics of programming network applications. It consists of 4 parts. The introductory part is focused on low-level programming using BSD sockets. The second part is devoted to designing communication protocols and their verification. The third part introduces the principles and applications of middleware technologies. The final part introduces basic modern models of distributed computing - P2P and blockchain. All topics will be first explained theoretically and then practices in computer labs using a chosen programming language environment.

BI-SPS.21 Administration of Computer Networks and Services

Z,ZK

5

The aim of the course is to deepen the theoretical knowledge of network technologies and protocols in the environment of network servers administrated under the operating systems Linux and Windows. The course syllabus requires the knowledge at the level of courses BIE-PSI, BIE-VPS, and BIE-OSY. Practical skills will be gained by practical hands-on experience with real network infrastructure.

BI-TPS.21 Computer Networks Technologies

Z,ZK

5

The course introduces students with basic and advanced technologies, components, and interfaces of contemporary computer networks at the physical layer with the overlap to the link layer. The lectures provide theoretical foundations of these technologies and explain relevant physical principles. In the labs, the respective technologies will be demonstrated and with the most important ones students will get hands-on experience. Thematically, the course covers both local and long-range optical networks, Ethernet, modern wireless networks, always with focus on high-speed networks.

BI-VDC.21 Virtualization and Data Centers

Z.ZK

5

The aim of the course is to familiarize students with technology basis of cloud computer systems. It shows principles and techniques used in design and implementation of data center infrastructure, such as various kinds of virtualization and high availability of servers, storages, and software layers. The course guides through data center technologies from private to public and hybrid clouds. Student learn current trends in the architecture of IT infrastructure and its configuration for classic and cloud applications. Students will understand the design, validation, and operation of complex infrastructures for modern applications with respect to scalability and protection against overloads, outages, and data losses.

BI-VPS.21 Selected Topics in Computer Networking

Z.ZK

5

The course builds upon the Computer Networks course (BI-PSI), obligatory for the program. Students will learn in detail principles, protocols, and technologies used in modern computer networks from local area networks up to Internet, with focus on switching, routing, security, and virtualization. The emphasis will be on gaining practical experience with real network devices in the lab and learning important methods of local area and wide area networks from the viewpoint of functionality, performance, and security.

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 5

The role of the block: PV

Code of the group: BI-PV-PS.21

Name of the group: Compulsory elective courses of the specialization Computer Networks and Internet, version 2021

Requirement credits in the group: In this group you have to gain at least 5 credits (at most 15)

Requirement courses in the group: In this group you have to complete at least 1 course (at most 3)

Credits in the group: 5

Note on the group:

BI-MSI.21

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
BI-EHA.21	Ethical Hacking Ji í Dostál, Martin Kolárik, Andrej Šimko Ji í Dostál Ji í Dostál (Gar.)	Z,ZK	5	2P+2C	L	PV
BI-MSI.21	Mobile Networks Pavel Tvrdík	Z,ZK	5	2P+2C	L	PV
BI-ML2.21	Machine Learning 2 Daniel Vašata Daniel Vašata (Gar.)	Z,ZK	5	2P+2C	L	PV

Characteristics of the courses of this group of Study Plan: Code=BI-PV-PS.21 Name=Compulsory elective courses of the specialization Computer Networks and Internet, version 2021

BI-EHA.21 | Ethical Hacking | Z,ZK | 5
The goal of the course is to introduce students to the field of penetration testing and ethical hacking. The course deals with cybersecurity threats, vulnerabilities, and their possible

exploitation in computer networks, web applications, wireless networks, operating systems, and others like the Internet of Things or cloud. The focus is on hands-on experience with vulnerabilities testing and the following process of penetration test documentation.

The goal of the course is to acquaint students with basic principles of mobile networks 4G, 5G, and with multimedia data transfers in these networks. Also, students will study the principles of smart cards and their use for authentication of users of mobile networks. The computer labs will be based on simulations of mobile networks. The course builds upon preceding courses BIE-PSI and BIE-VPS and completes the overall student's knowledge mainly in the area of high-speed mobile networks.

BI-ML2.21 Machine Learning 2 Z,ZK 5

The goal of this course is to introduce students to the selected advanced methods of machine learning. In the supervised learning scenario, they, in particular, learn kernel methods and neural networks. In the unsupervised learning scenario students learn the principal component analysis and other dimensionality reduction methods. Moreover, students get the basic principles of reinforcement learning and natural language processing.

Name of the block: Povinná t lesná výchova, sportovní kurzy

Minimal number of credits of the block: 0

Mobile Networks

The role of the block: PT

Code of the group: BI-PT.24

Name of the group: Physical Education, version 2024

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 2 courses (at most 7)

Credits in the group: 0

Note on the group:

The student is obliged to successfully complete two courses of this group.

Z,ZK

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
TV1	Physical Education	Z	0	0+2	Z	PT
TVV	Physical education	Z	0	0+2	Z,L	PT
TVK1	Physical Education Luboš Neuman Ji í Drnek (Gar.)	Z	1		L,Z	PT
TVV0	Physical education	Z	0	0+2	Z,L	PT
TV2	Physical Education	Z	0	0+2	L	PT
TVKZV	Physical Education Course	Z	0	7dní	Z	PT
TVKLV	Physical Education Course	Z	0	7dní	L	PT

Characteristics of the courses of this group of Study Plan: Code=BI-PT.24 Name=Physical Education, version 2024

TV1	Physical Education	Z	0
TVV	Physical education	Z	0
TVK1	Physical Education	Z	1
TVV0	Physical education	Z	0
TV2	Physical Education	Z	0
TVKZV	Physical Education Course	Z	0
TVKLV	Physical Education Course	Z	0

Name of the block: Povinná zkouška z angli tiny

Minimal number of credits of the block: 2

The role of the block: PJ

Code of the group: BI-ZKA.21

Name of the group: English Language Exam

Requirement credits in the group: In this group you have to gain at least 2 credits (at most 4)

Requirement courses in the group: In this group you have to complete 1 course

Credits in the group: 2

Note on the group:

BI-ANG, ending with an exam for two credits, is enrolled by students who have completed preparator English courses and have a credit from the BI-A2L course.

--

br> --

BI-ANG1, ending with an exam for two credits, is enrolled by students who prepared for the exam independently and do not have credit from BI-A2L. These students must complete a credit paper before their own exam. After passing the exam, the student will also be recognized for the course BI-ANGS (Independent preparation for the English exam) for 2 credits.

--

The BIE-ECC course can be recognized for any active semester after the submission of a external certificate at the level of at least B2 according to the Common European Framework of Reference.

	octation at the level of at least B2 according to the Commit	ni Europeun	i iuiiicv	VOIN OI I	CICICIOC.	
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
BI-ANG1	English Language Examination without Preparatory Courses Kate ina Valentová Kate ina Valentová (Gar.)	Z,ZK	2	2D	L	PJ
BIE-EEC	English language external certificate Zden k Muziká Zden k Muziká Zden k Muziká (Gar.)	Z	4	2D	L	PJ
BI-ANG	English Language, Internal Certificate Kate ina Valentová Kate ina Valentová (Gar.)	ZK	2	2D	Z,L	PJ

Characteristics of the courses of this group of Study Plan: Code=BI-ZKA.21 Name=English Language Exam

BI-ANG1	English Language Examination without Preparatory Courses	Z,ZK	2				
BIE-EEC	English language external certificate	Z	4				
The BIE-ECC course ca	The BIE-ECC course can be recognized for any active semester after the submission of a certificate certificate that demonstrates their proficiency in English comparable to or exceeding						
the B2 level of the Com	mon European Framework of Reference for Languages.						
BI-ANG	English Language, Internal Certificate	ZK	2				
Course information and	Course information and teaching materials can be found at https://moodle-vyuka.cvut.cz/course/search.php?search=BI-ANG						

Name of the block: Elective courses
Minimal number of credits of the block: 0

The role of the block: V

Code of the group: BI-V.2021

Name of the group: Purely Elective Courses of Bachelor Programme Informatics, version from 2021/22 till

2024/25

Requirement credits in the group: Requirement courses in the group:

Credits in the group: 0
Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BI-ADW.1	Windows Administration Ji í Kašpar, Miroslav Prágl Miroslav Prágl (Gar.)	Z,ZK	4	2P+1C	Z	V
BI-ALO	Algebra and Logic Jan Starý Jan Starý Jan Starý (Gar.)	Z,ZK	4	2P+1C	L	V
BI-AVI.21	Algorithms visually Lud k Ku era Lud k Ku era (Gar.)	Z,ZK	4	2P+1C	L	V
BI-A2L	English language, preparation for the B2 level exam Kate ina Valentová Kate ina Valentová (Gar.)	Z	2	2C	L	V
BI-APJ	Aplication Programming in Java Ji í Dan ek	Z,ZK	4	2P+1R+1C	Z	V
NI-AFP	Applied Functional Programming Robert Pergl, Marek Suchánek, Daniel N mec Robert Pergl Robert Pergl (Gar.)	KZ	5	2P+1C	L	V
BIE-ZUM	Artificial Intelligence Fundamentals Pavel Surynek	Z,ZK	4	2P+2C	L	V

BI-BLE	Blender Lukáš Ba inka Lukáš Ba inka Lukáš Ba inka (Gar.)	Z,ZK	4	2P+2C	L	V
NI-DSP	Database Systems in Practes Tomáš Vichta Tomáš Vichta Tomáš Vichta (Gar.)	Z,ZK	4	2P+1C	L	V
BI-STO	Storage and Filesystems	Z,ZK	4	2P+2C	L,Z	V
NI-PSD	Public Services Design David Pešek, Ond ej Brém David Pešek Ond ej Brém (Gar.)	KZ	4	1P+2C		V
BIE-DIF	Differential equations Antonella Marchesiello, Jan Valdman, Ond ej Bouchala Tomáš Kalvoda Ond ej Bouchala (Gar.)	Z,ZK	5	2P+2C	L	V
NI-DZO	Digital Image Processing	Z,ZK	4	2P+1C	L	V
NI-DDM	Distributed Data Mining	KZ	4	3C	L	V
BI-EP1.24	Effective programming 1 Martin Ka er Martin Ka er (Gar.)	KZ	4	2P+2C	Z	V
BI-EP2	Efficient Programming 2 Martin Ka er Martin Ka er (Gar.)	KZ	4	2P+2C	L	V
BI-ANGK	English language, contact preparation for the B2 level exam Kate ina Valentová (Gar.)	Z	2	2C	Z,L	V
BI-EJA	Enterprise Java Ji í Dan ek	Z,ZK	4	2P+2C	L	V
BI-EJK	Enterprise Java and Kotlin Ji í Dan ek Ji í Dan ek Ji í Dan ek (Gar.)	Z,ZK	4	2P+2C	L	V
BI-FMU	Financial and Management Accounting David Buchtela	Z,ZK	5	2P+2C	Z	V
BI-HAM	HW accelerated network traffic monitoring Tomáš ejka, Karel Hynek Tomáš ejka Tomáš ejka (Gar.)	KZ	4	2P+1C	L	V
BI-HMI	History of Mathematics and Informatics Alena Šolcová Alena Šolcová (Gar.)	Z,ZK	3	2P+1C	L	V
BI-ARD	Interactive applications on Arduino Jan ezní ek, Ji í Cvr ek, Robert Hülle, Vojt ch Miškovský Robert Hülle Robert Hülle (Gar.)	KZ	4	3C	L	V
NI-IAM	Internet and Multimedia Ji í Melnikov	Z,ZK	4	2P+1C	L	V
BIE-CSI	Introduction to Computer Science Christoph Kirsch Christoph Kirsch (Gar.)	Z	2	2C	Z	V
FITE-EHD	Introduction to European Economic History Tomáš Evan	Z,ZK	3	2P+1C	L	V
BIE-IMA2	Introduction to Mathematics 2	Z	2	1C	Z	V
BI-CS2	Karel Klouda C# language and data access Pavel Št pán Pavel Št pán (Gar.)	KZ	4	0P+3C	Z	V
BI-CS3	Language C# - design of web applications Pavel Št pán Pavel Št pán Pavel Št pán (Gar.)	KZ	4	3C	Z	V
BI-SQL.1	Language SQL, advanced Michal Valenta Michal Valenta Michal Valenta (Gar.)	KZ	4	3C	L	V
BI-QAP	Quantum algorithms and programming	KZ	5	1P+2C	Z	V
NI-LSM	Tomáš Kalvoda, Ivo Petr Ivo Petr Ivo Petr (Gar.) Statistical Modelling Lab	KZ	5	3C	L	V
BI-HAS	Kamil Dedecius Kamil Dedecius (Gar.) Human Aspects in Cryptography and Security	Z,ZK	5	2P+1C	Z	V
NI-MPL	Ivana Trummová Ivana Trummová Ivana Trummová (Gar.) Managerial Psychology	ZK	2	2P	Z,L	V
NI-MSI	Jan Fiala Jan Fiala Jan Fiala (Gar.) Mathematical Structures in Computer Science	Z,ZK	4	2P+1C	L	V
BI-MPP.21	Jan Starý Methods of interfacing peripheral devices Miroslav Skrbek Miroslav Skrbek (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-MIT	Mikrotik technologies	KZ	3	1P+2C	Z	V
NI-MOP	Jan Fesl Jan Fesl (Gar.) Modern Object-Oriented Programming in Pharo Jan Plizai and Pahart Powel, Pobert Powel (Car.)	KZ	4	3C	Z	V
BI-MVT.21	Jan Blizni enko Robert Pergl Robert Pergl (Gar.) Modern Visualisation Technologies li i Chludil Petr Pous Petr Pous Petr Pous (Cor.)	Z,ZK	5	2P+2C	Z	V
BI-MMP	Ji í Chludil, Petr Pauš Petr Pauš (Gar.) Multimedia team project Zda ka pakaná Zda ka pakaná (Gar.)	KZ	4	3C	Z,L	V
BI-ORL	Zde ka echová Zde ka echová (Gar.) Operations Research and Linear Programming	KZ	5	1P+2C	L	V
NI-OLI	Dušan Knop Dušan Knop Dušan Knop (Gar.) Linux Drivers Misseley State to Leveley Beyerla's Misseley State to (Con)	Z,ZK	4	2P+2C	L	V
BI-ACM	Miroslav Skrbek, Jaroslav Borecký Jaroslav Borecký Miroslav Skrbek (Gar.) Programming Practices 1	KZ	5	4C	L	V
BI-ACM2	Tomáš Valla Tomáš Valla (Gar.) Programming Practices 2	KZ	5	4C	Z	V
BI-ACM3	Ond ej Suchý, Tomáš Valla Tomáš Valla (Gar.) Programming Practices 3	KZ	5	4C	L	V
DI-UOINIO	Ond ej Suchý, Tomáš Valla Tomáš Valla Tomáš Valla (Gar.)	r\Z		40	L	v v

BI-ACM4	Programming Practices 4 Ond ej Suchý, Tomáš Valla Tomáš Valla Ond ej Suchý (Gar.)	KZ	5	4C	Z	V
BI-AND.21	Programming for the Android Operating System Jan Mottl, Jan Vep ek, Marek Kodr, Petr Šíma Jan Mottl Marek Kodr (Gar.)	KZ	4	3C	L	V
BI-CS1	Programming in C# Pavel Št pán, Helena Wallenfelsová Helena Wallenfelsová Pavel Št pán (Gar.)	KZ	4	3C	L,Z	V
BI-PJV	Programming in Java Miroslav Balík, Jan Blizni enko, Ji í Borský, Jan Zimolka Miroslav Balík Miroslav Balík (Gar.)	Z,ZK	4	2P+2C	Z,L	V
BI-PJS.1	JavaScript Programming Old ich Malec	KZ	4	3C	L	V
BI-KOT	Programing in Kotlin Ji í Dan ek Ji í Dan ek Ji í Dan ek (Gar.)	Z,ZK	4	2P+2C	L	V
NI-PSL	Programming in Scala Ji í Dan ek Ji í Dan ek Ji í Dan ek (Gar.)	Z,ZK	4	2P+1C	Z	V
BI-PMA	Programming in Mathematica Zden k Buk Zden k Buk Zden k Buk (Gar.)	Z,ZK	4	2P+2C	Z,L	٧
BI-PHP.1	Programing in PHP	KZ	4	3C	Z	V
BI-PS2	Programming in shell 2 Lukáš Ba inka	Z,ZK	4	2P+2C	L	V
NI-PDD	Data Preprocessing Marcel Ji ina Marcel Ji ina Marcel Ji ina (Gar.)	Z,ZK	5	2P+1C	Z	V
BI-PKM	Introduction to mathematics Tomáš Kalvoda Tomáš Kalvoda (Gar.)	Z	4		Z	V
NI-REV	Reverse Engineering Josef Kokeš Josef Kokeš Josef Kokeš (Gar.)	Z,ZK	5	1P+2C	Z	V
BI-SCE1	Computer Engineering Seminar I Hana Kubátová Hana Kubátová Hana Kubátová (Gar.)	Z	4	2C	L,Z	V
BI-SCE2	Computer Engineering Seminar II Hana Kubátová Hana Kubátová Hana Kubátová (Gar.)	Z	4	2C	L,Z	V
BI-ST1	Network Technology 1 Alexandru Moucha Alexandru Moucha (Gar.)	Z	3	2C	Z	V
BI-ST2	Network Technology 2 Alexandru Moucha Alexandru Moucha (Gar.)	Z	3	3C	L	V
BI-ST3	Network Technology 3 Alexandru Moucha Alexandru Moucha (Gar.)	Z	3	2C	Z	V
BI-ST4	Network Technology 4 Alexandru Moucha Alexandru Moucha (Gar.)	Z	3	2C	L	V
BI-SKJ.21	Scripting Languages Lukáš Ba inka, Jan Ž árek Lukáš Ba inka Jan Ž árek (Gar.)	Z,ZK	4	2+2	L	V
BI-SOJ	Machine Oriented Languages	Z,ZK	4	2P+2C	L	V
FIT-SEP	World Economy and Business	Z,ZK	4	2P+2C	L	V
BI-SEP	World Economy and Business	Z,ZK	4	2P+2C	L	V
NI-SYP	Tomáš Evan Tomáš Evan (Gar.) Parsing and Compilers	Z,ZK	5	2P+1C	Z	V
BI-GIT	Jan Janoušek Jan Janoušek Jan Janoušek (Gar.) Version control system GIT	KZ	2	16P	Z,L	V
BIE-SEG	Petr Pulc Systems Engineering	Z	0	2C	Z	
	Christoph Kirsch Christoph Kirsch (Gar.) Physical Education			20		V
TVK1	Luboš Neuman Ji í Drnek (Gar.)	Z	1		L,Z	V
TVV	Physical education	Z	0	0+2	Z,L	V
TV1	Physical Education	Z	0	0+2	Z	V
TVV0	Physical education	Z	0	0+2	Z,L	V
TV2	Physical Education	Z	0	0+2	L	V
TV2K1	Physical Education 2	Z	1		L,Z	V
TVKLV	Physical Education Course	Z	0	7dní	L -	V
TVKZV	Physical Education Course	Z	0	7dní	Z	V
BI-TS1	Theoretical Seminar I Dušan Knop, Ond ej Suchý, Tomáš Valla Tomáš Valla (Gar.)	Z	4	2C	Z	V
BI-TS2	Theoretical Seminar II Dušan Knop, Ond ej Suchý, Tomáš Valla Tomáš Valla Ond ej Suchý (Gar.)	Z	4	2C	L	V
BI-TS3	Theoretical Seminar III Ond ej Suchý, Tomáš Valla Tomáš Valla Tomáš Valla (Gar.)	Z	4	2C	Z	V
BI-TS4	Theoretical Seminar IV Ond ej Suchý, Tomáš Valla Tomáš Valla (Gar.)	Z	4	2C	L	V
BI-TDA	Test driven architecture Marek Hakala	KZ	4	2P+1C	Z,L	V

NI-TSP	Testing and Reliability Petr Fišer Martin Da hel Petr Fišer (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-QUA	Quality Assurance Marek Kodr, Martin Pilný, Kate ina Kalášková Kate ina Kalášková Marek Kodr (Gar.)	KZ	4	3C	Z	V
FI-TOP	Academic writing Tomáš Nová ek	Z	2	10B	Z	V
BI-CCN	Compiler Construction Christoph Kirsch Christoph Kirsch (Gar.)	Z,ZK	5	2P+1C	L	V
BI-TEX	TeX and Typography Petr Olšák Petr Olšák Petr Olšák (Gar.)	Z,ZK	4	2P+1C	L	V
BI-EHD	Introduction to European Economic History Tomáš Evan Tomáš Evan (Gar.)	Z,ZK	3	2P+1C	Z,L	V
BI-KSA	Cultural and Social Anthropology Tomáš Houdek, Alena Libánská, Jakub Šenovský Jakub Šenovský Alena Libánská (Gar.)	ZK	2	2P	Z,L	V
BI-ULI	Introduction to Linux Zden k Muziká, Petr Zemánek, Jan Ž árek Zden k Muziká Zden k Muziká (Gar.)	Z	2	4D	Z	V
BI-OPT	Introduction to Optical Networks Pavel Tvrdík	Z,ZK	4	2P+1C	Z	V
NI-VCC	Virtualization and Cloud Computing Tomáš Vondra, Jan Fesl Tomáš Vondra Tomáš Vondra (Gar.)	Z,ZK	5	2P+1C	L	V
BI-VHS	Virtual game worlds Radek Richtr	ZK	4	2P+2C	Z	V
BI-VR1	Virtual reality I Petr Pauš, Petr Klán Petr Klán (Gar.)	KZ	4	2P+2C	L,Z	V
BI-VR2	Virtual reality II Petr Klán Petr Klán Petr Klán (Gar.)	KZ	3	1P+2C	L	V
BI-VAK.21	Selected Applications of Combinatorics Michal Opler Michal Opler Michal Opler (Gar.)	Z	3	2R	L	V
BI-VMM	Selected Mathematical Methods Marzieh Forough Tomáš Kalvoda Tomáš Kalvoda (Gar.)	Z,ZK	4	2P+2C	L	V
NI-VYC	Computability Jan Starý Jan Starý (Gar.)	Z,ZK	4	2P+2C	L	V
BI-ZS10	Bachelor internship abroad for 10 credits Zden k Muziká Zden k Muziká (Gar.)	Z	10		Z,L	V
BI-ZS20	Bachelor internship abroad for 20 credits Zden k Muziká Zden k Muziká (Gar.)	Z	20		Z,L	V
BI-ZS30	Bachelor internship abroad for 30 credits Zden k Muziká Zden k Muziká (Gar.)	Z	30		Z,L	V
BI-ZIVS	Intelligent Embedded System Fundamentals Miroslav Skrbek Miroslav Skrbek (Gar.)	KZ	4	1P+3C	Z	V
BI-ZPI	Process engineering Robert Pergl Robert Pergl (Gar.)	KZ	4	1P+2C	L	V
BI-ZNF	PHP Framework Nette - basics Ji í Chludil	KZ	3	2P+1C	L	V
BI-IOS	Fundamentals of iOS Application Development for iPhone and iPad Rostislav Babá ek, Igor Rosocha Martin P Ipitel Martin P Ipitel (Gar.)	KZ	4	2C	Z	V
BI-ZWU	Introduction to Web and User Interfaces Lukáš Ba inka Lukáš Ba inka Jakub Klímek (Gar.)	Z,ZK	4	2P+2C	L	V
BI-3DT.1	3D Printing Miroslav Hron ok, Tomáš Sýkora Tomáš Sýkora Miroslav Hron ok (Gar.)	KZ	4	3C	L	V

Characteristics of the courses of this group of Study Plan: Code=BI-V.2021 Name=Purely Elective Courses of Bachelor Programme Informatics, version from 2021/22 till 2024/25

TV1	Physical Education	Z	0		
TVV	Physical education	Z	0		
TVK1	Physical Education	Z	1		
TVV0	Physical education	Z	0		
TV2	Physical Education	Z	0		
TVKZV	Physical Education Course	Z	0		
TVKLV	Physical Education Course	Z	0		
BI-ADW.1	Windows Administration	Z,ZK	4		
This course is presente	d in Czech. However, there is an English variant in the program Informatics (B1801 / 4753).				
BI-ALO	Algebra and Logic	Z,ZK	4		
The course extends and	The course extends and deepens the study of topics touched upon in the basic course in logic.				
BI-AVI.21	Algorithms visually	Z,ZK	4		

The course complements other algorithm courses at FIT. It brings knowledge about particular important algorithms from different fields of the computer science that extend substantially knowledge presented in BI-AG1 and BI-AG2. A wide scope of covered subject is made possible due to using visualization bz Algovision (www.algovision.org<http://www.algovision.org>) that make understanding the principles of algorithms easy.

B-A2L English language, preparation for the B2 level exam To control of the coulce or resolution of the Coulce or resolution of the college of the country			
izone part in the intergroup instruction. More the requirements for variety assignments. Summon, Aboract Application Programming in Java The costs of the successor to sear at 71%. Silv. Silv. On the Programming in Java The costs is producted in Costs. A Selected in Programming in Java The costs is producted in Costs. A Selected in Programming in Java The costs is producted in Costs. A Selected in Programming in Java The costs is producted in Costs. A Selected in Programming in Java The costs is producted in Costs. A Selected in Programming in Java The costs is producted in Costs. A Selected in Programming in Java The costs is producted in Costs. A Selected in Programming in Java The costs is producted in Costs. A Selected in Programming in Java The Costs is producted in Costs. A Selected in Programming in Java The Costs is producted in Costs in The Costs in The Costs in	BI-A2L English language, preparation for the B2 level exam	Z	2
interest with the sucroses office set at 70%. 80% and owner in 80/14 sets means (SRAL EXAM ONIX) froe written part). Requirements will be specified by individual numbers during in Fed dates of the term. Bit AP J Application Programming in Java The course of spreaded in Cacet. Abstracted individual programming in Java The course of spreaded in Cacet. Abstracted individual programming programming programming and programming in Java programming. In Java programming progra			
tiess of the form Proceedings Application Programming in Java Recognition Application Programming in Java Recognition Application Programming Java Recognition Application Programming Application Programming Recognition Recognitio			
BIAD Aplication Programming in Java Nicescance in presented Conzel. Advanced technologies in Java Nicescance in Conzel. Advanced to Conzel. Advanced to Security of Processing Control of of Processi		individual teacher	s during the first
This course is presented in Caset. Asserted technologies in June. NASP Applied Functional Programming represents one of the traditional programming persents on so the traditional programming persents on the traditional programming interests in the traditional programming interests on the traditional programming interests of the traditional programming interests. BI-BLE BIE-BLE BIE-BLE		7.71/	4
N-APP Applied Functional Programming insugages are on the inadional programming president of zeach. Proteodinal programming inspagages are on the rise considerable of zeach. Proteodinal programming inspagages are on the rise considerable of the short content programming president of a shorter empirison that the content of president of a shorter empirison that the content of president of a shorter empirison, garden feed of the shorter of the president of the shorter of the president of the shorter of the sh		Z,ZK	4
This course is presented in Casch. Functional programming recreases on the transcriptoring and the functional programming recreases as encessary competents of a software engineer the theory and especially the practice. BIE-ZUM Affilicial Intelligence Fundamentalis Supports as introduced to the fundamental proclams in the Artificial Intelligence Fundamentalis Supports are introduced to the fundamental proclams in the Artificial Intelligence Fundamentalis Supports are introduced to the fundamental proclams in the Artificial Intelligence Fundamentalis Supports are introduced to the fundamental proclams in the Artificial Intelligence Fundamental Proclams in Telephone Applications; course, it is interested to those intelligence in September 1 (and the Artificial Intelligence Fundamental Proclams in Telephone Applications) course, it is interested to those intelligence in September Intelligence Fundamental Proclams in Telephone Applications; course, in the Artificial Intelligence Fundamental Proclams in Telephone Applications; course, in the Artificial Intelligence Fundamental Proclams in Telephone Applications in the Artificial Intelligence Fundamental Proclams in Telephone Applications in Telep		V7	-
the rise necessary consequence of the functional preadings becomes a imposessor compensation of a software enginement the theory and excellent in the protection of the contractions of the contraction of the contractions of the contraction of the contractions of the contraction of the contr	111 - 3 - 3 - 3 - 3	1	-
Interesting competence of a software engineer. The theory and especially the practice. BE-ZUM Artificial Intelligence Fundamental problems in the Artificial Intelligence, and the basic methods for their salving, it bousses mainly on the classical basis from the areas of states space season, multiple special systems, gare theory, plasming, and machine learning. Modern soft-computing methods, including the exclusionary signorities and interesting and productions of the presentations will be presented as well. BI-BLE BROWNER BROW			
Suddents are introduced to the fundamental problems in the Antificial Intelligence, and the basic methods for their solvings It bosons mainly on the classical teads from the areas of states season search, making games the springs, game theory; planning, and markine learning. Modern sold correcting methods, including the evolutionary alignments and the neural networks, will be presented as well. BI-BLE BISING BISING Distriction of complete and postnorch program Bistorier from BI-MGA (Multimodia and Graphics Applications) cut seek. NI-DSP Distriction of complete and postnorch program Bistorier from BI-MGA (Multimodia and Graphics Applications) cut seek. NI-DSP Distriction of complete and postnorch program Bistorier from BI-MGA (Multimodia and Graphics Applications) cut seek. NI-DSP Distriction of complete and postnorch program Bistorier from BI-MGA (Multimodia and Graphics Applications) cut seek. NI-DSP Distriction of the springs of the sprin		g p	
Students are introduced to the fundamental problems in the Artificial Intelligence, and the basic methods for their solving. It because mainty on the dissectable label from proposed groups are specimens, gave theory, planning, and machine learning. Modern solvic complaining methods, including the evolutionary algorithms and the neutral networks, will be provided as a complaining and provided productions. And the provided productions of the provided production to BIMCA (Multimedia and Graphics Applications) course. In course extends touroelegia of processing program Blender from BIMCA (Multimedia and Graphics Applications) course. In course of the production of the provided production to BIMCA (Multimedia and Graphics Applications) course. In course is the production of the provided production to BIMCA (Multimedia and Graphics Applications) course. In course will be complete and processing production of the BIMCA (Multimedia and Graphics Applications) course. In course is limited as the provided production of the solicity of the programming graphics applications) course. In course is limited as the provided production of the solicity of the programming graphics applications) course. In course is limited as the provided production of the solicity of the programming graphics applications) course. In course is limited as the proposed and course of stronge poystions architecture. The mobile explains promption of deat strong production, and architecture, as one as stronge scalar and the course will be course the programming graphics applications. In course will be considered the programming graphics applications on the solicity of the programming graphics and	BIE-ZUM Artificial Intelligence Fundamentals	Z.ZK	4
Be-BLE Biender The course setureds knowledge of operacure program Blender from BI-MGA (Multimedia and Graphics Applications) course. It is intended for those interested in 30 graphics and animation. Lettlers a complete and practically of retined introduction to Blender environment. Students may continue to BI-PGA (Programming graphs applications) course. The student will be extracted in Carch. NI-DSP Database Systems in Practes The course is presented in Carch. BI-STO Storage and Fillesystems The student will be principle and current estudions of storage systems architecture. The module explains principles of data store, protection, and archivage, as to as storage scaling, total balancing and thigh, availability. NI-DSP Public Services Design The course will introduce students to specifics of UK. Service design and development for public sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. We will bok into the design and development are supplied sector. The supplied sector and the supplied sectors. The supplied sectors are supplied sectors. The supplied s			ne areas of state
Bi-BiLE	space search, multi-agent systems, game theory, planning, and machine learning. Modern soft-computing methods, including the evolutionary algor	thms and the neu	al networks, will
The course steeded skoolwedge of operatource program Blender from BI-MAG (Multimedia and Cinpplies Applications) course. It is intended to those interested in 32 graphics and animation, it offers a complete and practically oriented introduction to Blender environment. Students may continue to BI-PAG (Programming graphs graphics) and continued to BI-PAG (Programming graphs graphics) and the students will be provided the programming and provided the programming and particular to the students will be provided the provided the provided the programming and particular to the programming and provided the provided th	·		
asimation. Forther a complete and pranctically contended introduction to Blender environment. Students may continue to BI-PGA (Programming graphics applications) curval. **NI-DSP**** Database Systems in Practes*** This course presented in Conch.**			
No.			
This course is presented in Czech. Storage and Filesystems ZZK 4			
BLSTO Storage and Filesystems Z,ZK 4		Z,ZK	4
The student will learn principles and current solutions of storage systems architecture. The module explains principles of data store, protection, and archiving, as so as storage scaling, tools balancing and high availability. NEPSD Public Services Design The course will introduce students to specifics of U.S. Service design and development for public servic. We will look into the design and development process from the perspective of suppliers (devs and designes) as well as clients. In small teams students will work on projects from partner organizations and will try out collaboration with client representatives. Course is aiment at students-designess as well as clients. BIE-DIF Differential equations This course provides a bornadination devinwith offerential equations, starting with basic motivation and examples of ODEs and progressing to essential solution methods like separation of variables. Rey theorems on existence and uniqueness establish when solutions can be guaranteed. Linear and system-based ODEs are covered with methods like characteristic polynomial analysis, followed by exemples of non-linear models such as precious-prey and epidemiological models to showcase real-abundations. In introduction to partial differential equations (PDEs) extends these concepts to multi-variable contexts. The course will also cover numerical methods for solving ODEs and PDEs, including implicit and explicit taken methods. Runge-richital size, Visually attractive applications and explores taken with common progressing to the course of the contexts. The course will also cover numerical methods for solving operations and politic processing. This course were well not required applications solving and particulations provide better understanding of basic theoretical particulations in the course of digital image processing. This course well introduced applications solving the following practical applications expended and processing framework Apache Spark and with existing distributed data mining and parallelization of	· · · · · · · · · · · · · · · · · · ·	7.71/	4
Isoa balancing and high availability. Public Services Design The course will introduce students to specifics of UK, Service design and development for public sector. We will look into the design and development process from the perspective of suppliers (does not designed as well as a clients. Is small teams students will write a simple of the students designed as well as a clients. BIE-DIF Differential equations This course provides a bound activate in small equations. Starting will be also motivation and examples of ODEs and processing to essential solution methods like separation of variabilities. Rey in Moreovers on existence and uniquentees establish when solutions can be quanteed. Linear and system-based ODEs are convent with methods the characteristic polynomial analysis, followed by examples of non-linear models such as precision-prey and epidemiological models to showcase neal-world applications. Finally, and introduction to partial differential equations. (PEDs 1) extends these concepts to multi-variable contracts. The course will also occur mumerical methods for solving ODEs and PDEs, including implicit and explicit Euler methods. Runge-Kutta methods, and finite element methods for both ODEs and PDEs. NI-DZO Digital Image Processing This course processing. This course provides a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical algorithms that are both easy to implement and have an interactival applications. Sequences will also occurse and difficult and applications and equations. PDE-3 (PEDs 2) (PED			•
NIPSD Public Services Dasign NIPSD Public Services (Dasign The course will infortable students to specifics of UX. Service design and development for public sector. We will look into the design and development process from the perspective of suppliers (deve and designees) as well as clients, in small teams students will work on projects from partner organizations and will try out collaboration with client representatives. Course is sained at students-designees as well as clients, in small teams students will work on projects from partner organizations and will try out collaboration with client representatives. Course is sained at students-designees) as well as clients, in small teams as students will be considered to the partner organizations and will try out collaboration with client representatives. Course is sained at students of the course of the partner organizations of the partner organizations (PDIs) extended to the partner of the partner of the partner of variables. Key theorems on existence and uniqueness establish when solutions can be guaranteed. Linear and system-based ODEs and progressing to essential solution methods the characteristic polyromial analysis, followed by examples of non-linear modes such as predator-prey and epidemological models to showcase real-world applications propriated and explications propriated and explicated into the partner organization of partner organization and solutions can finite demand methods for both ODEs and PDEs. NIPSD Digital Immage Processing. This course presents a comprehensive overview of modern methods for both ODEs and PDEs. NIPSD Services presents a comprehensive overview of modern methods for interactive editing of digital images and vide. It mainly deals with practical abactyour deals also availables overview or methods and processing and chrining, digital proteomorage and digital image processing. This course will interest the programming and chrining, digital proteomorage and chrining digital phort-mortage, coloration, between the processing		ilcilivilig, as so as	storage scaling,
The course will introduce students to specifies of U.X. Service design and development of public sector. We will look into the design and development process from the perspective of suppliers (development designed) are designed as a designed of several the contract of the course of		K7	4
suppliers (devs and designeer) as well as clients. In small teams students will work on projects from partner organizations and will try out collaboration with client representatives. Course is aimand at students-designers as well as clients as students will supplied the students and students as students and students and students are supplied to the students and students are supplied to exercise or differential equations. Course is the supplier of the students are supplied to exercise the suppliers of the students are supplied to exercise the suppliers of the students are supplied to exercise the suppliers on extractions or extraction of variations. Course of the suppliers of the students are suppliers as the suppliers of the supplier		1	•
Europe is almed at students-designers as well as clients.		-	
This course provides a foundational overview of differential equations, starting with basic motivation and examples of ODEs and progressing to essential solution methods like separation of variables. Rev beforemes on existence and uniqueness establish when solutions can be guaranteed. Linear and system-based lose are covered with methods like characteristic polynomial analysis, followed by examples of non-linear models such as predator-prey and epidemiological models to showcase real-world applications. Finally, an introduction to partial differential equations (PDEs) extends these concepts to multi-warable contexts. The course will also cover numerical methods for solving ODEs and PDEs, including implicit and explicit Euler methods. Runge-Kutta methods, and finite element methods for both ODEs and PDEs. NI-DZO Digital Image Processing This course presents a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical algorithms that are both easy to implement and have an interesting theoretical basis. Visually attractive applications provide better understanding of basis theoretical background that is also valuable outside the domain of digital image processing. This course will introduce algorithms solving the following practical applications sedge-averae editing menapine. HPG compression, de-buttering in frequency domain, abstraction, hybrid images, gradient domain editing, seamless image statching and cloning, digital phote-montage, color-ti-gray conversion, context enhancement, interactive as-regide-appressable in menapine. HPG compression, de-buttery and cloning, digital phote-montage, color-ti-gray conversion, context enhancement, interactive as-regide-appressable to menapine. HPG compression, de-buttery and course in a state of-the-art approaches to prefer form image registration, texture synthesis, interactive segmentation, or mapping, 140 (2014). NI-DDM Distributed Data Mining Course focuses on state-of-the-art approaches to facility t			
of variables. Key theorems on existence and uniqueness establish when solutions can be guaranteed. Linear and system-based ODEs are overed with methods like characteristic ophyromial analysis, followed by examples of non-linear models such as periaderic pray and epidemiological models to shows are relaworid applications. Finally, an introduction to partial differential equations (PDEs) extends these concepts to multi-variable contents. The course will also cover numerical methods for solving ODEs and PDEs, including implicit and explicit Euler methods. Runge-Kutta methods, and finite element methods for both ODEs and PDEs. NI-DZO Digital Image Processing This course presents a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical algorithms that are both easy to implement and have an interesting interestical assisting interesting of the processing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping. HDR compression, de-blurring in frequency domain, abstraction, hybrid images, gradent domain editing, seamless image statisticing and cloning, digital photo-moreison, context enhancement, interactive as-rigid-as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, adding depth, alpha mattring. NI-DDM Distributed Data Mining KZ 4 Course focuses on stata-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 remevork Apeach Spark and with existing distributed DM. ML algorithms. They will learn principles of their parallel implementations and will be capable to propose approaches to aprallelize other algorithms. The course is taught in Cazeh. BI-EP1.24 Effective programming 1 KZ 4 The content of the course corresponds to the preparation for the English exam at the B2 level Requirements f	BIE-DIF Differential equations	Z,ZK	5
polynomial analysis, followed by examples of non-linear models such as predato-prey and epidemiological models to showcase real-world applications. Finally, an introduction to partial differential equations (PEDs) extends these concepts to multi-variable contexts. The course will also cover numerical methods for solving ODEs and PDEs, including implicit and explicit Euler methods. Runge-Kutta methods, and finite element methods for both ODEs and PDEs. NI-DZO Digital Image Processing Size Variable Digital Image Processing Size Variable Vari	This course provides a foundational overview of differential equations, starting with basic motivation and examples of ODEs and progressing to essential		s like separation
and acquicit fleermethabes. Runge-Kulta methods, and finite element methods for both ODEs and PDEs. NI-DZO Digital Image Processing This course presents a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical algorithms that are both easy to implement and have an interesting theoretical basis. Visually attractive applications provide better understanding of basis theoretical background that is also valuable ourside the domain of digital image processing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDR compression, de-burring in frequency domain, abstraction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray co-wersion, control enhancement, interactive as-rigid-as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, adding depth, alpha-matting. NI-DDM Distributed Data Mining NI-DDM Distributed Data Mining Size of distributed data mining and parallelization of machine learning algorithms. Students will gain hards on experience with large scale data processing framework Apaches Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations of experience with a size of the programming 1. Students will practice implementation of algorithms by solving typical problems. Various ways of solving individual problems are discussed, with the aim to choose the best on ean advaicting implementation errors. BI-FNG English language, contact preparation for the B2 level exam Pin course in the course or services of the course credit. Academic Achievement - students are due to: Take an active part in the language instruction. Meet the requirements for writing assignments - Summary, Abstract, Argumentation Paper - Succeed in both the midterm and the final term tests with the sunce to course o	of variables. Key theorems on existence and uniqueness establish when solutions can be guaranteed. Linear and system-based ODEs are covered	with methods like	characteristic
NI-DZO Digital Image Processing NI-DZO Digital Image NI-DZO Digital Image NI-DZO Digital Image and video. It mainly deals with practical algorithms solving negative processing. This course will introduce algorithms solving the following practical applications: edge-aware editing, none mapping, HDP Compression, de-bluring in frequency domain, abstraction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-mortage, color-to-gray conversion, context enhancement, interactive as-rigida-spossible image determation, there-form image registration, texture synthesis, interactive segmentation, colorazation, painting, adding depth, adhipm arting. NI-DDM Distributed Data Mining NI-DDM Distributed Distributed data mining and parallelization of machine learning algorithms. Students will gain there will have been departed by the parallelized with a students of the parallelized will represent the students of the students of the parallelized will represent the students are duc- NI-DDM Distributed Distributed Distributed DM / ML algorithms. They will learn principles of their parallel implementations and will be capable to propose approaches to the programming 1. Students will practice implementation of students will be students are duc- NI-DDM Distributed Distributed Distributed DM / ML algorithms. They will learn principles of their parallel implementation will be capable to propose approaches to the programming 1. Students will practice implementation of s			
NI-DZO Digital Image Processing Z,ZK 4 This course presents a comprehensive workiev of modern methods for interactive editing of digital images and video. It mainly deals with practical algorithms that are both easy to implement and have an interesting theoretical basis. Visually attractive applications provide better understanding of basis theoretical background that its also valuable outside the domain of digital image processing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, IHDR compression, de-blurring in frequency domain, abstraction, hydrid images, gradient domain editing, seamless image etitiching and cloning, digital principal continuation, and interactive as a significant of the device of the properties of their parallel image depth, alpha matting. NI-DDM Distributed Data Mining NI-DDM Distribu		Es and PDEs, incl	uding implicit
This course presents a comprehensive overview of modern methods for interactive editing of digital images and video. It maintly deals with practical algorithms that are both easy to implement and have an interesting theoretical basis. Visually attractive explications provide better understanding of basic interesting theoretical basis. Visually attractive explications provide better understanding of basic interesting theoretical basis. Visually attractive explications provide better understanding of basic interestical services, color-to-gray conversion, context enhancement, interactive ascriptional-assosystate image detormation, free-form image registration, texture synthesis, interactive segmentation, colorization, patiniting, adding depth, alpha matritus, which is a patiniting depth of the parallel implementations and with exhibiting distributed DM / ML alporithms, They will learn principles of their parallel implementations and with example coloriting 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 with example control of parallelization of an advantage and parallelization of the parallelization of an advantage and parallelization of the paralleliza		7.71	
implement and have an interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that it also valuable outside the domain of digital image processing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDR compression, de-blurring in frequency domain, abstraction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray conversion, context enhancement, interactive as-rigid-as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, adding depth, alpha matting. NI-DDM Distributed Data Mining KZ 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 Apacies Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations on experience with large scale data processing framework Apacies 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. The course is taught in Czech. BI-EP1 Effective programming 1 Effective programming 2 Effective programming 1 Expert Substantial Capable Programming 1 Expert Substantial Capable Programming 1 Expert Substantial Programmin			
of digital image processing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDR compression, de-bluring in frequency domain, abstraction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray conversion, context enhancement, interactive as-rigid-as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, adding depth, alpha matting. NI-DDM Distributed Data Mining KZ 4 4 Course focuses on state-of-the-or 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. The course is prezented in czech language. BI-EP1.24 Effective programming 1 KZ 4 The course is study in Cozech. BI-EP1.25 Efficient Programming 2 Continuation of Efficient Programming 1. Students will practice implementation of algorithms by solving typical problems. Various ways of solving individual problems are discussed, with the aim to choose the best one and avoid implementation errors. BI-ANGK English language, contact preparation for the B2 level exam Z 2 The content of the course corresponds to the preparation for the English exam at the B2 level exam part in the language instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation Paper - Succeed in both the mictre mand the final term tests with the success rate set at 70% -80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term. BI-EJA Enterprise Java Enterprise Java and Kotlin The aim of the course is on advanced technologies in the Java and Kotlin prog		-	-
trequency domain, abstraction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray conversion, context enhancement, interactive as-rigid-as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, adding depth, alpha matting. NI-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 Apaches Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations and will be capability to repose approaches to parallelize other algorithms. The course is prezented in czech language. BI-EP1.24 Effective programming 1 The course is taught in Czech. BI-EP2 Efficient Programming 2 Continuation of Efficient Programming 2 Efficient Programming 2 Efficient Programming 1 Evaluation of Efficient Programming 2 Evaluation of Efficient Programming 1 Evaluation of Efficient Programmin			
NI-DDM Distributed Data Mining NI-DDM NI-		=	-
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. The course is traught in Czech. BI-EP1.24	interactive as-rigid-as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a	dding depth, alpha	a matting.
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. The course is prezented in czech language. BI-EP1.2 Effective programming 1 BI-EP2 Efficient Programming 2 Continuation of Efficient Programming 1. Students will practice implementation of algorithms by solving typical problems. Various ways of solving individual problems are discussed, with the aim to choose the best one and avoid implementation errors. BI-ANCK English language, contact preparation for the B2 level exam Z 2 The content of the course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - students are due to: Take an active part in the language instruction. Meet the requirements for writing assignments - Summary, Abstract, Argumentation Paper. Succeed in both the milderm and the final term tests with the success rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part), Requirements will be specified by individual teachers during the first class of the term. BI-EJA 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 act achabase and are accessed through the web interface. BI-EJK Enterprise Java and Kotlin Statements including opening and closing of bookkeeping. The focus is on technologies for development and inabilities in the particular accounting operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-arry bookkeeping for enterprising subjects in the Czech Republic. Principles of manufaction and analysis of network traffic are manufactory skills to	NI-DDM Distributed Data Mining	KZ	4
BI-EP1.24 Effective programming 1 KZ 4 BI-EP2 Efficient Programming 2 KZ 4 Continuation of Efficient Programming 1. Students will practice implementation of algorithms by solving typical problems. Various ways of solving individual problems are discussed, with the aim to choose the best one and avoid implementation errors. BI-ANGK English language, contact preparation for the B2 level exam Z 2 The content of the course orresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - students are due to: Take an active part in the language instruction. Meet the requirements for writing assignments - Summary, Abstract, Argumentation Paper - Succeed in both the midtles made due to: Take an active part in the language instruction. Here the requirements for writing assignments - Summary, Abstract, Argumentation Paper - Succeed in both the midtles made the first class of the term. BI-EJA Enterprise Java To% - 80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term. BI-EJA Enterprise Java To% - 80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term. BI-EJA Enterprise Java A KOtlin 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 with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting Financial and Management Accounting the principles of balancing the property amounts and liabilities in the particular accounting operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double—entry bookkeeping for enterprising subjects in the	Course focuses on state-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain han	ds on experience	with large scale
BI-EP1.24		ns and will be capa	ble to propose
The course is taught in Czech. BI-EP2 Efficient Programming 2			
BI-EP2 Efficient Programming 2 Continuation of Efficient Programming 1. Students will practice implementation of algorithms by solving typical problems. Various ways of solving individual problems are discussed, with the aim to choose the best one and avoid implementation errors. BI-ANGK English language, contact preparation for the B2 level exam Z 2 The content of the course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - students are due to: -Take an active part in the language instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the mildrem and the final term tests with the success rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term. BI-EJA 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. BI-EJK Enterprise Java and Kotlin Z,ZK 4 The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting Z,ZK 5 The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounti		KZ	4
Continuation of Efficient Programming 1. Students will practice implementation of algorithms by solving typical problems. Various ways of solving individual problems are discussed, with the aim to choose the best one and avoid implementation errors. BI-ANGK English language, contact preparation for the B2 level exam Z 2 The content of the course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - students are due to: -Take an active part in the language instruction.—Meet the requirements for writing assignments - Summary, Abstract, Argumentation Paper.—Succeed in both the midterm and the final term tests with the success rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term. BI-EJA 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. BI-EJK Enterprise Java and Kotlin Z,ZK 4 The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting Z,ZK 5 The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Information s		147	
with the aim to choose the best one and avoid implementation errors. BI-ANGK English language, contact preparation for the B2 level exam The content of the course credit. Academic Achievement - students are due to: -Take an active part in the language instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation Paper, -Succeed in both the midterm and the final term tests with the success rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term. BI-EJA 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. BI-EJK Enterprise Java and Kotlin The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting Financial and Management Accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Intelligence modules in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and developme		1	•
BI-ANGK English language, contact preparation for the B2 level exam Z 2 The content of the course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - students are due to: -Take an active part in the language instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the midterm and the final term tests with the success rate set at 70% -80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term. BI-EJA 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. BI-EJK Enterprise Java and Kotlin The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for development of enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting Financial and Management Accounting Financial and Management Accounting Financial and Management accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and in		iividuai probiems a	ire aiscussea,
The content of the course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - students are due to: -Take an active part in the language instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the midterm and the final term tests with the success rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term. BI-EJA 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. BI-EJK Enterprise Java and Kotlin Z,ZK 4 The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting Z,ZK 5 The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Intelligence modules in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to networ		7	2
active part in the language instruction. Meet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the midterm and the final term tests with the success rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term. BI-EJA 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. BI-EJK Enterprise Java and Kotlin Z,ZK 4 The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting Z,ZK 5 The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Intelligence modules in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are manufatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are t		. – .	_
tests with the success rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term. BI-EJA 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. BI-EJK Enterprise Java and Kotlin Z,ZK 4 The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations of economic operations based on current methods of double-entry bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Inteligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics	t the second		
BI-EJA 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. BI-EJK Enterprise Java and Kotlin The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Inteligence motules in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics			
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. BI-EJK Enterprise Java and Kotlin The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics	class of the term.		· ·
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. BI-EJK Enterprise Java and Kotlin The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics	BI-EJA Enterprise Java	Z,ZK	4
BI-EJK Enterprise Java and Kotlin The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Inteligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics			e connected to
The course is on advanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise information systems with microservice architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Inteligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics	a database and are accessed through the web interface.		
BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Inteligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics Z,ZK 3	BI-EJK Enterprise Java and Kotlin		
BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Inteligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics	The course is an advanced to the planta in the large and Katling are received by the form in the form is a table planta for developing and making information in the	Z,ZK	4
The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the particular accounting operations, operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Inteligence moduls in Business information systems. BI-HAM		. , .	
operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modification of bookkeeping, description of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Inteligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics Z,ZK 3	architecture, that can be deployed to the cloud.	mation systems w	ith microservice
of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management accounting are base of Business Inteligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics Z,ZK 3	architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting	mation systems w	ith microservice
Business Inteligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring KZ 4 This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics Z,ZK 3	architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the	Z,ZK	5 sting operations,
BI-HAM HW accelerated network traffic monitoring This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics Z,ZK 3	architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modifice	Z,ZK e particular accouration of bookkeep	5 ting operations, ng, description
This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The monitoring and analysis of network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics Z,ZK 3	architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modific of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of management architecture.	Z,ZK e particular accouration of bookkeep	5 ting operations, ng, description
network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a source of information and data for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics Z,ZK 3	architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modific of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of managements in the course provides in Business Information systems.	Z,ZK particular accouration of bookkeep	5 ting operations, ng, description are base of
for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffic on a hardware and software level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics Z,ZK 3	architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modific of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of managements in the Indiana subjects in the Czech Republic. Principles of managements in the Indiana subjects in the Czech Republic in Business information systems. BI-HAM HW accelerated network traffic monitoring	Z,ZK e particular accouration of bookkeep gement accounting	5 ting operations, ng, description are base of
level and to develop their practical abilities in this field. BI-HMI History of Mathematics and Informatics Z,ZK 3	architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modific of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of managements in the ligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring.	Z,ZK e particular accouration of bookkeep gement accounting KZ The monitoring an	5 sting operations, ng, description are base of 4 d analysis of
	architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modific of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of managements in Business Inteligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as	Z,ZK e particular accour ation of bookkeep gement accounting KZ The monitoring an a source of inform	5 ting operations, ng, description are base of 4 d analysis of ation and data
	architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modific of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of managements in Business Inteligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The poals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network.	Z,ZK e particular accour ation of bookkeep gement accounting KZ The monitoring an a source of inform	5 ting operations, ng, description are base of 4 d analysis of ation and data
	architecture, that can be deployed to the cloud. BI-FMU Financial and Management Accounting The aim of the course is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the operations in accounts and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modific of economic operations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of managements Intelligence moduls in Business information systems. BI-HAM HW accelerated network traffic monitoring This course introduces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The network traffic are mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as for analysis). The goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network level and to develop their practical abilities in this field.	Z,ZK e particular accour ation of bookkeep gement accounting KZ The monitoring an a source of inform traffic on a hardwa	5 ting operations, ng, description are base of 4 d analysis of lation and data re and software

BI-ARD Interactive applications on Arduino The subject is desirable for students of first grade of bash less that yet in the subject is desirable and the students of first grade of bash less that yet in the subject is desirable and the subject in the subject in the subject is desirable and the subject in	KZ	4
The subject is designed for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple app kits and control varied peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedde		
not only on display of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore	•	
Software Engineering students.		
NI-IAM Internet and Multimedia	Z,ZK	4
The NI-IAM course is focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes a	cquisition of AV sig	gnals (input),
presentation of AV signals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practi	cal use case scena	arios of real-time
audiovisual transmissions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the	effect of various co	omponents on
the quality and latency of AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording	ng the scene up to	the presentation
for audience.		
BIE-CSI Introduction to Computer Science	Z	2
This is an introductory class on Elementary Computer Science for broad audiences: bachelor students in computer science, students majoring in oth		-
science, high-school students, anybody with a background in basic math and the desire to understand the absolute basics of computer science. The	-	
and relate basic principles of computer science for students to understand, early on, what computer science is, why things such as high-level progra		
done the way they are, and even how, on a basic yet representative and practically relevant level. After taking the class, students are able to answer	•	•
questions but also questions about themselves such as which courses to take next and which books to follow up with, ideally realizing if they are int than expected, or even less than before.	erestea in compute	er science more
	7 71/	2
FITE-EHD Introduction to European Economic History The course introduces a colorion of the most from the European economic history. It gives the student basis knowledge shout forming of the global.	Z,ZK	3
The course introduces a selection of themes from the European economic history. It gives the student basic knowledge about forming of the global of the key periods in history. As European countries have been dominant actors in this process it focuses predominantly on their roles in the economic history.		
area of Roman Empire to fragmentation of the Middle Ages, from destruction of WWII to the current affairs, the development of modern financial ins	•	•
does not cover detailed economic history of particular European countries but rather the impact of trade and role of particular events, institutions an	•	
meetings will consist of a mixture of lecture and discussion.	.u o.gaaoo	o.o.y. O.aoo
BIE-IMA2 Introduction to Mathematics 2	Z	2
Students refresh and extend knowledge of elementary functions and their properties. Students understand basic mathematical principles and they a	1	-
examples.		
BI-CS2 C# language and data access	KZ	4
The C# language and data access course objective is to introduce students several data access technologies - database, XML, NoSQL - on the Mid	1 1	•
get to know objects used to retrieve data - Connection, Command, Data Reader and DataAdapter v ADO.NET. Next, they will learn to use current te	•	
of features for querying and updating data, integrated directly with the .NET platform languages, which enable LINQ use with Objects, XML and SQ	-	
and LINQ to SQL). Another objective is the Entity Framework - an object-relational mapper that enables .NET developers to work with relational data	· ·	
(ORM). This part of the course introduces Code First, Database First, Model First approaches. The students will also get to know the Conceptual Mi	odel, Storage Mod	el and Mapping
(XML description).		
BI-CS3 Language C# - design of web applications	KZ	4
The students will be introduced to current technologies in web application development on the .NET platform. They will acquire a comprehensive overvi	iew of the developn	nent possibilities
on thisplatform. They will learn to create WebAPI and to use it by client programs.		
BI-SQL.1 Language SQL, advanced	KZ	4
Module is based on knowledge obtained in BI-DBS. Students become familiar with advanced relational and non-relational features of SQL language.	In particular stored	program unites,
triggers, recursive queries, OLAP support, object-relational constructions. Part of the course is dedicated to practical database optimization from the period of the course is dedicated to practical database optimization from the period of the course is dedicated to practical database optimization from the period of the course is dedicated to practical database optimization from the period of the course is dedicated to practical database optimization from the period of the course is dedicated to practical database optimization from the period of the course is dedicated to practical database optimization from the period of the course is dedicated to practical database optimization from the period of the course is dedicated to practical database optimization from the period of	oint of view of speci	alized database
structures like indexes, clusters, index-organized tables, and materialized views. as well as from the point of view query optimization. Execution plan	n and possibilities o	of its. changes
will be discussed. Lectures will usually discuss SQL standard, but many features will be demonstrated on Oracle DBMS. Seminars are based on Or	acle DBMS and pa	rtially on
PostgreSQL.		
BI-QAP Quantum algorithms and programming	KZ	5
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic	cs, on which quanti	um technologies
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software developed.	cs, on which quanti lopment kit Qiskit,	um technologies which is based
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V	cs, on which quanti lopment kit Qiskit,	um technologies which is based
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed.	cs, on which quanti lopment kit Qiskit, MM and experienc	um technologies which is based e with Python
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab	cs, on which quant lopment kit Qiskit, MM and experienc	um technologies which is based e with Python
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is	cs, on which quant lopment kit Qiskit, MM and experienc KZ s put on the effecti	um technologies which is based e with Python 5 we use of the
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms.	cs, on which quant lopment kit Qiskit, MM and experienc KZ s put on the effecti	um technologies which is based e with Python 5 we use of the
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis).	cs, on which quant lopment kit Qiskit, MM and experienc KZ s put on the effecti , and analyses of the	um technologies which is based e with Python 5 we use of the heir properties.
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security	cs, on which quant lopment kit Qiskit, MM and experienc KZ s put on the effecti , and analyses of the	um technologies which is based e with Python 5 ve use of the heir properties.
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop	cs, on which quant lopment kit Qiskit, MM and experienc KZ s put on the effecti , and analyses of the	um technologies which is based e with Python 5 ve use of the heir properties.
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security.	cs, on which quantilopment kit Qiskit, MM and experienc KZ s put on the effectit, and analyses of tl Z,ZK pers. Students of th	um technologies which is based e with Python 5 we use of the heir properties. 5 his course can
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology	cs, on which quantilopment kit Qiskit, MM and experienc KZ s put on the effectit, and analyses of tl Z,ZK pers. Students of th	um technologies which is based e with Python 5 we use of the heir properties. 5 his course can
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science	cs, on which quantilopment kit Qiskit, MM and experienc KZ s put on the effectir, and analyses of the Z,ZK pers. Students of the ZK Z,ZK	um technologies which is based e with Python 5 we use of the heir properties. 5 his course can
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continuous lattices, Scott topology. Procedures as continuous mappings. The Scott	cs, on which quantilopment kit Qiskit, MM and experienc KZ s put on the effectir, and analyses of the Z,ZK pers. Students of the ZK Z,ZK	um technologies which is based e with Python 5 we use of the heir properties. 5 his course can
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continous lattices, Scott topology. Procedures as continuous mappings. The Scot Introduction to category theory.	cs, on which quantilopment kit Qiskit, MM and experience KZ s put on the effectir, and analyses of the Z,ZK pers. Students of the ZK Z,ZK ott model of lambda	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus.
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continuous lattices, Scott topology. Procedures as continuous mappings. The Scot Introduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices	cs, on which quantilopment kit Qiskit, MM and experience KZ s put on the effectif, and analyses of the Z,ZK pers. Students of the Z,ZK of the model of lambda Z,ZK	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus.
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continuous lattices, Scott topology. Procedures as continuous mappings. The Scotnitroduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices The course is focused on methods for interfacing of peripheral devices. Interfacing of real peripheral devices is focused on techniques based on University of the semantic	cs, on which quantilopment kit Qiskit, MM and experience KZ s put on the effectir, and analyses of the Z,ZK pers. Students of the ZK Z,ZK off model of lambdate Z,ZK versal serial bus (U	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus. 5 SB). The course
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continous lattices, Scott topology. Procedures as continuous mappings. The Scotn Introduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices The course is focused on methods for interfacing of peripheral devices. Interfacing of real peripheral devices is focused on techniques based on Univincludes both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of	cs, on which quantilopment kit Qiskit, MM and experience KZ s put on the effectir, and analyses of the Z,ZK pers. Students of the ZK Z,ZK off model of lambdate Z,ZK versal serial bus (U	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus. 5 SB). The course
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develon Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continous lattices, Scott topology. Procedures as continuous mappings. The Scot Introduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices. Interfacing of real peripheral devices is focused on techniques based on Univincludes both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of drivers, simple application development, and APIs of selected devices.	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effecting, and analyses of the Z,ZK pers. Students of the Z,ZK of the model of lambdate to the Z,ZK versal serial bus (UUSB devices, Linus	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continuous lattices, Scott topology. Procedures as continuous mappings. The Scott Introduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices. The course is focused on methods for interfacing of peripheral devices. Interfacing of real peripheral devices is focused on techniques based on Univincludes both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of drivers, simple application development, and APIs of selected devices. BI-MIT Mikrotik technologies	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effective, and analyses of the Z,ZK pers. Students of the Z,ZK of the model of lambda kersal serial bus (UUSB devices, Linu:	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continuous lattices, Scott topology. Procedures as continuous mappings. The Scotntroduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices. Interfacing of real peripheral devices is focused on techniques based on Universe, simple application development, and APIs of selected devices. BI-MIT Mikrotik technologies The main motivation of the subject stands in the introduction of the RouterOS operating system and some network Mikrotik technologies which are	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effective, and analyses of the Z,ZK pers. Students of the Z,ZK of the model of lambdate to the Z,ZK were all serial bus (UUSB devices, Linus KZ commonly used by	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows 3 of the small and
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develous their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continous lattices, Scott topology. Procedures as continuous mappings. The Scotntroduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices. The course is focused on methods for interfacing of peripheral devices. Interfacing of real peripheral devices is focused on techniques based on Univincludes both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of drivers, simple application development, and APIs of selected devices. BI-MIT Mikrotik technologies The main motivation of the subject stands in t	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effective, and analyses of the Z,ZK pers. Students of the Z,ZK ott model of lambdate X,ZK versal serial bus (UUSB devices, Linux KZ commonly used by e metallic, optical of lambdate to the common the common that is the common that is the common to the common that is the common that i	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows 3 the small and or wireless links
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-Wight be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modelling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continous lattices, Scott topology. Procedures as continuous mappings. The Scotntroduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices The course is focused on methods for interfacing peripheral devices. Interduction to category theory. BI-MIT Mikrotik technologies The main motivation of the subject stands in the introduction of the RouterOS operating system and some network Mikrotik technologies which are middle internet service providers (ISPs). The students learn how to use and create the architectures of the network solutions which are based on than how to admini	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effective, and analyses of the Z,ZK pers. Students of the Z,ZK ott model of lambdate X,ZK versal serial bus (UUSB devices, Linux KZ commonly used by e metallic, optical of lambdate to the common the common that is the common that is the common to the common that is the common that i	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows 3 the small and or wireless links
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continous lattices, Scott topology. Procedures as continuous mappings. The Scotntroduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices. Interfacing of real peripheral devices is focused on techniques based on Univincludes both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of drivers, simple application development, and APIs of selected devices. BI-MIT Mikrotik technologies The main motivation of the subject stands in the introduction of the RouterOS operating system and some network Mikrotik techno	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effective, and analyses of the Z,ZK pers. Students of the Z,ZK of the model of lambda cersal serial bus (UUSB devices, Linux KZ commonly used by a metallic, optical cer networks conception.	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows 3 the small and or wireless links ots like protocols
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. No previous knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develor use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continuous lattices, Scott topology. Procedures as continuous mappings. The Scot Introduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices Interfacing of real peripheral devices is focused on techniques based on Univinculates both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of drivers, simple application development, and APIs of selected devices. BI-MIT Mikrotik technologies Mikrotik technologies which are middle internet service providers (ISPs). The students learn how to use a	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effective, and analyses of the Z,ZK pers. Students of the	um technologies which is based e with Python 5 we use of the heir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows 7 the small and or wireless links ots like protocols
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. No previous knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develor use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continuous lattices, Scott topology. Procedures as continuous mappings. The Scotlintroduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices The course is focused on methods for interfacing of peripheral devices. Interfacing of real peripheral devices is focused on techniques based on Univincludes both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of drivers, simple application development, and APIs of selected devices. BI-MIT Mikrotik technologies The main motivation of the s	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effective, and analyses of the Z,ZK pers. Students of the	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows 3 of the small and or wireless links ots like protocols 4 tural abstraction
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software devel on Python language. No previous knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develor use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continuous lattices, Scott topology. Procedures as continuous mappings. The Scot Introduction to category theory. BI-MPP.21 Methods of interfacing peripheral devices Interfacing of real peripheral devices is focused on techniques based on Univinculates both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of drivers, simple application development, and APIs of selected devices. BI-MIT Mikrotik technologies Mikrotik technologies which are middle internet service providers (ISPs). The students learn how to use a	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effective, and analyses of the Z,ZK pers. Students of the	um technologies which is based e with Python 5 we use of the neir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows 3 the small and or wireless links ots like protocols 4 tural abstraction implementation
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanica are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develop Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develop use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NII-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continous lattices, Scott topology. Procedures as continuous mappings. The Scotntroduction to category theory. BI-MP.21 Methods of interfacing peripheral devices in the context of human-centered security includes both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of drivers, simple application development, and APIs of selected devices. BI-MIT Mikrotik technologies The main motivation of the subject stands in the introduction of the RouterOS operating system and some network Mikrotik technologies which are middle i	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effective, and analyses of the Z,ZK pers. Students of the	um technologies which is based e with Python 5 we use of the heir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows 3 the small and or wireless links ots like protocols 4 tural abstraction implementation of interest. In
Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanic are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software develop Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-V might be an advantage. No previous knowledge of physics is assumed. NI-LSM Statistical Modelling Lab The subject is oriented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is available information and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms. At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesis). BI-HAS Human Aspects in Cryptography and Security This course is for students interested not only in technical scope of computer science, but also in making products usable - for users and for develous their gained knowledge to design, plan and analyse their own projects in the context of human-centered security. NI-MPL Managerial Psychology NI-MSI Mathematical Structures in Computer Science Mathematical semantics of programming languages. Data types as continous lattices, Scott topology. Procedures as continuous mappings. The Scotthroduction to category theory. BI-MPP.1 Methods of interfacing peripheral devices The course is focused on methods for interfacing of peripheral devices. BI-MPP.21 Methods of interfacing of peripheral devices interfacing of real peripheral devices is focused on techniques based on Univincludes both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of direvers, simple application development, and APIs of selected devices. BI-MIT Mikrotik tec	cs, on which quantilopment kit Qiskit, MM and experience KZ sput on the effective, and analyses of the Z,ZK pers. Students of lambda to the commonly used by the metallic, optical of the commonly used by the commonly	um technologies which is based e with Python 5 we use of the heir properties. 5 his course can 2 4 a calculus. 5 SB). The course x and Windows 3 the small and or wireless links ots like protocols 4 tural abstraction implementation of interest. In projects and OO

BI-MVT.21 Modern Visualisation Technologies	Z,ZK	5			
The goal of the course is to give an overview of modern visualization technologies and their principles, namely technologies related to virtual and an					
high resolution displays (e.g., SAGE and video mapping) and their applications in practice. Several lectures deal with the content creation for the mentioned technologies, namely fractal and procedural visualization, scientific data visualization, and 3D model scanning.					
BI-MMP Multimedia team project	KZ	4			
This course is presented in Czech.	1				
BI-ORL Operations Research and Linear Programming	KZ	5			
The subject aims to introduce students to the issues of operational research and primarily to the practical application of linear programming as a fun	· ·	ation technique.			
Operational research primarily focuses on the use of engineering methods (with a mathematical background) to solve practical problems (such as n NI-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	1 '	•			
increase the variability of peripheral subsystems requiring specific software drivers. This course is an advanced course in the Linux driver developm					
course provides knowledge of Linux operating system architecture, principles of development of various types drivers, including practical experience					
BI-ACM Programming Practices 1	KZ	5			
This is a selective course for preparing talented student for representation in international programming contests. PLACM2 Programming P	KZ	5			
BI-ACM2 Programming Practices 2 This is a selective course for preparing talented student for representation in international programming contests.	KZ	ວ			
BI-ACM3 Programming Practices 3 This is a selective course for preparing talented student for representation in international programming contests.	KZ	5			
BI-ACM4 Programming Practices 4	KZ	5			
This is a selective course for preparing talented student for representation in international programming contests.	112	3			
BI-AND.21 Programming for the Android Operating System	KZ	4			
This course is presented in Czech.	1				
BI-CS1 Programming in C#	KZ	4			
The goal of the course is to introduce .NET Framework as a multi-language development platform. Then, programming language C#, its fundamental transfer of the course is to introduce .NET Framework as a multi-language development platform. Then, programming language C#, its fundamental transfer of the course is to introduce .NET Framework as a multi-language development platform. Then, programming language C#, its fundamental transfer of the course is to introduce .NET Framework as a multi-language development platform.					
operators, arrays, loops, definitions and calls of functions will be discussed. Attention is focused on the object oriented programming in C# - class deconstructors, methods, properties, static members, Garbage Collector, inheritance and polymorphism, collections, delegates, and generics. Debugg					
well as work with files are emphasized.	Jing and exception	processing, as			
BI-PJV Programming in Java	Z,ZK	4			
This course is presented in Czech. However, there is an English variant in the program Informatics (B1801 / 4753).	,				
BI-PJS.1 JavaScript Programming	KZ	4			
Main goal of the course is an introduction to Javascript programming. Students will learn also best practices and will use tool that eases developme					
recommended for students of BIE-WSI-WI.2015 branch of study and do not have required knowledge to register for BIE-TWA.1. They should register of study.	for this course in th	eir 4th semester			
BI-KOT Programing in Kotlin	Z,ZK	4			
Kotlin is a modern, statically-styled object-functional language that exploits the extensive Java language ecosystem while delivering a number of ad	1				
The language is fully Java compliant and allows for mixed projects that preserve existing parts written in Java, and continue with the development of					
with minimum of boiler-plate code. Last but not least, Kotlin is suitable for designing of DSLs (Domain-Specific Languages).	,				
NI-PSL Programming in Scala	Z,ZK	4			
The course introduces the modern programming language Scala which exploits object-functional paradigm. Scala comprises advance language fea advance standard library. Scala enables to use of applications functional patterns e.g. H-List, Monads, etc. Scala is used by many powerful frameworks					
Scalaz, etc.	and libraries e.g.	riay, Cassariura,			
BI-PMA Programming in Mathematica	Z,ZK	4			
Students will be working with modern technical and scientific software. Students will learn how to use different programming styles (functional progr	1				
etc.), how to create dynamic interactive applications and visualisations, data processing and presentations.					
BI-PHP.1 Programing in PHP	KZ	4			
The course is taught in Czech. Main goal of the course is an introduction to PHP - language and technology. Students will learn also best practices					
development in PHP. The course is recommended for students of BIE-WSI-WI.2015 branch of study and do not have required knowledge to register for this course in their 3rd semester of study.	TOT BIE-TWA.T. II	ney snould			
BI-PS2 Programming in shell 2	Z,ZK	4			
Students gain a general overview of available scripting languages, their syntax, semantics, programming style, data structures, pros and cons. In ac	1 '				
into shell and some other particular scripting languages and will get practical experience with shell script programming.					
NI-PDD 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 information from various data for further processing and analysis.		• •			
time series, etc., and learn the skills to apply these theoretical concepts to solve specific problems in individual projects - e.g., extraction of characters	eristics from image	s or from web			
BI-PKM Introduction to mathematics	Z	4			
BI-PKM Introduction to mathematics This course is presented in Czech.		4			
NI-REV Reverse Engineering	Z,ZK	5			
Students will get acquainted with the essentials of reverse engineering of computer software. They will learn how processes start and what happens	1 '				
is called. Students will understand how executable files are organized and how they interact with 3rd party libraries. Another part of the course is de					
applications written in C++. Students will also understand principles of disassemblers and obfuscation techniques. A part of the course will also be a					
debuggers and debugging work and which methods can be used to detect it. One of the lectures will be dedicated to the latest trends on the compute the course is on the seminars, where students will solve practically oriented tasks from the real world.	itei maiware scene	e. The locus of			
BI-SCE1 Computer Engineering Seminar 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 resistan	1	· ·			
are approached individually within the subject. Each student or group of students solves some interesting topic with the selected supervisor. Part of	=				
articles and other professional literature and/or work in K N laboratories. The capacity of the subject is limited by the possibilities of the seminar teal	chers. The topics	are new for each			
semester.					

BI-SCE2 Computer Engineering Seminar 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 are approached individually within the subject. Each student or group of students solves some interesting topic with the selected supervisor. Part of		
articles and other professional literature and/or work in K N laboratories. The capacity of the subject is limited by the possibilities of the seminar teachers.	•	
semester.	·	
BI-ST1 Network Technology 1	Z	3
The subject is oriented to providing the students basic information and practical skills from the area of digital and IP networks. The subject is acredite	ed under the Cisc	o Netacad -
CCNA1 - R&S Introduction to Networks.		0
BI-ST2 Network Technology 2 This course is presented in Czech.	Z	3
BI-ST3 Network Technology 3	Z	3
Students will further enhance their knowledge acquired from previous BI-ST1 and BI-ST2 courses. Principles of routing and switching presented during	. – .	_
get further extended in the course. Students will be able to start fine-tune protocols' settings to gain certain advantages like increased efficiency, pre	dictability, extensi	on beyond a
simple topology, security, etc.		
BI-ST4 Network Technology 4	Z	3
Students will further enhance their knowledge already acquired from previous BI-ST1, BI-ST2, and BI-ST3 courses. Principles of routing and switchi BI-ST2 courses got further extended in BI-ST3. Students were able to start fine-tune protocols' settings to gain certain advantages like increased eff		-
beyond a simple topology, security, etc. This module teaches students to configure and fine-tune Wide Area Networks and to experience a complete	= =	=
Broadcast Multiple Access) which radically differs from well-known Ethernet (broadcast) type of networks. Students will also manage router and swit		-
recoveries, and emergency procedures. Also the security aspect is treated; students will learn possible intra- and inter-network attacks and the mitig	ation ways while r	maintaining the
network running.	7.71	
BI-SKJ.21 Scripting Languages Students gain a general overview of available scripting languages, their syntax, semantics, programming style, data structures, pros and cons. In ad-	Z,ZK	4
into shell and some other particular scripting languages and will get practical experience with shell script programming.	dition, they gain a	deeper msignt
BI-SOJ Machine Oriented Languages	Z.ZK	4
Students of the course will gain an ability to create their own programs in the assembly language of the most common PC platform focusing on optimal	, ,	
and efficient cooperation of software with hardware. Next, there will be discussed x86 specifics of the majority of OSes from the application point of vie	w linked to higher	level languages.
This knowledge will be used during reverse engineering, optimization, and evaluation of code security.		
FIT-SEP World Economy and Business	Z,ZK	4
This course is presented in Czech. The course introduces students of technical university to the international business. It does that predominantly by		
and key regions of world economy. Students get to know about different religions and cultures, necessary for doing business in diverse societies as well corruption and economic development, which are needed for the right investment decision. Seminars help to improve on the knowledge in the form of		
readings. It is advised to take bachelor level of this course BIE-SEP as a prerequisite.	31 010000010110 200	ou on maividual
BI-SEP World Economy and Business	Z,ZK	4
This course is presented in Czech. The course introduces students of technical university to the international business. It does that predominantly by	comparing indivi	dual 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		
corruption and economic development, which are needed for the right investment decision. Seminars help to improve on the knowledge in the form of readings. It is advised to take bachelor level of this course BIE-SEP as a prerequisite.	of discussions bas	sed on individual
NI-SYP Parsing and Compilers	Z,ZK	5
The module builds upon the knowledge of fundamentals of automata theory, formal language and formal translation theories. Students gain knowledge of		_
of LR parsing and are introduced to special applications of parsers, such as incremental and parallel parsing.		• • •
BI-GIT Version control system GIT	KZ	2
Students will be introduced to basic principles of version control systems. These principles will be then shown on DCVS Git both theoretically and pr		articular system
even the implementation details will be shown. Students will be challenged to use Git as users, project managers, team leaders as well as Git server		
BIE-SEG Systems Engineering This is an introductory class on systems engineering for bachelor students in computer science. The goal of the class is to introduce basic principles	Z Z	0
to understand processor and memory virtualization. Seeing and actually understanding virtualization is the overarching theme of the class. After taking the content of the class of the class of the class of the class of the class. After taking the content of the class of the cla	,	
understand the difference between processes and threads as well as emulation and virtualization, what virtual memory is and how it works, what co	-	
parallelism, and how processes and threads synchronize efficiently to overcome concurrency for communication.		
TV2K1 Physical Education 2	Z	1
BI-TS1 Theoretical Seminar 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 seminar is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classical seminar is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classical seminar is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classical seminar is a seminar in the contemporary theoretical computer science. It is mostly a classical seminar is a seminar in the contemporary theoretical computer science. It is mostly a classical seminar is a seminar in the contemporary theoretical computer science in the contemporary theoretical computer science.		•
are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is other scholarly literature. The capacity is limited by the the potentials of the teachers of the seminar.	s a work with scie	ntific papers and
BI-TS2 Theoretical Seminar 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 class	. – .	· ·
are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is		•
other scholarly literature. The capacity is limited by the the potentials of the teachers of the seminar.		
BI-TS3 Theoretical Seminar 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 class		•
are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is other scholarly literature. The capacity is limited by the the potentials of the teachers of the seminar.	s a work with scie	ntific papers and
BI-TS4 Theoretical Seminar 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 class	. – .	· ·
are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is		•
other scholarly literature. The capacity is limited by the the potentials of the teachers of the seminar.		
BI-TDA Test driven architecture	KZ	4
The course is focused on practical examples of how to develop, test, and deploy software with tools like GitLab, Docker, Kubernetes, and more that a world. This course has a strong connection on courses like BI(E)-SI1 and BI(E)-SI2. The main goal of this course is to learn by examples that occur is		
NI-TSP Testing and Reliability	Z,ZK	5
Students will gain knowledge about circuit testing and about methods for increasing reliability and security. They will get practical skills to be able to		_
the intuitive path sensitization and to use an ATPG for automatic test generation. They will be able to design easily testable circuits and systems with		-
will be able to compute, analyze, and control the reliability and availability of the designed circuits.		

BI-QUA (Quality Assurance	KZ	4
This course introduces st	udents to the fundamentals of testing and quality management. Students will learn what the role of a tester is in the context	of different types	of software
development and will exp	erience hands-on application testing using both manual and automated testing. At the end of the semester, the student sho	uld be prepared to	perform a test
analysis, design a set of t	est scenarios, prepare test data, automate an appropriate portion of the scenarios, and prepare a report on the bugs found	in the product un	der test.
FI-TOP	Academic writing	Z	2
	t and required part of research activity. It is not only about obtaining research results but also about applying them in the for	•	-
	I for students not only in their own publishing activities but also in the preparation of a bachelor's or master's thesis. In the control of		
	hat parts such an article should have, and how the peer review process works. Students will also try their hand at presenting		· I
on the availability of enrol	will be taught in blocks, with one lecture at the beginning of the semester and one practicum in the middle of the semester.	Dates will be dete	rmined based
		7 71/	
	Compiler Construction	Z,ZK	5
-	iss on compiler construction for bachelor students in computer science. The goal of the class is to introduce basic principles d implementation of programming languages. Seeing and actually understanding self-compilation is the overarching theme	· ·	students to
			4
	TeX and Typography in Czech. This course gives basics of programming in TeX (plain TeX, ConTeXt, LaTeX, OpTeX, LuaTeX). Te second part of t	Z,ZK	
rules.	in Ozeon. This course gives basics of programming in text (plain text, Context, Latex, Optex, Luatex). Te second part of t	ne course rocuses	on typographic
	ntroduction to European Economic History	Z,ZK	3
· ·	in Czech. However, there is an English variant in the program Informatics (B1801 / 4753).	2,21	3
	Cultural and Social Anthropology	ZK	2
1	e aims to acquaint students with the basics of social and cultural anthropology as a scientific discipline dealing with the dive		
	from our "exotic" cultures (topics: kinship, religion, social exclusion, migration, globalization, , material culture, language, he	=	· ·
shown. The course is pre-		anti, motory, dodt	1, 010, Will 50
<u> </u>	ntroduction to Linux	Z	2
	with the basics of the Linux operating system using e-learning form. They learn to work with the command line and becom	=	
	like system. Topics can be studied first theoretically and then practically verified in a virtual machine (terminal).	o lannia man bao	
	ntroduction to Optical Networks	Z,ZK	4
I	ew of optical networking technology with the emphasis on practical utilization in Internet and in network infrastructures, on p	, ,	
-	ogy and on their solutions. The course will include the history of optical communications, an overview of passive componer	-	
· ·	and others), and an overview of active components (optical switches and amplifiers, high-speed coherent transmission sy		-
·	s presented at premium research conferences, such as ECOC or OFC. Attention will also be paid to new applications, such	,	
ultrastable frequency tran	sfer, or sensor networks. The labs will focus on real work with optical components and on measurement of their parameters	s. Students will sol	ve real tasks
from practice.			
NI-VCC '	/irtualization and Cloud Computing	Z,ZK	5
Students will gain knowle	dge of architectures of large computer systems that are used in data centers and computer infrastructure of companies and	d organizations. Th	ney will get
acquainted with virtualiza	tion principles, tools and technologies that serve to facilitate and automate configuration, testing and monitoring, and to effi	ciently operate an	d optimize the
performance parameters	of modern computer systems. Theoretically and practically, they will get acquainted with containerization as the most effect	ive technology tod	ay for the
-	computer systems and with specific technologies of cloud systems. Finally, they will learn the principles and gain practical skil	Is in the use of mo	dern integration
	continuous integration and development).		
	/irtual game worlds	ZK	4
	s to create a complex virtual world. The course is a continuation of basic graphical courses (MGA, PGR, BLE,). This current s	_	
•	ory of game design, principles of writing dialogues and characters in order to create a functional and complex virtual world.	The course can b	e followed by
	ne task of converting scenes and their dynamics into a fully virtual environment suitable for VR devices.	1/7	
	/irtual reality I	KZ	4
	ality (VR), virtual reality operating system and virtual reality creation. Another objective is to meet the rules and requirement e ways of teaching using virtual reality technologies and interactive activities in educational virtual 3D worlds. It improves o		
and shared social activitie		omputational think	ing, empany
	/irtual reality II	KZ	3
· ·	ا e Virtual Reality I. The new course focuses on collaborative telepresence, spatial computing and social life of avatars. The o		_
	gamification in various social metaverse and desktop engines.	bjective is to deve	iop applications
	Selected Applications of Combinatorics	Z	3
I	uce students in an accessible form to various branches of theoretical computer science and combinatorics. In contrast to th	1	
	theory. Together, we will first refresh the basic knowledge needed to design and analyze algorithms and introduce some basic knowledge to the basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms and introduce some basic knowledge needed to design and analyze algorithms are also all the source of the source		
	on of students, we will focus on solving popular and easily formulated problems from various areas of (not only theoretical)		
	solved will include, for example, graph theory, combinatorial and algorithmic game theory, approximation algorithms, optim		
•	tions to the studied problems with a special focus on the effective use of existing tools.		
BI-VMM	Selected Mathematical Methods	Z,ZK	4
	n introduction to the analysis of complex functions of a complex variable. Next, we present the Lebesgue integral. We then	, ,	
-			
the linear programming p	troduce and study the properties of the Discrete Fourier Transform (DFT) and its fast implementation (FFT). We discuss the	wavelet transform	
	troduce and study the properties of the Discrete Fourier Transform (DFT) and its fast implementation (FFT). We discuss the roblem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples.	wavelet transform	
NI-VYC 0			4
l l	roblem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples.	wavelet transform	4
Classical theory of recurs	roblem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples. Computability ive functions and effective computability.		4
Classical theory of recurs	roblem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples. Computability	Z,ZK Z	10
Classical theory of recurs BI-ZS10 I Each student can once w	roblem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples. Computability ive functions and effective computability. Bachelor internship abroad for 10 credits	Z,ZK Z	10 n. Before the
Classical theory of recurs BI-ZS10 I Each student can once w internship the Dean of the	roblem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples. Computability ive functions and effective computability. Bachelor internship abroad for 10 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or	Z,ZK Z research institution sional content and	10 n. Before the extent of the
Classical theory of recurs BI-ZS10 I Each student can once w internship the Dean of the internship. Auxiliary cours employment with a foreign	roblem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples. Computability ive functions and effective computability. Bachelor internship abroad for 10 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or a FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profess es BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided.	Z,ZK Z research institution sional content and correspond to 4 w	10 n. Before the extent of the eeks of full-time
Classical theory of recurs BI-ZS10 I Each student can once w internship the Dean of the internship. Auxiliary cours employment with a foreign exceeds the academic ye	roblem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples. Computability ive functions and effective computability. Bachelor internship abroad for 10 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or is FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profess es BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided ar's dead-line.	Z,ZK Z research institution sional content and correspond to 4 w I into two subjects	10 n. Before the extent of the eeks of full-time if the internship
Classical theory of recurs BI-ZS10 I Each student can once w internship the Dean of the internship. Auxiliary cours employment with a foreign exceeds the academic ye BI-ZS20 I	roblem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples. Computability ive functions and effective computability. Bachelor internship abroad for 10 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or a FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profess as BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided ar's dead-line. Bachelor internship abroad for 20 credits	Z,ZK Z research institution sional content and correspond to 4 w I into two subjects	10 n. Before the extent of the eeks of full-time if the internship
Classical theory of recurs BI-ZS10 I Each student can once we internship the Dean of the internship. Auxiliary cours employment with a foreign exceeds the academic ye BI-ZS20 I Each student can once we	Computability ive functions and effective computability. Bachelor internship abroad for 10 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided ar's dead-line. Bachelor internship abroad for 20 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided ar's dead-line. Bachelor internship abroad for 20 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or	Z,ZK Z research institution sional content and correspond to 4 w I into two subjects Z research institution	10 n. Before the extent of the eeks of full-time if the internship 20 n. Before the
Classical theory of recurs BI-ZS10 I Each student can once we internship the Dean of the internship. Auxiliary cours employment with a foreign exceeds the academic ye BI-ZS20 I Each student can once we internship the Dean of the	roblem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples. Computability ive functions and effective computability. Bachelor internship abroad for 10 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or in FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the professional sets BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided ar's dead-line. Bachelor internship abroad for 20 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or a FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the professional content.	Z,ZK Z research institution sional content and correspond to 4 w I into two subjects Z research institution sional content and	10 n. Before the extent of the eeks of full-time if the internship 20 n. Before the extent of the
Classical theory of recurs BI-ZS10 I Each student can once we internship the Dean of the internship. Auxiliary cours employment with a foreign exceeds the academic ye EI-ZS20 I Each student can once we internship the Dean of the internship. Auxiliary cours	Computability ive functions and effective computability. Bachelor internship abroad for 10 credits ithin his / her bachelor's study affairs assesses the professional content. The student must provide evidence of the profess es BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided ar's dead-line. Bachelor internship abroad for 20 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or a FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the professional series of the professional content. The student must provide evidence of the professional BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits	Z,ZK Z research institution sional content and correspond to 4 w I into two subjects Z research institution sional content and correspond to 4 w	10 n. Before the extent of the eeks of full-time if the internship 20 n. Before the extent of the eeks of full-time
Classical theory of recurs BI-ZS10 I Each student can once we internship the Dean of the internship. Auxiliary cours employment with a foreign exceeds the academic ye Each student can once we internship the Dean of the internship. Auxiliary cours employment with a foreign end on the course employment with a foreign employment with a foreign employment with a foreign end on the course employment with a foreign employment em	Computability ive functions and effective computability. Bachelor internship abroad for 10 credits ithin his / her bachelor's study affairs assesses the professional content. The student must provide evidence of the profess es BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided ar's dead-line. Bachelor internship abroad for 20 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or a FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the professions BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship in 30 credits. This amount can be divided to the institution. The maximum number of credits a student can earn for one internship in 30 credits. This amount can be divided to the institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided to the divided to the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided to the evidence and evaluation of the internship in IS KOS. Every 10 credits in the internship in IS KOS.	Z,ZK Z research institution sional content and correspond to 4 w I into two subjects Z research institution sional content and correspond to 4 w	10 n. Before the extent of the eeks of full-time if the internship 20 n. Before the extent of the eeks of full-time
Classical theory of recurs BI-ZS10 I Each student can once we internship the Dean of the internship. Auxiliary cours employment with a foreign exceeds the academic ye EI-ZS20 I Each student can once we internship the Dean of the internship. Auxiliary cours	Computability ive functions and effective computability. Bachelor internship abroad for 10 credits ithin his / her bachelor's study affairs assesses the professional content. The student must provide evidence of the profess es BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided ar's dead-line. Bachelor internship abroad for 20 credits ithin his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or a FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the professions BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship in 30 credits. This amount can be divided to the institution. The maximum number of credits a student can earn for one internship in 30 credits. This amount can be divided to the institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided to the divided to the evidence and evaluation of the internship in IS KOS. Every 10 credits in institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided to the evidence and evaluation of the internship in IS KOS. Every 10 credits in the internship in IS KOS.	Z,ZK Z research institution sional content and correspond to 4 w I into two subjects Z research institution sional content and correspond to 4 w	10 n. Before the extent of the eeks of full-time if the internship 20 n. Before the extent of the eeks of full-time

		1	
BI-ZS30	Bachelor internship abroad for 30 credits	Z	30
	e within his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or		
internship the Dean of	f the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profes	sional content and	d extent of the
	ourses BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits	•	
employment with a for	eign institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divide	d into two subjects	if the internship
exceeds the academic	c year's dead-line.		
BI-ZIVS	Intelligent Embedded System Fundamentals	KZ	4
Intelligent embedded	system fundamentals course is focused on high-level technology embedded systems integrating artificial intelligence. The aim	of the course is to	teach students
modern humanoid rob	ot control and development of applications in a graphical development environment. Lectures provide fundamentals of motion of	control, sensor rea	ding, application
interfaces, robot naviç	ation and development tools. In labs, students program a set of basic task by using the robot simulator and real hardware to g	et practical experi	ence with these
technologies.			
BI-ZPI	Process engineering	KZ	4
Students will learn fur	damentals of process engineering in this subject. Students will get necessary foundations for understanding formal principles	of process model	ing and they will
	damentals of process engineering in this subject. Students will get necessary foundations for understanding formal principles and notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of	•	
learn basics of the use		business processe	es using modern
learn basics of the use	ed notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of	business processe	es using modern
learn basics of the use CASE tools. The role	ed notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of process engineering for information systems development is discussed as well as its importance in the overall context of information.	business processe	es using modern
learn basics of the use CASE tools. The role an enterprise. BI-ZNF	ed notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of	business processormation and busi	es using modern ness strategy of
learn basics of the using CASE tools. The role an enterprise. BI-ZNF Students will gain the	ed notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of process engineering for information systems development is discussed as well as its importance in the overall context of information systems. PHP Framework Nette - basics	business processormation and busi	es using modern ness strategy of
learn basics of the using CASE tools. The role an enterprise. BI-ZNF Students will gain the	ed notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of of process engineering for information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information phenomena in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development in the overall context of information systems development development is discussed as well as its importance in the overall context of information systems development developm	business processormation and busi	es using modern ness strategy of
learn basics of the use CASE tools. The role an enterprise. BI-ZNF Students will gain the knowledge should ser	ed notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of of process engineering for information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development for information in the overall context of information and info	business processon and busi KZ h popular framewo	es using modern ness strategy of 3 ork. The resulting
learn basics of the use CASE tools. The role an enterprise. BI-ZNF Students will gain the knowledge should ser BI-IOS	ed notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of of process engineering for information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information systems development for information in the overall context of information and info	business processon and busi KZ h popular framewo	es using modern ness strategy of 3 ork. The resulting
learn basics of the use CASE tools. The role on enterprise. BI-ZNF Students will gain the knowledge should ser BI-IOS This course is present	ed notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of of process engineering for information systems development is discussed as well as its importance in the overall context of information systems development is discussed as well as its importance in the overall context of information of process engineering for information systems development is discussed as well as its importance in the overall context of information systems development. PHP Framework Nette - basics basics of PHP framework Nette. They will learn how to practically work with MVP architecture and various libraries of this Czecl version for the efficient creation of a web backend in PHP language. Fundamentals of iOS Application Development for iPhone and iPad ded in Czech. Introduction to Web and User Interfaces	business processon and busing KZ h popular framewo	es using modern ness strategy of 3 ork. The resulting

Code of the group: BI-PS-VO.21

Name of the group: Elective Vocational Courses for a Bachelor Specialization BI-PS.21, version 2021

Requirement credits in the group: Requirement courses in the group:

Credits in the group: 0 Note on the group:

	Name of the course / Name of the group of courses					
Code	(in case of groups of courses the list of codes of their members)	Completion	Credits	Scope	Semester	Role
	Tutors, authors and guarantors (gar.)					
BI-ADU.21	Unix Administration Zden k Muziká, Petr Zemánek, Miroslav Prágl Zden k Muziká Zden k Muziká (Gar.)	Z,ZK	5	2P+2C	L	V
BI-AWD.21	Web and Database Server Administration Michal Valenta, Lukáš Ba inka Lukáš Ba inka Michal Valenta (Gar.)	Z,ZK	5	2P+2C	Z	٧
BI-AG2.21	Algorithms and Graphs 2 Dušan Knop, Michal Opler, Ond ej Suchý, Tomáš Valla, Radek Hušek Ond ej Suchý Ond ej Suchý (Gar.)	Z,ZK	5	2P+2C	L	V
BI-ASB.21	Applied Network Security Yelena Trofimova, Ji í Dostál, Jakub Tetera, Michal Polák, Martin Šutovský, Martin Mandík Ji í Dostál Ji í Dostál (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-APS.21	Architectures of Computer Systems Michal Štepanovský, Pavel Tvrdík Michal Štepanovský Pavel Tvrdík (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-BEK.21	Secure Code Josef Kokeš Josef Kokeš (Gar.)	Z,ZK	5	2P+2C	L	V
BI-BIG.21	DB Technologies for Big Data Monika Borkovcová Monika Borkovcová (Gar.)	KZ	5	2P+2C	Z,L	٧
BI-EPP.21	Economic Business Processes David Buchtela David Buchtela Tomáš Evan (Gar.)	Z,ZK	5	2P+2C	L,Z	V
BI-EHA.21	Ethical Hacking Ji í Dostál, Martin Kolárik, Andrej Šimko Ji í Dostál Ji í Dostál (Gar.)	Z,ZK	5	2P+2C	L	V
BI-FBI.21	Financial Business Intelligence David Buchtela David Buchtela Petra Pavlí ková (Gar.)	Z,ZK	5	2P+2C	Z,L	٧
BI-HWB.21	Hardware Security Ji í Bu ek Ji í Bu ek Ji í Bu ek (Gar.)	Z,ZK	5	2P+2C	Z	٧
BI-JPO.21	Computer Units Pavel Kubalík Pavel Kubalík (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-KOM.21	Conceptual Modelling Robert Pergl, Marek B Iohoubek Robert Pergl Robert Pergl (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-LA2.21	Linear Algebra 2 Daniel Dombek, Lud k Kleprlík, Karel Klouda, Marta Nollová, Jakub Šístek Lud k Kleprlík Karel Klouda (Gar.)	Z,ZK	5	2P+2C	L	V
BI-LOG.21	Mathematical Logic Kate ina Trlifajová Kate ina Trlifajová (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-MPP.21	Methods of interfacing peripheral devices Miroslav Skrbek Miroslav Skrbek Miroslav Skrbek (Gar.)	Z,ZK	5	2P+2C	Z	٧

BI-MDF.21	Modern Data Formats Petr Pauš Petr Pauš (Gar.)	KZ	3	1P+1C	Z	V
FIT-ITI	Modern IT infrastructure Ivan Sime ek	Z,ZK	5	2P+1C	Z,L	V
BI-MVT.21	Modern Visualisation Technologies Ji í Chludil, Petr Pauš Petr Pauš (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-MGA.21	Multimedia and Graphics Applications Ji í Chludil, Lukáš Ba inka, Jan Buriánek, Šimon Tan v Lukáš Ba inka Ji í Chludil (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-OOP.21	Object-Oriented Programming Filip K ikava, Petr Máj, Filip íha Filip K ikava Filip K ikava (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-PGR.21	Computer graphics programming Petr Felkel, Jaroslav Sloup Jaroslav Sloup Petr Felkel (Gar.)	Z,ZK	5	2P+2C	L	V
BI-PRS.21	Practical Statistics Kamil Dedecius, Petr Novák Petr Novák Petr Novák (Gar.)	KZ	5	1P+2C	L	V
BI-PNO.21	Practical Digital Design Martin Novotný Martin Novotný (Gar.)	KZ	5	2P+2C	Z	V
BI-PAI.21	Law and Informatics Zden k Ku era, Št pánka Havlíková, Dominik Vítek, Martin Samek, Ji í Maršál, Michal Mat jka Št pánka Havlíková Zden k Ku era (Gar.)	ZK	5	2P+2C	L	V
BI-PJP.21	Programming Languages and Compilers Jan Janoušek, Tomáš Pecka Jan Janoušek (Gar.)	Z,ZK	5	2P+1C	L	V
BI-PPA.21	Programming Paradigms Jan Janoušek, Tomáš Pecka, Petr Máj, Tomáš Jakl Jan Janoušek Jan Janoušek (Gar.)	Z,ZK	5	2P+2R	Z	V
BI-PGA.21	Programming of Graphic Applications Ji i Chludil, Radek Richtr Radek Richtr Radek Richtr (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-PJS.21	JavaScript Programming Martin Kolárik, Nikita Mironov Monika Borkovcová Monika Borkovcová (Gar.)	KZ	5	3C	L	V
BI-PYT.21	Python Programming Martin Šlapák, Ji í Hanuš, Ond ej Bouchala, Mohamed Bettaz, Jan Šafa ík Martin Šlapák Martin Šlapák (Gar.)	KZ	5	3C	Z,L	V
BI-PRR.21	Project management David Pešek David Pešek Petra Pavlí ková (Gar.)	Z,ZK	5	2P+2C	Z,L	V
BI-SWI.21	Software Engineering Michal Valenta, Ji i Mlejnek, Zden k Rybola Zden k Rybola Michal Valenta (Gar.)	Z,ZK	5	2P+1C	L	V
BI-SP1.21	Team Software Project 1 Michal Valenta, Ji í Chludil, Ji í Mlejnek, Ji í Hunka, Zden k Rybola, Ji í Borský, Jan Matoušek, Radek Richtr, Marek Suchánek, Zden k Rybola Ji í Mlejnek (Gar.)	KZ	5	2C	L	V
BI-SP2.21	Team Software Project 2 Stanislav Kuznetsov, Michal Valenta, Ji í Chludil, Ji í Mlejnek, Ji í Hunka, Zden k Rybola, Ji í Borský, Jan Matoušek, Radek Richtr, Ji í Mlejnek Ji í Mlejnek (Gar.)	KZ	5	2C	Z	V
BI-SPS.21	Administration of Computer Networks and Services Jan Kubr, Libor Dostálek Pavel Tvrdík Libor Dostálek (Gar.)	Z,ZK	5	2P+2S	Z	V
BI-ML1.21	Machine Learning 1 Karel Klouda, Daniel Vašata Daniel Vašata (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-ML2.21	Machine Learning 2 Daniel Vašata Daniel Vašata (Gar.)	Z,ZK	5	2P+2C	L	V
BI-SVZ.21	Machine vision and image processing Marcel Ji ina, Jakub Novák, David Kramný, Justýna Frommová Jakub Novák Marcel Ji ina (Gar.)	Z,ZK	5	2P+2C	L,Z	V
BI-SRC.21	Real-time systems Hana Kubátová, Ji í Vysko il Jaroslav Borecký Hana Kubátová (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-TAB.21	Applications of Security in Technology Ji í Dostál, Jan B Iohoubek, Martin Kolárik, Martin Pozd na Ji í Dostál Ji í Dostál (Gar.)	Z,ZK	5	2P+2C	L	V
BI-TJV.21	Java Technology Stanislav Kuznetsov, Jan Blizni enko, Ji í Dan ek, Raian Samerkhanov Ji í Dan ek	Z,ZK	5	2P+2C	Z	V
BI-TIS.21	Information Systems Pavel Náplava Pavel Náplava (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-TUR.21	User Interface Design Jan Schmidt Jan Schmidt (Gar.)	Z,ZK	5	2P+2C	L	V
BI-TWA.21	Design of Web Applications David Bernhauer David Bernhauer (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-IDO.21	Introduction to DevOps Michal Valenta, Ji í Mlejnek, Tomáš Vondra, Zden k Rybola Tomáš Vondra Ji í Mlejnek (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-UKB.21	Introduction to Cybersecurity Ivana Trummová, Jan B Iohoubek, David Pokorný, Jakub Tetera, František Ková, Martin Mandík, Tomáš Lu ák David Pokorný Jan B Iohoubek (Gar.)	Z,ZK	5	3P+1C	Z	V
BI-VES.21	Embedded Systems Miroslav Skrbek Miroslav Skrbek (Gar.)	Z,ZK	5	2P+2C	L	V

BI-VDC.21	Virtualization and Data Centers Ji í Kašpar Ji í Kašpar Ji í Kašpar (Gar.)	Z,ZK	5	2P+2C	L	V
BI-VIZ.21	Data Visualization Magda Friedjungová Magda Friedjungová (Gar.)	KZ	5	3P	Z	V
BI-VPS.21	Selected Topics in Computer Networking Alexandru Moucha, Mohamed Bettaz Pavel Tvrdík Mohamed Bettaz (Gar.)	Z,ZK	5	2P+2C	L	V
BI-VWM.21	Searching the Web and Multimedia Databases Ji í Novák, Tomáš Skopal Ji í Novák Tomáš Skopal (Gar.)	Z,ZK	5	2P+1C	L	V
BI-FEM.21	Fundamentals of Economics Tomáš Evan Tomáš Evan (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-ZRS.21	Basics of System Control Kate ina Hyniová Kate ina Hyniová (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-ZSB.21	Basics of System Security Marián Svetlík, Martin Šutovský, Dominik Novák, Ladislav Marko Simona Forn sek Simona Forn sek (Gar.)	Z,ZK	5	2P+2C	Z	V
BI-ZUM.21	Artificial Intelligence Fundamentals Pavel Surynek Pavel Surynek (Gar.)	Z,ZK	5	2P+2C	L	V

Characteristics of the courses of this group of Study Plan: Code=BI-PS-VO.21 Name=Elective Vocational Courses for a Bachelor Specialization BI-PS.21, version 2021

Unix Administration

Students will learn the internal structure of the UNIX operating system, with the administration of its basic subsystems and with the security principles. They will understand the differences between user and administrator roles. They will get theoretical and practical knowledge of user management and administration, of users access rights, file systems, disk subsystems, processes, memory, network services and remote access, and in the areas of system deployment and virtualization. In the labs, they will verify the knowledge from the lectures on specific examples from practice.

BI-APS.21 Architectures of Computer Systems

Z,ZK

Students will learn the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special emphasis is given on the pipelined instruction processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the principles of instruction processing not only in scalar processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the sequential model of the program. The course further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory coherence and consistency in such systems.

BI-SPS.21 Administration of Computer Networks and Services

5

The aim of the course is to deepen the theoretical knowledge of network technologies and protocols in the environment of network servers administrated under the operating systems Linux and Windows. The course syllabus requires the knowledge at the level of courses BIE-PSI, BIE-VPS, and BIE-OSY. Practical skills will be gained by practical hands-on experience with real network infrastructure.

Virtualization and Data Centers

The aim of the course is to familiarize students with technology basis of cloud computer systems. It shows principles and techniques used in design and implementation of data center infrastructure, such as various kinds of virtualization and high availability of servers, storages, and software layers. The course guides through data center technologies from private to public and hybrid clouds. Student learn current trends in the architecture of IT infrastructure and its configuration for classic and cloud applications. Students will understand the design, validation, and operation of complex infrastructures for modern applications with respect to scalability and protection against overloads, outages, and data losses.

BI-VPS.21 Selected Topics in Computer Networking

Z.ZK

The course builds upon the Computer Networks course (BI-PSI), obligatory for the program. Students will learn in detail principles, protocols, and technologies used in modern computer networks from local area networks up to Internet, with focus on switching, routing, security, and virtualization. The emphasis will be on gaining practical experience with real network devices in the lab and learning important methods of local area and wide area networks from the viewpoint of functionality, performance, and security.

BI-EHA.21 Ethical Hacking

The goal of the course is to introduce students to the field of penetration testing and ethical hacking. The course deals with cybersecurity threats, vulnerabilities, and their possible exploitation in computer networks, web applications, wireless networks, operating systems, and others like the Internet of Things or cloud. The focus is on hands-on experience with vulnerabilities testing and the following process of penetration test documentation.

Machine Learning 2

The goal of this course is to introduce students to the selected advanced methods of machine learning. In the supervised learning scenario, they, in particular, learn kernel methods and neural networks. In the unsupervised learning scenario students learn the principal component analysis and other dimensionality reduction methods. Moreover, students get the basic principles of reinforcement learning and natural language processing.

Methods of interfacing peripheral devices

The course is focused on methods for interfacing of peripheral devices. Interfacing of real peripheral devices is focused on techniques based on Universal serial bus (USB). The course includes both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of USB devices, Linux and Windows drivers, simple application development, and APIs of selected devices.

Modern Visualisation Technologies BI-MVT.21

Z.ZK

The goal of the course is to give an overview of modern visualization technologies and their principles, namely technologies related to virtual and augmented reality, visualization on high resolution displays (e.g., SAGE and video mapping) and their applications in practice. Several lectures deal with the content creation for the mentioned technologies, namely fractal and procedural visualization, scientific data visualization, and 3D model scanning.

BI-AWD.21 Web and Database Server Administration

Z,ZK

5

Students will get acquainted with the administration of database and web servers and services. They will be able to install, configure, operate, test, and backup complex database and web service systems. The principles will be demonstrated on the PostgreSQL relational database engine and Apache will be used as an example of a web server.

Algorithms and Graphs 2

This course, presented in Czech, introduces basic algorithms and concepts of graph theory as a follow=up on the introduction given in the compulsory course BI-AG1.21. It further delives into advances data structures and amortized complexity analysis. It also includes a very light introduction to approximation algorithms. For English version of the course see BIE-AG2.21.

Applied Network Security

The aim of the course is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gained in course BI-PSI with actual security applications like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing the course student will get knowledge of security applications in computer networks.

BI-BEK.21	Secure Code	Z,ZK	5
	now to assess security risks and how to take them into account in the design phase of their own code and solutions. After gettir actical experience with running programs with reduced privileges and methods of specifying these privileges, since not every	•	٠ - ١
	Dangers inherent in buffer overflows will be practically demonstrated. Students will be introduced to the principles of securin		
security and database s	systems, web, remote procedure calls, and sockets in general. The module concludes with Denial of Service attacks and the	defense against th	nem.
BI-BIG.21	DB Technologies for Big Data	KZ	5
	ced into the field of Big Data processing where nonrelational (NoSQL) database engines are typically used today. The course	· ·	- 1
•	dents were able to choose suitable tools (mostly open source) and techniques,design and implement a simplest reproducible on/aggregation, presentation). Students get acquainted with various architectures for processing and storing big data. A theor		• •
,	es will be supplemented with specific examples from practice.		
BI-EPP.21	Economic Business Processes	Z,ZK	5
	s to present typical processes related to the usual life cycle of a company. The course focuses mainly on the basic economic		
	ent of the Czech Republic and the basics of management. In the course, students are acquainted with the typical phases of tl mpany, through the management of property and capital structure, financing of the company, determining the cost function of		
	health of the company and its eventual rehabilitation or termination.	the company and	1 10001 00313, 10
BI-FBI.21	Financial Business Intelligence	Z,ZK	5
	to acquaint students primarily with financial accounting as a tool for recording business operations and documents for business	=	- 1
	comparison with other companies and management decision process at the tactical and strategic level. The second view is r	ŭ	· ·
•	nt and prediction of business development. Management accounting allows monitoring of the financial status and performance ables a multidimensional view of business data, enables to control effectively factors affecting the return on invested capital a		
	to future business decisions. The principles of management accounting, described in this course, are the basis of Business Ir		
	cision support systems, and other knowledge-oriented systems.		
BI-HWB.21	Hardware Security	Z,ZK	5
	ardware resources used to ensure security of computer systems including embedded ones. Students become familiar with the op es of modern processors, and storage media protection through encryption. They will gain knowledge about vulnerabilities of HW		
	with hardware during manufacture. Students will have an overview of contact and contactless smart card technology including		
for multi-factor authention	cation (biometrics). Students will understand methods of efficient implementations of ciphers.		
BI-JPO.21	Computer Units	Z,ZK	5
•	pasic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detal Frunits and processors and their interactions with the environment, including accelerating arithmetic-logic units and using app		
-	ganization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, inclu	-	
	nd serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of con	-	
	e architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational micro	oprogrammed pro	cessor simulator
BI-KOM.21	ware design kits (FPGA).	Z,ZK	5
	Conceptual Modelling n developing abstract thinking and precise formulation skills using conceptual models. Students learn skills of discerning key		-
	correct relations in complex systems of social reality, mostly enterprises and institutions. Students learn basics of ontological st		
	n how to express business rules and constraints using the OCL language and foundations of OWL/RDF semantic data repres		
	enterprise engineering, being a discipline for conceptual modelling of enterprises and institutes and their processes. The DEM se is designed with the respect to continuation in software implementations. Recommended optional follow-up course: BI-ZPI		BPMN notation
BI-LA2.21	Linear Algebra 2	Z,ZK	5
	m tu rozší í znalosti z p edm tu BI-LA1, kde se pracovalo pouze s vektory ve form n-tic ísel. Zde si zavedeme vektorový p		-
	ojmem skalární sou in a lineární zobrazení, což nám dovolí ukázat souvislost s lineární algebrou, geometrií a po íta ovou g		
	í algebra, kde si ukážeme potíže s ešením soustav lineárních rovnic na po íta i a možnosti, jak se s tímto problémem vypo a ce lineární algebry v r zných oborech.	ádat s d razem na	rozklady matic.
BI-LOG.21	Mathematical Logic	Z,ZK	5
	the basics of propositional and predicate logic. It starts from the semantic point of view. Based on the notion of truth, satisfial		-
logical consequence of	formulas are defined. Methods for determining the satisfiability of formulas, some of which are used for automated proving, a	re explained. This	relates to the P
•	plean functions in propositional logic. In predicate logic, the course further deals with formal theories, such as arithmetics, an		e syntactic
BI-MDF.21	cal logic is demonstrated on the axiomatic system of propositional logic and its properties. Gödel's incompleteness theorems Modern Data Formats	KZ	3
	s to give an overview of commonly used data formats for typical types of data. There will be a description of each data type a		
data type along with too	ols available to work with such data. After finishing the course, the students should know how to work with common data, e.g.	on the Web.	
FIT-ITI	Modern IT infrastructure	Z,ZK	5
BI-MGA.21	Multimedia and Graphics Applications	Z,ZK	5
	d with multimedia technologies and applications for 2D/3D bitmap and vector graphics. During the course, current tools for wow will be introduced. Students learn several basic techniques of creation and editing content in computer graphics, introduction to		
	n to use multimedia transmission and representation systems, including real-time multimedia processing. They understand th		
-	cards. They gain a number of practical skills, such as vectorizing raster images, retouching photos, or creating 3D models.		
BI-OOP.21	Object-Oriented Programming	Z,ZK	5
	nming has been used in the last 50 years to solve computational problems by using graphs of objects that collaborate togeth Juainted with the main principles of object-oriented programming and design, used in modern programming languages. The er		-
	which includes testing, error handing, refactoring, and application of design pattern.	ripriasis is ori prac	dicar techniques
BI-PGR.21	Computer graphics programming	Z,ZK	5
After attending this curs	e, students can program a simple interactive 3D graphical application like a computer game or scientific visualization, design	the scene, add to	- 1
-	aterials (like wall surface, wood, sky), and set up the lighting. At the same time, they understand the fundamental principles and		
	ne, geometric transformations, or lighting model. They gain knowledge allowing orientation in computer graphics and represe nt, e.g., GPU programming and animations. They get used to techniques utilized in geometric modeling, modeling curves and su	_	
BI-PRS.21	Practical Statistics	KZ	5
	oduced to methods of applied statistics. They will learn how to work with various types of data, perform analyses, and choose in		
• •	ion and correlation analysis, analysis of variance and non-parametric methods. Students will learn to use the statistical softw	are R and will app	ly the studied
methods on data from r	еагртолетть.		

BI-PNO.21	Practical Digital Design	KZ	5
-	w of the contemporary digital design flow and learn practical skills to use synchronous design techniques. They understand t hnologies FPGA and ASIC. Students demonstrate practical use of the design techniques in the course project using modern		1
tools.	infologies i FOA and ASIC. Students demonstrate practical use of the design techniques in the course project using modern	ilidusti y-staridard	CAD design
BI-PAI.21	Law and Informatics	ZK	5
	s to introduce students into the basic legal instruments that they will encounter in their practice. Students will gain knowledge	•	
=	rted to the pitfalls that await them in business from the point of view of law. They will understand the process of concluding or		
	their responsibilities in working with the Internet, will be familiar with the institutes of intellectual property law, and will be able es. Emphasis will also be put on the legal protection of data on the Internet, the registration of Internet domains and protectic		
•	uch behaviour in the field of IT that can be classified as criminal under the Czech law. The course will also include analyses o	-	
BI-PJP.21	Programming Languages and Compilers	Z,ZK	5
	mpiling methods of programming languages. They are introduced to intermediate representations used in current compilers of		-
•	a translation of a text that conforms a given syntax, to a target code and also to create a compiler based on the specificatior guage but any text in a language generated by a given LL input grammar.	. The compiler ca	n translate not
BI-PPA.21	Programming Paradigms	Z,ZK	5
	asic paradigms of high-level programming languages, including their basic execution models, benefits, and disadvantages of	· · · · · · · · · · · · · · · · · · ·	_
	and its basic principles are explained in details. Logic programming is introduced as another way of declarative programming		
	on Lisp (Racket) and Prolog programming languages. Moreover, usage of these principles is demonstrated on modern main	stream programm	ning languages
such as C++ and Java. BI-PGA.21	Programming of Graphic Applications	Z,ZK	5
	the possibilities of current professional open-source tools for image editing, video editing, 3D animation (GIMP, Blender) and th		
· · · · · · · · · · · · · · · · · · ·	ematical data). Emphasis will be placed on the possibilities of further enhancement of the presented software tools, both using		-
by implementation of plu	ugins.		
BI-PJS.21	JavaScript Programming	KZ	5
BI-PYT.21	uction to Javascript programming. Students will also learn best practices and get acquai nted with tools that make code devel	opment in Javasc	ript easier. 5
	Python Programming s to get acquainted with basic efficient control and data structures of the Python programming language for text and binary da		-
	programming in Python and in other programming languages will be explained. Each topic is prepared for students in the forn	· ·	
•	to individual student work. Before each lab, students pass a short test on the last week topic. Four homeworks plus a semest	er work will be as	signed during
the semester.		7 71/	
BI-PRR.21	Project management storm to the basic concepts and principles of project management, i.e. methods of planning, teamwork, an	Z,ZK	5
	argumentation and meeting management. Students will practice project management techniques (e.g. SWOT analysis, risk	-	-
	schedule, resource balancing, network graphs) and creation of project documentation. The course is designed especially for		
· -	dge outside IT, consider starting their own company, or have ambitions to work in middle or senior management positions in I	arge companies.	The course is
BI-SWI.21	e who will develop software or hardware in the form of team projects. Software Engineering	Z,ZK	5
	d with methods of analysis and design of larger software projects that are typically designed and implemented in teams. They		_
their knowledge during t	the analysis and design of larger software systems that will be developed in the concurrent course BIE-SP1. Students get hand	ds-on experience	with CASE tools
	ge UML for modeling and solving software problems. Students learn the basics of object-oriented analysis, architecture design	_	hin the course,
BI-SP1.21	oretical basis in the field of project management, estimation of costs of software projects, and methods of their development Team Software Project 1	KZ	5
_	realth Software Froject in the analysis, design, and prototyping of a large-scale software system. Theoretical support is provided in the	ı	_
-	aches students necessary techniques and principles. Teams consisting of 4-6 students will work on a specific project. The teams		
	consults with the team (at the seminars) both the formal and material aspects of the software design. The resulting software	artefact will be fu	rther developed
and finished in the BIE-		1/3	
BI-SP2.21	Team Software Project 2 experience with the iterative development process while working on a large-scale software project. The first iteration is the res	KZ	5 Lourse project
	ip, the functionality, testing, and documentation of the software system being developed will be emphasized. Students will wo		
teacher, in the role of th	e team and project leader, regularly consults with the team (at the seminars) the formal as well as material aspects of their s	olution.	
BI-ML1.21	Machine Learning 1	Z,ZK	5
-	is to introduce students to the basic methods of machine learning. They get theoretical understanding and practical working is		
	the supervised learning scenario and clustering models in the unsupervised scenario. Students will be aware of the relations fundamentals of assessing model quality. Moreover, they learn the basic techniques of data preprocessing and multidimensic	=	
	s and scikit libraries in Python will be used.		
BI-SVZ.21	Machine vision and image processing	Z,ZK	5
	coming a common part of life by being universally available. Related to this phenomenon is the need to process and evaluate	-	
	ifferent types of camera systems and a variety of methods for image and video processing. The course is focused on practical	use of camera sys	stems for solving
BI-SRC.21	at the graduates may encounter. Real-time systems	Z,ZK	5
	ic knowledge in the real-time (RT) system theory and in the design methods for RT systems including the dependability issue		_
	entally verified in computer labs. The course is mainly focused on embedded RT systems, therefore the design kits in the lab		-
course.			
BI-TAB.21	Applications of Security in Technology	Z,ZK	5
-	s to introduce students to selected topics from cybersecurity technical applications that are utilized in different industries. Stu ns and extend their knowledge from the cryptology, the secure code, and system, network, and hardware security.	uents get a broad	er overview of
BI-TJV.21	Java Technology	Z,ZK	5
-	nowledge and skills for developing information systems and applications through concepts used in software development and	· · · · · · · · · · · · · · · · · · ·	_
from Java language eco	system. At the course end, the students are able to develop software systems in Java platform.		

BI-TIS.21 Information Systems The goal of this course is to familiarise students with the information systems topic and information systems implementation principles. During the course, students are introduced to "on the market" existing types of systems and their usage in specific industry segments. Students are familiarised with the CRM, ERP, MRP and other types of information systems. The fundamental part of the course is the introduction to key ideas of an information system selection, evaluation of information system benefits, ways of information systems implementation and information system implementation based on the project management principles. The emphasis is on the initial customer analysis, customer insight and ability to decide whether it is better to implement any existing information system or to develop a new one from scratch. These factors determine the information system implementation success. At the end of the course information systems security, operation, support, maintenance, legislation impacts, and government information systems topics are discussed. BI-TUR.21 User Interface Design Z,ZK Students gain a basic overview of methods for designing and testing common user interfaces. They get experience to solve the problems where software and other products do not communicate with the user optimally, since the needs and characteristics of users are not taken into account during product development. Students gain an overview of methods that bring users into the development process to ensure optimal interface for them. BI-TWA.21 Design of Web Applications The basic course of web application development. Initially, the students become familiar with HTTP and its possibilities and partly with some properties of language describing the structure (HTML) and presentation of document on the Web (CSS). These skills provide the necessary basis for the development of Web applications, which will be demonstrated in modern libraries facilitate the development of Web pages applications. Server side will be demonstrated on PHP technology using frameworks Symfony 2, Doctrine 2. Developments on the client side will be demonstrated using a JavaScript language with library jQuery and possibly MV* framework React. BI-IDO.21 Introduction to DevOps Z.ZK 5 The course deals with the topic of DevOps and prepares future developers and administrators for a modern culture of development and operation of systems and services. The course covers the tools to support software development, testing and compilation. It also focuses on tools for automating infrastructure management and building and deploying software to the Cloud. It is an introduction to technologies that will then be discussed in more detail in related follow-up courses. The student will also get acquainted with modern technologies used in practice. BI-UKB.21 Z.ZK Introduction to Cybersecurity 5 The goal of the course is to provide students with the introduction of basic concepts in modern approach to cybersecurity. Students will get a basic overview of threats in cyberspace and attacker techniques, security mechanisms in networks, operating systems and applications, as well as of basic cyberspace regulations. **Embedded Systems** Students learn to design embedded systems and develop software for them. They get basic knowledge of the most common microcontrollers and embedded processors, their integrated peripheral circuits, programming methods, and applications. They get practical skills with development kits and tools. BI-VIZ.21 ΚZ 5 **Data Visualization** The course offers an overview of the types and characteristics of data as well as suitable visualization methods. This will aid the students in understanding data, their content and their application in areas such as data mining and machine learning. Within the course, students will be introduced to exploratory data analysis, preprocessing, and ways of visualizing different kinds of data such as text, social networks, time series or basic image data processing. Students will get hands-on experience in applications of selected methods to real-world examples in the Python programming language. Searching the Web and Multimedia Databases Students get basic overview about search techniques in the web environment that is interpreted as a very large distributed and heterogeneous storage of documents. In particular, students acquire information about search techniques in text and hypertext documents (the web pages themselves) and about feature extraction from web pages. They get detailed knowledge of similarity search in multimedia databases (generally in collections of unstructured data). They also learn techniques for programming web search engines for the mentioned data types (documents) BI-FEM.21 Z,ZK Fundamentals of Economics 5 The course allows the students to discover basics of economic theory, which will then be used in subsequent courses of economics and management. It contains a general overview of fundamental microeconomic and macroeconomic topics. Z.ZK 5 **Basics of System Control** The course gives an introduction to the field of automatic control. Students will gain knowledge in this rapidly evolving field of great future. We will focus our attention particularly on control of engineering and physical systems. We will provide basic information from the feedback control of linear dynamical SISO systems, description methods of system models, basic linear dynamic systems analysis and design verification, simple PID feedback, PSD, and fuzzy controllers. Students will learn the methods of creating a description of the system model, the basic linear dynamic systems analysis and design verification and simple PID feedback, PSD, and fuzzy controllers. Attention is also given to sensors and actuators in control loops, issues of stability in control systems, single and continuous adjustment of the controller parameters, and certain aspects of the industrial implementation of continuous and digital controllers and PLC control.

Basics of System Security

The goal of the course is to provide introduction to basic concepts in security of computer systems. Further, the course introduces the basics of forensic analysis and related topics such as malware analysis or incident response. After finishing the course student will get both theoretical and practical knowledge in the area of modern operating systems security, as well as skills needed for independent work in the area of operating system security incident analysis.

BI-ZUM.21 Artificial Intelligence Fundamentals 7.7K

Basic course on introduction to artificial intelligence with emphasis on symbolic techniques. The design of an intelligent agent and the techniques needed to create it will be discussed, especially at the decision-making level. The intelligent agent in the context of the course can be represented for example by a physical robot, but also by a non-physical entity, such as a virtual assistant or a character in a computer game. We will not only introduce the basics, but also show the current state-of-the-art during the course.

List of courses of this pass:

Code	Name of the course	Completion	Credits
BI-3DT.1	3D Printing	KZ	4
BI-A2L	English language, preparation for the B2 level exam	Z	2

The content of the course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - students are due to: -Take an active part in the language instruction. -Meet the requirements for writing assignments - Summary, Abstract, Argumentation Paper. -Succeed in both the midterm and the final term tests with the success rate set at 70%. -80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by individual teachers during the first class of the term.

BI-AAG.21	Automata and Grammars	Z,ZK	5
	uced to basic theoretical and implementation principles of the following topics: construction, use and mutual transformations of finite a	_	-
	ars, context-free grammars, construction and use of pushdown automata, and translation grammars and transducers. They know the	=	al languages
	ey understand the relationships between formal languages and automata. They are introduced to the Turing machine and complexity		
BI-ACM	Programming Practices 1 This is a selective course for preparing talented student for representation in international programming contests.	KZ	5
BI-ACM2	Programming Practices 2 This is a selective course for preparing talented student for representation in international programming contests.	KZ	5
BI-ACM3	Programming Practices 3 This is a selective course for preparing talented student for representation in international programming contests.	KZ	5
BI-ACM4	Programming Practices 4 This is a selective course for preparing talented student for representation in international programming contests.	KZ	5
BI-ADU.21	Unix Administration	Z,ZK	5
	he internal structure of the UNIX operating system, with the administration of its basic subsystems and with the security principles. They		_
	administrator roles. They will get theoretical and practical knowledge of user management and administration, of users access rights,		
processes, memo	ory, network services and remote access, and in the areas of system deployment and virtualization. In the labs, they will verify the known specific examples from practice.	owledge from the le	ectures on
BI-ADW.1	Windows Administration This course is presented in Czech. However, there is an English variant in the program Informatics (B1801 / 4753).	Z,ZK	4
BI-AG1.21	Algorithms and Graphs 1	Z,ZK	5
	rs the basics of efficient algorithm design, data structures, and graph theory, belonging to the core knowledge of every computing cui		_
develops the know	rledge from the course BI-DML.21, in which students acquire the knowledge and skills in combinatorics necessary for evaluating the	time and space co	mplexity of
algo	rithms. The course also follows up knowledge from BI-MA1.21, the practical usage of asymptotic mathematics, in particular, the asymptotic mathematics in the particular mathem	ptotic notation.	
BI-AG2.21	Algorithms and Graphs 2	Z,ZK	5
	ented in Czech, introduces basic algorithms and concepts of graph theory as a follow=up on the introduction given in the compulsory		
delves into advan	ces data structures and amortized complexity analysis. It also includes a very light introduction to approximation algorithms. For Engl BIE-AG2.21.	ish version of the o	course see
BI-ALO	Algebra and Logic	Z,ZK	4
BI-ALO	The course extends and deepens the study of topics touched upon in the basic course in logic.	Z,ZN	4
BI-AND.21	Programming for the Android Operating System This course is presented in Czech.	KZ	4
BI-ANG	English Language, Internal Certificate	ZK	2
DI-ANG	Course information and teaching materials can be found at https://moodle-vyuka.cvut.cz/course/search.php?search=BI-AN		2
DI ANGA	English Language Examination without Preparatory Courses		
BI-ANG1		Z,ZK	2
BI-ANGK	English language, contact preparation for the B2 level exam	Z	2
BI-ANGK The content of the	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement	Z students are due	2 to: -Take an
BI-ANGK The content of the active part in the I	English language, contact preparation for the B2 level exam	Z students are due e midterm and the	2 to: -Take an e final term
BI-ANGK The content of the active part in the I	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the	Z students are due e midterm and the	2 to: -Take an e final term
BI-ANGK The content of the active part in the I	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ess rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indi class of the term. Aplication Programming in Java	Z students are due e midterm and the	2 to: -Take an e final term
BI-ANGK The content of the active part in the I tests with the succession BI-APJ	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ess rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicass of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java.	Z students are due le midterm and the vidual teachers du Z,ZK	2 to: -Take an e final term ring the first
BI-ANGK The content of the active part in the I tests with the succes BI-APJ BI-APS.21	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ess rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indi class of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems	Z students are due le midterm and the vidual teachers du Z,ZK Z,ZK	2 to: -Take an e final term ring the first 4
BI-ANGK The content of the active part in the I tests with the succes BI-APJ BI-APS.21 Students will lear	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ess rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicals of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Spec	Z students are due le midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is given	2 to: -Take an e final term ring the first 4 5 ven on the
BI-ANGK The content of the active part in the I tests with the succes BI-APJ BI-APS.21 Students will lear pipelined instruction	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ess rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicated the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specing processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the principles.	Z students are due le midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is givenibles of instruction	2 to: -Take an e final term ring the first 4 5 ven on the e processing
BI-ANGK The content of the active part in the I tests with the succes BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ess rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicals of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Spec	Z students are due le midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential mo	2 to: -Take an e final term ring the first 4 5 ven on the n processing del of the
BI-ANGK The content of the active part in the I tests with the succes BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ess rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicates of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specing processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the prince processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of	Z students are due le midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential mo	2 to: -Take an e final term ring the first 4 5 ven on the n processing del of the
BI-ANGK The content of the active part in the I tests with the succes BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ess rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicated the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specing processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the principle processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe	Z students are due le midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential mo	2 to: -Take an e final term ring the first 4 5 ven on the n processing del of the
BI-ANGK The content of the active part in the I tests with the successive BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar program. The course BI-ARD The subject is designed.	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ses rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicated the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the princip processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino Interactive applications on Arduino Interactive applications on Students will learn how to design simple applicated.	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential mo rence and consiste KZ ions for modern pro	2 to: -Take an e final term ring the first 4 5 ven on the n processing odel of the ency in such
BI-ANGK The content of the active part in the I tests with the successive BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar program. The course BI-ARD The subject is designified and control value.	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ses rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicates of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the princip processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino Interactive applications on Arduino Interactive applications with help of available libraries. The goal of the subject is to show varied software approaches to control embedded s	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ ions for modern pro ystems, i.e. to see	2 to: -Take an e final term ring the first 4 5 ven on the n processing odel of the ency in such 4 ogrammable the results
BI-ANGK The content of the active part in the I tests with the successive BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar program. The course BI-ARD The subject is designified and control value.	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ses rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicates of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino Interactive applications on Arduino Interactive applications on Arduino Interactive applications on Students will learn how to design simple applicated peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded say of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ ions for modern pro ystems, i.e. to see	2 to: -Take an e final term ring the first 4 5 ven on the n processing odel of the ency in such 4 ogrammable the results
BI-ANGK The content of the active part in the I tests with the successive BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar program. The course BI-ARD The subject is designite and control vanot only on display	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the less rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicates of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino Interactive applications on Arduino Interactive applications on Arduino Interactive applications on Arduino (applications) in the subject is to show varied software approaches to control embedded so any of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students.	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK tial emphasis is give ciples of instruction the sequential morence and consiste KZ ions for modern proystems, i.e. to see is suitable even for	2 to: -Take an a final term ring the first 4 5 ven on the processing odel of the ency in such 4 ogrammable the results r Web and
BI-ANGK The content of the active part in the I tests with the successive BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar program. The course BI-ARD The subject is designite and control was not only on displayed. BI-ASB.21	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ses rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indi- class of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specing processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino Interactive applications on Arduino Interactive applications to embedded systems. Students will learn how to design simple applicative peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded sign of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK sial emphasis is give ciples of instruction the sequential morence and consiste KZ ions for modern pro ystems, i.e. to see is suitable even for Z,ZK	2 to: -Take an a final term ring the first 4 5 ven on the a processing odel of the ency in such 4 ogrammable the results r Web and
BI-ANGK The content of the active part in the I tests with the successive BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar program. The course BI-ARD The subject is designite and control variety and control variety on display. BI-ASB.21 The aim of the course of the subject is designite and control variety on the subject is designite.	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ass rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indi class of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino (and for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicated peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded is any of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security rise is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ ions for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI	2 to: -Take an a final term ring the first 4 5 ven on the a processing odel of the ency in such 4 ogrammable the results r Web and 5 with actual
BI-ANGK The content of the active part in the I tests with the successive BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar program. The course BI-ARD The subject is designite and control variety and control variety on display. BI-ASB.21 The aim of the course of the subject is designite and control variety on the subject is designite.	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ass rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicass of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino Interactive applications on Interactive subject is to show varied software approaches to control embedded sign of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security Irise is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ ions for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI	2 to: -Take an a final term ring the first 4 5 ven on the a processing odel of the ency in such 4 ogrammable the results r Web and 5 with actual
BI-ANGK The content of the active part in the I tests with the successive BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar program. The course BI-ARD The subject is design kits and control vanot only on displating BI-ASB.21 The aim of the course security application.	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both these rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicals of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino and for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicator in processors with help of available libraries. The goal of the subject is to show varied software approaches to control embedded so yor of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security rese is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing knowledge of security applications in computer networks.	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ ions for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI g the course stude	2 to: -Take an a final term ring the first 4 5 ven on the a processing odel of the ency in such 4 bogrammable the results r Web and 5 with actual ant will get
BI-ANGK The content of the active part in the I tests with the success BI-APS.21 Students will lear pipelined instruction not only in scalar program. The cours BI-ARD The subject is design kits and control vanot only on display and only on display BI-ASB.21 The aim of the course security application.	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ass rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicass of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino Interactive applications on Interactive subject is to show varied software approaches to control embedded sign of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security Irise is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ ions for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI g the course stude Z,ZK	2 to: -Take an a final term ring the first 4 5 ven on the a processing adel of the ency in such 4 ogrammable the results r Web and 5 with actual ant will get
BI-ANGK The content of the active part in the I tests with the successive part in the successive program. The course successive part in the subject is designated by the subject is design	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement - anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ses rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indi- class of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Special processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the principrocessors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of sefurther elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino and for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicative peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded sign of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted networks in terms of cybersecurity. These topics extend the basic knowledge of security applications in computer networks. Algorithms visually	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ cons for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI g the course stude Z,ZK ience that extend s	2 to: -Take an a final term ring the first 4 5 ven on the a processing odel of the ency in such 4 ogrammable the results r Web and 5 with actual ant will get 4 substantially
BI-ANGK The content of the active part in the I tests with the success will lear pipelined instruction not only in scalar program. The cours BI-ARD The subject is designificated with the subject is designificated with the subject is designification of the course control variety application of the course completed with the success with the succe	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ses rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicass of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specing processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the princip processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of se further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino and first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicated peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded sy of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security rise is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing know	z students are due te midterm and the vidual teachers du Z,ZK z,ZK sial emphasis is give siples of instruction the sequential morence and consiste KZ tions for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI g the course stude Z,ZK ience that extend s t;http://www.algovis	2 to: -Take an a final term ring the first 4 5 ven on the a processing odel of the ency in such 4 bgrammable the results r Web and 5 with actual ant will get 4 substantially sion.org>)
BI-ANGK The content of the active part in the I tests with the success will lear pipelined instruction not only in scalar program. The cours Program. The cours will be subject is designated by the subject	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ses rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicated the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computer swith universal processors at the level of machine instructions. Specing processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the principle processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino Interactive applications on Arduino Interactive applications on Arduino Interactive applications on Arduino Interactive applications on Security applications will learn how to design simple applicat ried peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded s by of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security rese is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing knowledge of security applications in computer networks. Al	Z students are due te midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ cions for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI g the course stude Z,ZK ience that extend s t;http://www.algovist	to: -Take an a final term ring the first 4 5 ven on the processing adel of the ency in such 4 agrammable the results r Web and 5 with actual ant will get 4 substantially sion.org>)
BI-ANGK The content of the active part in the I tests with the success will lear pipelined instruction not only in scalar program. The cours Program. The cours will be subject is designated by the subject	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement annuage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ses rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicates of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specing processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of sefurther elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino and for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicated fried peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded size of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security rise is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing knowledge of security applications in computer networks. Algorithms visually ments other algorithm courses at FIT. It brings knowledge about particular important algorithms from different fields of the computer set and in BI-AG1 and BI-AG2. A wide scop	z students are due te midterm and the vidual teachers du Z,ZK z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ cions for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI g the course stude Z,ZK ience that extend s t;http://www.algovist z,ZK coackup complex de	to: -Take an a final term ring the first 4 5 ven on the processing adel of the ency in such 4 agrammable the results r Web and 5 with actual ant will get 4 substantially sion.org>) 5 atabase and
BI-ANGK The content of the active part in the I tests with the success will lear pipelined instruction not only in scalar program. The course subject is designificated by the subject is designificant by the subject is design	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ses rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicass of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specing processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of sefurther elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino and for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicative peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded sy of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security rise is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing knowledge of security applications in computer networks. Algorithms visually ments other algorithms courses at FIT. It brings knowledge about particular important algorithms from different fields of the computer scalar in BI-AG1 and BI-AG2. A wide scope of covere	z students are due te midterm and the vidual teachers du Z,ZK z,ZK stal emphasis is give stiples of instruction the sequential morence and consiste KZ tions for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI g the course stude Z,ZK ience that extend s t;http://www.algovis Z,ZK packup complex da uple of a web serve	2 to: -Take an a final term ring the first 4 5 ven on the processing adel of the ency in such 4 ogrammable the results r Web and 5 with actual ant will get 4 substantially sion.org>) 5 atabase and er.
BI-ANGK The content of the active part in the I tests with the success wit	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the sest rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicass of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specific processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the principles of united the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino and for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicative peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded sy of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security rese is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing knowledge of security applications in computer networks. Algorithms visually ments other algorithms courses at FIT. It brings knowledge about particular important algorithms from different fields of the computer set and in BI-AG1 and BI-AG2. A wide scope of covered subjec	z students are due the midterm and the vidual teachers du Z,ZK Stal emphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste KZ Stal temphasis is give spiples of instruction the sequential morence and consiste the sequ	2 to: -Take an el final term ring the first 4 5 ven on the el processing idel of the ency in such 4 ogrammable the results in Web and with actual int will get 4 substantially sion.org>) 5 atabase and er. 14
BI-ANGK The content of the active part in the I tests with the success BI-APJ BI-APS.21 Students will lear pipelined instruction not only in scalar program. The course like is and control vanot only on display higher than the course comple knowledge presented bI-AWD.21 Students will get ac web serv BI-AWD.21 BI-AWD.21 BI-AWD.21 BI-BEK.21	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the ses rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicated to the term. Aplication Programming in Java Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specing processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino med for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicatived peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded sign of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security rese is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing knowledge of security applications in computer networks. Algorithms visually ments other algorithms courses at FIT. It brings knowledge about particular important algorithms from different fields of the computer so and in BI-AG2. A wide scope of covered subject is made possible due to using visualization bz Algovision	Z students are due the midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ cons for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI g the course stude Z,ZK ience that extend s t;http://www.algovis Z,ZK coackup complex da ple of a web serve Z Z,ZK	2 to: -Take an el final term ring the first 4 5 ven on the el processing idel of the ency in such 4 ogrammable the results riveb and with actual int will get 4 substantially sion.org>) 5 atabase and er. 14 5
BI-ANGK The content of the active part in the I tests with the success wit	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both the sest rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicass of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specific processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the principles of united the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino and for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicative peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded sy of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students. Applied Network Security rese is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing knowledge of security applications in computer networks. Algorithms visually ments other algorithms courses at FIT. It brings knowledge about particular important algorithms from different fields of the computer set and in BI-AG1 and BI-AG2. A wide scope of covered subjec	Z students are due the midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ cons for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI g the course stude Z,ZK ience that extend s t;http://www.algovis Z,ZK coackup complex da ple of a web serve Z Z,ZK umiliar with the three	2 to: -Take an el final term ring the first 4 5 ven on the el processing idel of the ency in such 4 ogrammable the results in Web and with actual int will get 4 substantially sion.org>) 5 atabase and er. 14 5 eat modeling
BI-ANGK The content of the active part in the I tests with the success wit	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement anguage instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both these rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by indicates of the term. Aplication Programming in Java This course is presented in Czech. Advanced technologies in Java. Architectures of Computer Systems In the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Specing processors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the further elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory cohe systems. Interactive applications on Arduino pred for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicationed principles with help of available libraries. The goal of the subject is to show varied software approaches to control embedded systems. Sudents will bear how to design simple applicative propers. Applied Network Security rise is to introduce selected topics from computer networks in terms of cybersecurity. These topics extend the basic knowledge gaine ons like the public key infrastructure, encrypted network protocols, link and network layer security or wireless networks. After finishing knowledge of security applications in computer networks. Algorithms visually ments other algorithm courses at FIT. It brings knowledge about particular important algorithms from different fields of the computer set and in Bi-AG2. A wide scope of covered subject is made possible due to using visualization bz Algovision (www.algovision.org&lithat make under	Z students are due the midterm and the vidual teachers du Z,ZK Z,ZK cial emphasis is give ciples of instruction the sequential morence and consiste KZ cons for modern pro ystems, i.e. to see is suitable even for Z,ZK d in course BI-PSI g the course stude Z,ZK ience that extend s t;http://www.algovis Z,ZK coackup complex da ple of a web serve Z Z,ZK umiliar with the thre program needs to	to: -Take an el final term ring the first 4 5 ven on the el processing odel of the ency in such 4 ogrammable the results r Web and 5 with actual ant will get 4 substantially sion.org>) 5 atabase and er. 14 5 eat modeling or un with

BI-BIG.21	DB Technologies for Big Data	KZ	5
	troduced into the field of Big Data processing where nonrelational (NoSQL) database engines are typically used today. The course is for e students were able to choose suitable tools (mostly open source) and techniques, design and implement a simplest reproducible mo		
-	mation/aggregation, presentation). Students get acquainted with various architectures for processing and storing big data. A theoretic	-	
	of individual technologies will be supplemented with specific examples from practice.		
BI-BLE	Blender ds knowledge of opensource program Blender from Bl-MGA (Multimedia and Graphics Applications) course. It is intended for those in	Z,ZK	4
	offers a complete and practically oriented introduction to Blender environment. Students may continue to BI-PGA (Programming graph	_	
BI-BPR.21	Bachelor project	Z	1
_	ng of the semester, the student reserves the topic of the bachelor's thesis and connects with the supervisor. He / she will arrange the		
	semester to process the assignment. If he completes these tasks, the supervisor will award him a credit from the subject BI-BPR at the enters the information on granting the credit using the form "Granting credit from the external supervisor of the final thesis" (http://fit.cvul		
•	d signed form must be delivered in person or by email to the SZZ coordinator, who will arrange for the credit to be granted. 3. If the top	•	′
has reserved is for	mulated more generally, the tasks assigned to him by the supervisor for the semester should be aimed primarily at fine-tuning the assignment of the semester should be aimed primarily at fine-tuning the assignment of the semester should be aimed primarily at fine-tuning the assignment of the semester should be aimed primarily at fine-tuning the assignment of the semester should be aimed primarily at fine-tuning the assignment of the semester should be aimed primarily at fine-tuning the assignment of the semester should be aimed primarily at fine-tuning the assignment of the semester should be aimed primarily at fine-tuning the assignment of the semester should be aimed primarily at fine-tuning the semester should be aimed primarily at fine-tuning the assignment of the semester should be aimed by the semester should be also should be al	nment so that the	assignment
BI-CCN	can be supplemented and approved at the end of the semester. Compiler Construction	Z,ZK	5
	uctory class on compiler construction for bachelor students in computer science. The goal of the class is to introduce basic principles	· '	_
understa	and the design and implementation of programming languages. Seeing and actually understanding self-compilation is the overarching	theme of the class	S.
BI-CS1	Programming in C#	KZ	4
	urse is to introduce .NET Framework as a multi-language development platform. Then, programming language C#, its fundamental cc s, loops, definitions and calls of functions will be discussed. Attention is focused on the object oriented programming in C# - class def		
	nods, properties, static members, Garbage Collector, inheritance and polymorphism, collections, delegates, and generics. Debugging		
	well as work with files are emphasized.		
BI-CS2	C# language and data access and data access course objective is to introduce students several data access technologies - database, XML, NoSQL - on the Micros	KZ	4 tudents will
0 0	ts used to retrieve data - Connection, Command, Data Reader and DataAdapter v ADO.NET. Next, they will learn to use current technical technical services and the services of the services and the services and the services are services as the services are services as the services and the services are services as the services are service	•	
	erying and updating data, integrated directly with the .NET platform languages, which enable LINQ use with Objects, XML and SQL (L		
	.). Another objective is the Entity Framework - an object-relational mapper that enables .NET developers to work with relational data u of the course introduces Code First, Database First, Model First approaches.The students will also get to know the Conceptual Model		
(Ortivi). This part o	(XML description).	, Otorage Woder ar	ia iviapping
BI-CS3	Language C# - design of web applications	KZ	4
The students will be	e introduced to current technologies in web application development on the .NET platform. They will acquire a comprehensive overview on thisplatform. They will learn to create WebAPI and to use it by client programs.	of the development	possibilities
BI-DBS.21	Database Systems	Z,ZK	5
	roduced to the database engine architecture and typical user roles. They are briefly introduced to various database models. They lear		
	constraints) using a conceptual model and implement them in a relational database engine. They get a hands-on experience with the		
	dation - the relational database model. They learn the principles of normalizing a relational database schema. They understand the funda olling parallel user access to a single data source, as well as recovering a database engine from a failure. They are briefly introduced t		
-	ases with respect to speed of access to large quantities of data. This introductory-level course does not cover: Administration of data		-
DI DIMI 04	optimizing database applications, distributed database systems, data stores.	7 71/	
BI-DML.21 Students will get a	Discrete Mathematics and Logic cquainted with the basic concepts of propositional logic and predicate logic and learn to work with their laws. Necessary concepts from	Z,ZK m set theory will be	5 e explained
-	s paid to relations, their general properties, and their types, especially functional relations, equivalences, and partial orders. The cours		
	combinatorics and number theory, with emphasis on modular arithmetics.		
BI-EHA.21	Ethical Hacking ourse is to introduce students to the field of penetration testing and ethical hacking. The course deals with cybersecurity threats, vuln	Z,ZK	5 ir possible
_	nputer networks, web applications, wireless networks, operating systems, and others like the Internet of Things or cloud. The focus is		
	vulnerabilities testing and the following process of penetration test documentation.		
BI-EHD	Introduction to European Economic History	Z,ZK	3
BI-EJA	This course is presented in Czech. However, there is an English variant in the program Informatics (B1801 / 4753). Enterprise Java	Z,ZK	4
	advanced technologies in the Java programming language. The focus is on technologies for development of enterprise information sys		
	a database and are accessed through the web interface.		
BI-EJK	Enterprise Java and Kotlin	Z,ZK	4
ine course is on a	dvanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise informat architecture, that can be deployed to the cloud.	ion systems with n	nicroservice
BI-EP1.24	Effective programming 1	KZ	4
	The course is taught in Czech.		
BI-EP2	Efficient Programming 2	KZ	4
Continuation of El	fficient Programming 1. Students will practice implementation of algorithms by solving typical problems. Various ways of solving indivi- with the aim to choose the best one and avoid implementation errors.	duai problems are	discussed,
BI-EPP.21	Economic Business Processes	Z,ZK	5
	urse is to present typical processes related to the usual life cycle of a company. The course focuses mainly on the basic economic and	-	
	ronment of the Czech Republic and the basics of management. In the course, students are acquainted with the typical phases of the ne company, through the management of property and capital structure, financing of the company, determining the cost function of the		
	evaluating the financial health of the company and its eventual rehabilitation or termination.		
BI-FBI.21	Financial Business Intelligence	Z,ZK	5
	rse is to acquaint students primarily with financial accounting as a tool for recording business operations and documents for business rs for comparison with other companies and management decision process at the tactical and strategic level. The second view is man	=	-
	pement and prediction of business development. Management accounting allows monitoring of the financial status and performance of the second view is manual transfer.	-	-
accounting perio	ds, enables a multidimensional view of business data, enables to control effectively factors affecting the return on invested capital and	d to use value infor	mation to

assess options rela	ated to future business decisions. The principles of management accounting, described in this course, are the basis of Business Inte information systems, decision support systems, and other knowledge-oriented systems.	lligence modules i	in business
BI-FEM.21	Fundamentals of Economics	Z,ZK	5
The course allows t	the students to discover basics of economic theory, which will then be used in subsequent courses of economics and management.	It contains a gene	ral overview
DIEMI	of fundamental microeconomic and macroeconomic topics.	7.71/	
BI-FMU	Financial and Management Accounting se is explanation of basic terms in the theory of accounting, the principles of balancing the property amounts and liabilities in the pa	Z,ZK	5
	and accounting statements including opening and closing of bookkeeping. The course provides students with a legal modificatio	-	
•	ations based on current methods of double-entry bookkeeping for enterprising subjects in the Czech Republic. Principles of manager		
	Business Inteligence moduls in Business information systems.		
BI-GIT	Version control system GIT	KZ	2
	roduced to basic principles of version control systems. These principles will be then shown on DCVS Git both theoretically and practically and		
	nplementation details will be shown. Students will be challenged to use Git as users, project managers, team leaders as well as Git s	server administrato	
BI-GIT.21	SW Development Technologies d at one of the rudimental team software development technology - version control. To be more specific, we will introduce students to	Cit the informati	on manager
This course is aime	from hell, as Linus Torvalds nicknamed it, and provide a comprehensive guide into its depths, as well as for day-to-day use		on manager
BI-HAM	HW accelerated network traffic monitoring	KZ	4
	uces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. Th		analysis of
network traffic are r	mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a s	ource of information	on and data
for analysis). The go	pals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traffi	ic on a hardware a	and software
51.114.0	level and to develop their practical abilities in this field.	7 714	
BI-HAS	Human Aspects in Cryptography and Security tudents interested not only in technical scope of computer science, but also in making products usable - for users and for developers	Z,ZK	5
This course is for s	use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security.	s. Students of this	course carr
BI-HMI	History of Mathematics and Informatics	Z,ZK	3
Di i iivii	This course is presented in Czech.	_,,	' '
BI-HWB.21	Hardware Security	Z,ZK	5
	th hardware resources used to ensure security of computer systems including embedded ones. Students become familiar with the opera	,	ryptographic
	atures of modern processors, and storage media protection through encryption. They will gain knowledge about vulnerabilities of HW res		
attacks and tamper	ring with hardware during manufacture. Students will have an overview of contact and contactless smart card technology including a	pplications and rel	lated topics
DI IDO 04	for multi-factor authentication (biometrics). Students will understand methods of efficient implementations of ciphers.	7.71/	
BI-IDO.21	Introduction to DevOps ith the topic of DevOps and prepares future developers and administrators for a modern culture of development and operation of syst	Z,ZK	The course
	support software development, testing and compilation. It also focuses on tools for automating infrastructure management and build		
	introduction to technologies that will then be discussed in more detail in related follow-up courses. The student will also get acquaint		
	used in practice.		ŭ
BI-IOS	used in practice. Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech.	KZ	4
BI-IOS BI-IOT.21	Fundamentals of iOS Application Development for iPhone and iPad	KZ Z,ZK	_
BI-IOT.21	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech.	Z,ZK	4 5
BI-IOT.21 The course focuses wireless communic	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect.	Z,ZK view of sensors ar ctures for different	4 5 nd actuators, application
BI-IOT.21 The course focuses wireless communic	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments	Z,ZK view of sensors ar ctures for different	4 5 nd actuators, application
BI-IOT.21 The course focuses wireless communic areas. Within the co	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect computer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS).	Z,ZK view of sensors ar ctures for different (hardware - ARM,	4 5 nd actuators, application ESP, STM;
BI-IOT.21 The course focuses wireless communic areas. Within the co	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect computer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units	Z,ZK view of sensors ar ctures for different (hardware - ARM,	4 5 nd actuators, application ESP, STM;
BI-IOT.21 The course focuses wireless communic areas. Within the co	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect computer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS).	Z,ZK view of sensors ar ctures for different (hardware - ARM, Z,ZK vith the internal str	4 5 ad actuators, application ESP, STM; 5 ructure and
BI-IOT.21 The course focuses wireless communic areas. Within the communication of communica	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect computer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail or the program of the pr	Z,ZK view of sensors ar ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for imp	4 5 nd actuators, application ESP, STM; 5 ructure and olementation
BI-IOT.21 The course focuses wireless communic areas. Within the communication of communication of communication for parallel correction for parallel	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect computer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units their basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail verification of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common	Z,ZK view of sensors ar ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for imp g codes for error d unication of the pro-	4 5 nd actuators, application ESP, STM; 5 ructure and olementation etection and occessor with
BI-IOT.21 The course focuses wireless communic areas. Within the communication of communication of communication for parallel correction for parallel	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect computer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units their basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail verification of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common development in the labs and with the help of the educational microproces.	Z,ZK view of sensors ar ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for imp g codes for error d unication of the pro-	4 5 nd actuators, application ESP, STM; 5 ructure and olementation etection and occessor with
BI-IOT.21 The course focuses wireless communic areas. Within the course billing billin	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail to puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using apprope organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common detail and programmable hardware design kits (FPGA).	Z,ZK view of sensors ar ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for imp g codes for error d unication of the pro-	4 5 nd actuators, application ESP, STM; 5 ructure and olementation etection and occessor with sor simulator
BI-IOT.21 The course focuses wireless communic areas. Within the course billing billin	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail very puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using apprope organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common detail and programmable hardware design kits (FPGA). Cryptography and Security	Z,ZK view of sensors ar ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for imp g codes for error d unication of the pro- grammed process	4 5 nd actuators, application ESP, STM; 5 ructure and olementation etection and occessor with sor simulator 5
BI-IOT.21 The course focuses wireless communic areas. Within the course by the second of multiplication. The correction for parallethe environment and BI-KAB.21 Students will under	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail very puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using approper organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common detail and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common detail and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for imp g codes for error d unication of the pro- grammed process Z,ZK use cryptographic	4 5 nd actuators, application ESP, STM; 5 ructure and olementation etection and occessor with sor simulator 5 c keys and
BI-IOT.21 The course focuses wireless communic areas. Within the course by the second of multiplication. The correction for parallethe environment and BI-KAB.21 Students will under certificates in systems.	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail very puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using apprope organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common detail and programmable hardware design kits (FPGA). Cryptography and Security	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK vith the internal strainet codes for implementation of the programmed process Z,ZK use cryptographic ications. Within lat	4 5 nd actuators, application ESP, STM; 5 ructure and olementation etection and occessor with sor simulator 5 c keys and os, students
BI-IOT.21 The course focuses wireless communic areas. Within the course by the second of multiplication. The correction for parallethe environment and BI-KAB.21 Students will under certificates in systems.	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail to puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using apprope organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common detail and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common development environment, including accelerating arithmetic-logic units and using approper and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in apple	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK vith the internal strainet codes for implementation of the programmed process Z,ZK use cryptographic ications. Within lat	4 5 nd actuators, application ESP, STM; 5 ructure and olementation etection and occessor with sor simulator 5 c keys and os, students
BI-IOT.21 The course focuses wireless communic areas. Within the constant of the communication of communication of communication of multiplication. The correction for parallet the environment and BI-KAB.21 Students will under certificates in system will gain pra BI-KOM.21	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail verture units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using apprope or organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including all and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common development internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including all and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common development internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including all and serial data transmissions. They will also get acquainted be proceeded in the labs and with the help of the educational microproceded in the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproceded in the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproceded in the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproceded in the architectur	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK with the internal striate codes for error dunication of the programmed process Z,ZK use cryptographic ications. Within latidures of cryptanal	5 and actuators, application ESP, STM; 5 cucture and olementation etection and occessor with sor simulator 5 keys and os, students ysis.
BI-IOT.21 The course focuses wireless communic areas. Within the course for the correction of composition of the environment and the environment and the environment are will gain pra BI-KOM.21 The course is focus categorize and spec	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect computer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail very puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using apprope or organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including all and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common development of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproces and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicatical skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic processed on developing abstract thinking and precise formulation skills using conceptual models. Students learn skills of discerning key te cify correct relations in complex systems of social reality, mostly enterprises and institutions. Students learn basics of ontological structions.	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK with the internal striate codes for implication of the programmed process Z,ZK use cryptographic ications. Within latidures of cryptanal Z,ZK rms in a domain, totural modeling in the company of the process of the programmed process.	4 5 nd actuators, application ESP, STM; 5 ructure and olementation etection and ocessor with sor simulator 5 keys and os, students yesis. 5 he ability to ne OntoUML
BI-IOT.21 The course focuses wireless communic areas. Within the course for the correction of composition of the environment and the environment a	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail v puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using approp e organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including all and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common determined the bus system. The problems will be practically evaluated in the labs and with the help of the educational micropro- cand programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicational skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic process Conceptual Modelling sed on developing abstract thinking and precise formulation skills using conceptual models. Students learn basics of ontological struct learn how to express business rules and constraints using the OCL language and foundations of OWL/RDF semantic data represent	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK with the internal striate codes for error dunication of the programmed process Z,ZK use cryptographic ications. Within late dures of cryptanal Z,ZK rms in a domain, to tural modeling in the attorning the sensor control of the programmed process.	5 nd actuators, application ESP, STM; 5 ructure and olementation etection and ocessor with sor simulator 5 keys and os, students yesis. 5 he ability to ne OntoUML et. They also
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course forganization of composition of composition for paralletic environment and the environment and certificates in system will gain pra BI-KOM.21 The course is focus categorize and specinotation. Next, they learn the foundation	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architer or put the labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail viputer units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using apprope organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including all and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of commond the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproce and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicational skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic procer Conceptual Modelling sed on developing abstract thinking and precise formulation skills using conceptual models. Students learn basics of ontological structern how to express business rules and constraints using the OCL language and foundations of OWL/RDF semantic data represents of enterprise engineering, being a discipline fo	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for error dunication of the programmed process Z,ZK use cryptographic ications. Within late dures of cryptanaly Z,ZK rms in a domain, to tural modeling in the laternal method and the BP	5 nd actuators, application ESP, STM; 5 ructure and olementation etection and ocessor with sor simulator 5 keys and os, students yesis. 5 he ability to ne OntoUML et. They also
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course forganization of compost multiplication. The correction for parallethe environment and the environment and certificates in syste will gain pra BI-KOM.21 The course is focus categorize and specinotation. Next, they learn the foundation will	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architec computer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail of puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using approp e organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including el and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common d the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproce and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in appl cicical skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic proce- Conceptual Modelling sed on developing abstract thinking and precise formulation skills using conceptual models. Students learn skills of discerning key te sift correct relations in complex systems of social reality, mostly enterprises and institutions. Students learn basics of ontological struc- learn how to express business ru	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK with the internal striate codes for error dunication of the programmed process Z,ZK use cryptographic ications. Within late dures of cryptanal Z,ZK rms in a domain, total modeling in the ation in the Internethod and the BP ourse: BI-ZPI.	5 nd actuators, application ESP, STM; 5 ructure and objection and ocessor with sor simulator 5 keys and os, students ysis. 5 he ability to ne OntoUML et. They also MN notation
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course in the second of multiplication. The correction for paralled the environment and second in the second i	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architer or put the labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail viputer units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using apprope organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including all and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of commond the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproce and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicational skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic procer Conceptual Modelling sed on developing abstract thinking and precise formulation skills using conceptual models. Students learn basics of ontological structern how to express business rules and constraints using the OCL language and foundations of OWL/RDF semantic data represents of enterprise engineering, being a discipline fo	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK with the internal striate codes for implication of the programmed process Z,ZK use cryptographic lications. Within late dures of cryptanal Z,ZK rms in a domain, the tural modeling in the atton in the Internethod and the BP ourse: BI-ZPI. Z,ZK	5 nd actuators, application ESP, STM; 5 ructure and observation and ocessor with sor simulator 5 keys and os, students ysis. 5 he ability to ne OntoUML et. They also MN notation
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course is students deepen to organization of composition of multiplication. The correction for paralles the environment and students will under certificates in system will gain pra BI-KOM.21 The course is focus categorize and specinotation. Next, they learn the foundation will BI-KOT Kotlin is a modern,	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail to puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using approp or organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common developed the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproces and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicational skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic processed on developing abstract thinking and precise formulation skills using conceptual models. Students learn skills of discerning key te sifty correct relations in complex systems of social reality, mostly enterprises and institutions. Students learn basics of ontological struct learn how to express business rules and constra	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK with the internal str riate codes for imple g codes for error d unication of the pro- grammed process Z,ZK use cryptographic ications. Within late dures of cryptanal dures of cryptanal dures of cryptanal tural modeling in the lateron in the Internethod and the BP ourse: BI-ZPI. Z,ZK need language cor	4 5 nd actuators, application ESP, STM; 5 ructure and oblementation etection and ocessor with sor simulator 5 keys and os, students ysis. 5 he ability to ne OntoUML et. They also MN notation 4 nstructions.
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course forganization of composition of composition for paralleting the environment and correction for paralletine environment and certificates in system will gain pra BI-KOM.21 The course is focus categorize and specimotation. Next, they learn the foundation will BI-KOT Kotlin is a modern, The language is ful	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over ation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail viputer units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using apprope organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of commond the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microprocent and programmable hardware design kits (FPGA). Cryptography and Security Perstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to mis based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicatical skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic processed on developing abstract thinking and precise formulation skills using conceptual models. Students learn skills of discerning key te sify correct relations in complex systems of social reality, mostly enterprises and institutions. Students learn basics of ontological structern how to express business rules and constraints using th	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for error dunication of the programmed process Z,ZK use cryptographic ications. Within lat dures of cryptanaly Z,ZK rms in a domain, to tural modeling in the attention in the Internation in the Internation in the Internation in the Internation and the BP ourse: BI-ZPI. Z,ZK need language cormodern, object-fur	5 nd actuators, application ESP, STM; 5 ructure and olementation etection and ocessor with sor simulator 5 keys and os, students yesis. 5 he ability to ne OntoUML et. They also MN notation 4 nstructions. nctional way
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course is students deepen to organization of composition of multiplication. The correction for parallet the environment and students will under certificates in syste will gain pra BI-KOM.21 The course is focus categorize and specinotation. Next, they learn the foundation will BI-KOT Kotlin is a modern, The language is ful	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over attoin technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect or pupter labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail verification of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including all and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common and programmable hardware design kits (FPGA). Cryptography and Security Erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicatical skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic processed on developing abstract thinking and precise formulation skills using conceptual models. Students learn skills of discerning key te sify correct relations in complex systems of social reality, mostly enterprises and institutions. Students learn skills of discerning key te sify correct relations in complex systems of social reality, mostly enterprises and institutions. Students learn basics of ontological struct so fenterprise and institutions. Students learn basics of ontological struct so fenterprise and institutions. Students learn basics of ontological struct so fenterprises and institutions. Stu	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK with the internal str riate codes for important codes for error dunication of the proparamed process Z,ZK use cryptographic ications. Within late dures of cryptographic ications. Within late dures of cryptanal Z,ZK rms in a domain, to tural modeling in the lateron in the Internet and the BP ourse: BI-ZPI. Z,ZK need language cormodern, object-fur in the lateron in the lateron codern, object-fur in ZK	4 5 nd actuators, application ESP, STM; 5 ructure and olementation and ocessor with sor simulator 5 keys and os, students sysis. 5 he ability to ne OntoUML at. They also MN notation 4 nstructions. actional way
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course forganization of composition of communication for paralleting the environment and certificates in system will gain pra BI-KOM.21 The course is focus categorize and specinotation. Next, they learn the foundation will BI-KOT Kotlin is a modern, The language is ful BI-KSA The one-semester of	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over varion technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect computer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail of puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using approp e organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including a land serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of commond the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microprocand programmable hardware design kits (FPGA). Cryptography and Security erestand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicatical skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic proces Conceptual Modelling sed on developing abstract thinking and precise formulation skills using conceptual models. Students learn basics of ontological struct learn how to express business rules and constraints using the OCL language and foundations of OWL/RDF semantic data represent s of enterprise engineering, being a discipline	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for error dunication of the programmed process Z,ZK use cryptographic ications. Within lat dures of cryptanaly Z,ZK rms in a domain, to tural modeling in the attention in the Internation in the Internation in the International dures es BI-ZPI. Z,ZK need language cormodern, object-fur in ZK y of the world - example of the sensor and the world - example of the sensor and the world - example of the sensor and the world - example of the world - example of the sensor and the world - example of the world - example of the sensor and the world - example of the wo	4 5 ad actuators, application ESP, STM; 5 cucture and oblementation etection and ocessor with sor simulator 5 c keys and os, students yes. 5 he ability to ne OntoUML et. They also MN notation 4 astructions. actional way 2 amples from
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course forganization of composition of communication for paralleting the environment and certificates in system will gain pra BI-KOM.21 The course is focus categorize and specinotation. Next, they learn the foundation will BI-KOT Kotlin is a modern, The language is ful BI-KSA The one-semester of	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over action technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail versure units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using apprope organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail versure a land serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common of the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproce and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to mis based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicatical skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic processed on developing abstract thinking and precise formulation skills using conceptual models. Students learn skills of discerning key te sifty correct plations in complex systems of social reality, mostly enterprises and institutions. Students learn skills of discerning key te sifty correct plations in complex systems of social reality,	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for error dunication of the programmed process Z,ZK use cryptographic ications. Within lat dures of cryptanaly Z,ZK rms in a domain, to tural modeling in the attention in the Internation in the Internation in the International dures es BI-ZPI. Z,ZK need language cormodern, object-fur in ZK y of the world - example of the sensor and the world - example of the sensor and the world - example of the sensor and the world - example of the world - example of the sensor and the world - example of the world - example of the sensor and the world - example of the wo	4 5 ad actuators, application ESP, STM; 5 cucture and oblementation etection and ocessor with sor simulator 5 c keys and os, students yes. 5 he ability to ne OntoUML et. They also MN notation 4 astructions. actional way 2 amples from
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course forganization of composition of communication of multiplication. The correction for parallethe environment and the environment and certificates in syste will gain pra BI-KOM.21 The course is focus categorize and specinotation. Next, they learn the foundation will BI-KOT Kotlin is a modern, The language is ful BI-KSA The one-semester canthropological research.	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (loT), Lectures are devoted to an over lation technologies designed primarily for this area, and appropriate programming methods. They include an overview of loT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail value puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using approp or organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including a land serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of commond the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproce and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicated skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic procered on developing abstract thinking and precise formulation skills using conceptual models. Students learn basics of ontological structearn how to express business rules and constraints using the OCL language and foundations of OWL/RDF semantic data represent of a cofficial process business rules and constraints using the OCL lang	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for error dunication of the programmed process Z,ZK use cryptographic ications. Within late dures of cryptanaly Z,ZK rms in a domain, to tural modeling in the action in the Internation in the I	4 5 ad actuators, application ESP, STM; 5 ructure and olementation etection and ocessor with sor simulator 5 c keys and by six by six. 5 the ability to the OntoUML et. They also MN notation 4 astructions. actional way 2 amples from ttc) will be
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course forganization of comport for parallet the environment and the environment and certificates in syste will gain pra BI-KOM.21 The course is focus categorize and specinotation. Next, they learn the foundation will BI-KOT Kotlin is a modern, The language is ful BI-KSA The one-semester canthropological research	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (IoT). Lectures are devoted to an over cation technologies designed primarily for this area, and appropriate programming methods. They include an overview of IoT architect computer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail very puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using approp e organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including el and serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of common the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational micropror and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to mas based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicatical skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic proces Conceptual Modelling sed on developing abstract thinking and precise formulation skills using conceptual models. Students learn skills of discerning key te ciffy correct relations in complex systems of social reality, mostly enterprises and institutions. Students learn basics of ontological struc- learn how to express busines	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK with the internal str riate codes for important of the properties of codes for error dunication of the properties of cryptographic ications. Within late dures of cryptographic ications. Within late dures of cryptographic ications and omain, the tural modeling in the internation of cryptographic ication in the Internation in the Internation in the Internation of the BP ourse: BI-ZPI. Z,ZK code language commodern, object-fur in the Internation in the Int	4 5 d actuators, application ESP, STM; 5 ructure and olementation and ocessor with sor simulator set with set with sor simulator set with sor simulator set with sor simulator set with
BI-IOT.21 The course focuses wireless communic areas. Within the course focuses wireless communic areas. Within the course forganization of composition of multiplication. The correction for parallethe environment and the environment and certificates in syste will gain pra BI-KOM.21 The course is focus categorize and specinotation. Next, they learn the foundation will BI-KOT Kotlin is a modern, The language is ful BI-KSA The one-semester canthropological research and the course is for the language is ful BI-KSA The one-semester canthropological research and the course is for the language is ful BI-KSA The will introduce s	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech. Internet of Things on an overview of technologies and development tools used in the field of the Internet of Things (loT), Lectures are devoted to an over lation technologies designed primarily for this area, and appropriate programming methods. They include an overview of loT architectomputer labs, students will gain practical experience with developing simple IoT systems using common development environments software - Arduino, Raspberry Pi OS). Computer Units heir basic knowledge of digital computer units acquired in the obligatory course of the program (BIE-SAP), get acquainted in detail value puter units and processors and their interactions with the environment, including accelerating arithmetic-logic units and using approp or organization of main memory and other internal memories (addressable, LIFO, FIFO and CAM) will be discussed in detail, including a land serial data transmissions. They will also get acquainted with the methodology of controller design, with the principles of commond the architecture of the bus system. The problems will be practically evaluated in the labs and with the help of the educational microproce and programmable hardware design kits (FPGA). Cryptography and Security erstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ms based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in applicated skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic procered on developing abstract thinking and precise formulation skills using conceptual models. Students learn basics of ontological structearn how to express business rules and constraints using the OCL language and foundations of OWL/RDF semantic data represent of a cofficial process business rules and constraints using the OCL lang	Z,ZK view of sensors are ctures for different (hardware - ARM, Z,ZK vith the internal str riate codes for imp g codes for error dunication of the programmed process Z,ZK use cryptographic ications. Within lat dures of cryptanaly Z,ZK rms in a domain, t tural modeling in tration in the Internation in the International during the BP ourse: BI-ZPI. Z,ZK nced language cormodern, object-fur to the world - example of the world - exampl	4 5 d actuators, application ESP, STM; 5 ructure and olementation etection and ocessor with sor simulator 5 c keys and by standard by st

the connection with linear manifolds. We define the regularity of matrices and learn to find their inversions using GEM. We will also learn to find eigenvalues and eigenvectors of a matrix. We will also demonstrate some applications of these concepts in computer science. BI-LA2.21 Linear Algebra 2 Z.ZK 5 Studenti si v tomto p edm tu rozší í znalosti z p edm tu BI-LA1, kde se pracovalo pouze s vektory ve form n-tic ísel. Zde si zavedeme vektorový prostor v abstraktní obecné form Seznámíme se také s pojmem skalární sou in a lineární zobrazení, což nám dovolí ukázat souvislost s lineární algebrou, geometrií a po íta ovou grafikou. Dalším velkým tématem bude numerická lineární algebra, kde si ukážeme potíže s ešením soustav lineárních rovnic na po íta i a možnosti, jak se s tímto problémem vypo ádat s d razem na rozklady matic. Ukážeme si také aplikace lineární algebry v r zných oborech. BI-LOG.21 Mathematical Logic The course focuses on the basics of propositional and predicate logic. It starts from the semantic point of view. Based on the notion of truth, satisfiability, logical equivalence, and the logical consequence of formulas are defined. Methods for determining the satisfiability of formulas, some of which are used for automated proving, are explained. This relates to the P vs. NP problem and Boolean functions in propositional logic. In predicate logic, the course further deals with formal theories, such as arithmetics, and their models. The syntactic approach to mathematical logic is demonstrated on the axiomatic system of propositional logic and its properties. Gödel's incompleteness theorems is explained. Mathematical Analysis 1 BI-MA1.21 Z,ZK We begin the course by introducing students to the set of real numbers and its properties, and we note its differences with the set of machine numbers. Then we study real sequences and real functions of a real variable. We gradually introduce the notions of limits of sequences and functions, continuous functions, and derivatives of functions. This theoretical foundation is then applied to root-finding problems (iterative method of bisection and Newtons method), construction of cubic interpolation (spline), and formulation and solution of simple optimization problems (i.e., the issue of finding extrema of functions). The course is closed with the Landaus asymptotic notation and methods of mathematical description of complexity of algorithms. Z,ZK BI-MA2.21 Mathematical Analysis 2 The course completes the theme of analysis of real functions of a real variable initiated in BI-MA1 by introducing the Riemann integral. Students will learn how to integrate by parts and use the substitution method. The next part of the course is devoted to number series, and Taylor polynomials and series. We apply Taylors theorem to the computation of elementary functions with a prescribed accuracy. Then we study the linear recurrence equations with constant coefficients, the complexity of recursive algorithms, and its analysis using the Master theorem. Finally, we introduce the student to the theory of multivariate functions. After establishing basic concepts of partial derivative, gradient, and Hessian matrix, we study the analytical method of localization of local extrema of multivariate functions as well as the numerical descent method. We conclude the course with the integration of multivariate functions. Modern Data Formats 3 The goal of the course is to give an overview of commonly used data formats for typical types of data. There will be a description of each data type and the data formats used for that data type along with tools available to work with such data. After finishing the course, the students should know how to work with common data, e.g. on the Web. Multimedia and Graphics Applications BI-MGA 21 7 7K Students get acquainted with multimedia technologies and applications for 2D/3D bitmap and vector graphics. During the course, current tools for working with images, videos, 3D graphics and animation will be introduced. Students learn several basic techniques of creation and editing content in computer graphics, introduction to graphic formats, and compression technologies. They learn to use multimedia transmission and representation systems, including real-time multimedia processing. They understand the principle of operation and use of graphics processing cards. They gain a number of practical skills, such as vectorizing raster images, retouching photos, or creating 3D models. **BI-MIT** Mikrotik technologies The main motivation of the subject stands in the introduction of the RouterOS operating system and some network Mikrotik technologies which are commonly used by the small and middle internet service providers (ISPs). The students learn how to use and create the architectures of the network solutions which are based on the metallic, optical or wireless links and how to administrate and practically deploy them. The successful completion of this subject requires the previous knowledge of elementary computer networks concepts like protocols and technologies of the data-link, network and transport layer of the OSI model. BI-ML1.21 Machine Learning 1 7.7K 5 The goal of this course is to introduce students to the basic methods of machine learning. They get theoretical understanding and practical working knowledge of regression and classification models in the supervised learning scenario and clustering models in the unsupervised scenario. Students will be aware of the relationships between model bias and variance, and know the fundamentals of assessing model quality. Moreover, they learn the basic techniques of data preprocessing and multidimensional data visualization. In practical demonstrations, pandas and scikit libraries in Python will be used. BI-ML2.21 Z,ZK Machine Learning 2 5 The goal of this course is to introduce students to the selected advanced methods of machine learning. In the supervised learning scenario, they, in particular, learn kernel methods and neural networks. In the unsupervised learning scenario students learn the principal component analysis and other dimensionality reduction methods. Moreover, students get the basic principles of reinforcement learning and natural language processing. BI-MMP Multimedia team project ΚZ 4 This course is presented in Czech. BI-MPP21 Methods of interfacing peripheral devices Z,ZK 5 The course is focused on methods for interfacing of peripheral devices. Interfacing of real peripheral devices is focused on techniques based on Universal serial bus (USB). The course includes both PC side and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of USB devices, Linux and Windows drivers, simple application development, and APIs of selected devices. BI-MSI.21 Mobile Networks Z.ZK 5 The goal of the course is to acquaint students with basic principles of mobile networks 4G, 5G, and with multimedia data transfers in these networks. Also, students will study the principles of smart cards and their use for authentication of users of mobile networks. The computer labs will be based on simulations of mobile networks. The course builds upon preceding courses BIE-PSI and BIE-VPS and completes the overall student's knowledge mainly in the area of high-speed mobile networks. BI-MVT.21 Modern Visualisation Technologies Z.ZK 5 The goal of the course is to give an overview of modern visualization technologies and their principles, namely technologies related to virtual and augmented reality, visualization on high resolution displays (e.g., SAGE and video mapping) and their applications in practice. Several lectures deal with the content creation for the mentioned technologies, namely fractal and procedural visualization, scientific data visualization, and 3D model scanning. BI-OOP.21 Object-Oriented Programming Object-oriented programming has been used in the last 50 years to solve computational problems by using graphs of objects that collaborate together by message passing. In this course students get acquainted with the main principles of object-oriented programming and design, used in modern programming languages. The emphasis is on practical techniques for developing software, which includes testing, error handing, refactoring, and application of design pattern. **BI-OPT** Introduction to Optical Networks Students get basic overview of optical networking technology with the emphasis on practical utilization in Internet and in network infrastructures, on possible problems with deployment of optical network technology and on their solutions. The course will include the history of optical communications, an overview of passive components (optical fibres, multiplexors, dispersion compensators, and others), and an overview of active components (optical switches and amplifiers, high-speed coherent transmission systems). The course will also cover the most up-to-date topics presented at premium research conferences, such as ECOC or OFC. Attention will also be paid to new applications, such as the accurate time on Internet, ultrastable frequency transfer, or sensor networks. The labs will focus on real work with optical components and on measurement of their parameters. Students will solve real tasks from practice.

BI-ORL	Operations Research and Linear Programming	KZ	5
•	o introduce students to the issues of operational research and primarily to the practical application of linear programming as a fundar nal research primarily focuses on the use of engineering methods (with a mathematical background) to solve practical problems (suc	•	
BI-OSY.21	Operating Systems	Z,ZK	5
In this course that is	a follow-up of the Unix-like operating systems course students deepen their knowledge in areas of OS kernels, process and thread imp	lementations, race	
critical regions, thre	ead scheduling, shared resource allocation and deadlocks, management of virtual memory and data storages, file systems, OS moni and implement simple multithreaded applications. General principles are illustrated on operating systems Solaris, Linux, or MS W	• .	le to design
BI-PA1.21	Programming and Algorithmics 1	Z,ZK	7
-	ability to formulate algorithms for solving basic problems and write them in the C language. They understand data types (simple, structure)	•	
	ons, concept of recursion. They learn to analyse simple cases of algorithm complexity. They know fundamental algorithms for searchi with linked lists and trees.		
BI-PA2.21	Programming and Algorithmics 2	Z,ZK	7
	instruments of object-oriented programming and are able to use them for specifying and implementing abstract data types (stack, que n these skills using the C++ programming language and are introduced to all C++ features needed in object-oriented programming (ε	=	-
,	copying/moving of objects, operator overloading, inheritance, polymorphism).	3,44 444	3,
BI-PAI.21	Law and Informatics	ZK	5
	urse is to introduce students into the basic legal instruments that they will encounter in their practice. Students will gain knowledge of	-	
· · · · · · · · · · · · · · · · · · ·	Il be alerted to the pitfalls that await them in business from the point of view of law. They will understand the process of concluding conow their responsibilities in working with the Internet, will be familiar with the institutes of intellectual property law, and will be able to		
,	censes. Emphasis will also be put on the legal protection of data on the Internet, the registration of Internet domains and protection a		,,
	ted to such behaviour in the field of IT that can be classified as criminal under the Czech law. The course will also include analyses of		
BI-PGA.21	Programming of Graphic Applications	Z,ZK	5
· · · · · · · · · · · · · · · · · · ·	sent the possibilities of current professional open-source tools for image editing, video editing, 3D animation (GIMP, Blender) and their nathematical data). Emphasis will be placed on the possibilities of further enhancement of the presented software tools, both using b		
	by implementation of plugins.	g g	gg
BI-PGR.21	Computer graphics programming	Z,ZK	5
•	curse, students can program a simple interactive 3D graphical application like a computer game or scientific visualization, design the		٠ .
	nd materials (like wall surface, wood, sky), and set up the lighting. At the same time, they understand the fundamental principles and ter Dipeline, geometric transformations, or lighting model. They gain knowledge allowing orientation in computer graphics and representi		
	pment, e.g., GPU programming and animations. They get used to techniques utilized in geometric modeling, modeling curves and surface	_	
BI-PHP.1	Programing in PHP	KZ	4
	rught in Czech Main goal of the course is an introduction to PHP - language and technology. Students will learn also best practices		
development in I	PHP. The course is recommended for students of BIE-WSI-WI.2015 branch of study and do not have required knowledge to register for this course in their 3rd semester of study.	or BIE-TWA.1. The	ey should
BI-PJP.21	Programming Languages and Compilers	Z,ZK	5
- 1	asic compiling methods of programming languages. They are introduced to intermediate representations used in current compilers G	'	
create a specificat	ion of a translation of a text that conforms a given syntax, to a target code and also to create a compiler based on the specification. T	he compiler can tr	anslate not
BI-PJS.1	only a programming language but any text in a language generated by a given LL input grammar. JavaScript Programming	KZ	4
	course is an introduction to Javascript programming. Students will learn also best practices and will use tool that eases development	l I	
recommended for s	tudents of BIE-WSI-WI.2015 branch of study and do not have required knowledge to register for BIE-TWA.1. They should register for the	nis course in their 4	th semester
5,5,5,5	of study.		
BI-PJS.21	JavaScript Programming introduction to Javascript programming. Students will also learn best practices and get acquai nted with tools that make code develo	KZ	5 nt easier
BI-PJV	Programming in Java	Z,ZK	4
-	This course is presented in Czech. However, there is an English variant in the program Informatics (B1801 / 4753).		
BI-PKM	Introduction to mathematics	Z	4
DI DMA	This course is presented in Czech.	7 71/	4
BI-PMA Students will be wo	Programming in Mathematica rking with modern technical and scientific software. Students will learn how to use different programming styles (functional programm	Z,ZK	4 ogramming
	etc.), how to create dynamic interactive applications and visualisations, data processing and presentations.		- 99,
BI-PNO.21	Practical Digital Design	KZ	5
	rerview of the contemporary digital design flow and learn practical skills to use synchronous design techniques. They understand the		1
and implementation	on technologies FPGA and ASIC. Students demonstrate practical use of the design techniques in the course project using modern in tools.	dustry-standard C	AD design
BI-PPA.21	Programming Paradigms	Z,ZK	5
	rith basic paradigms of high-level programming languages, including their basic execution models, benefits, and disadvantages of par		
	digm and its basic principles are explained in details. Logic programming is introduced as another way of declarative programming. The	• •	
on lambda calculus	s and on Lisp (Racket) and Prolog programming languages. Moreover, usage of these principles is demonstrated on modern mainstr such as C++ and Java.	eam programming	ianguages
BI-PRR.21	Project management	Z,ZK	5
The aim of the co	urse is to introduce students into the basic concepts and principles of project management, i.e. methods of planning, teamwork, anal	ysis, crisis manage	ement in a
	cation, argumentation and meeting management. Students will practice project management techniques (e.g. SWOT analysis, risk as		-
	ource schedule, resource balancing, network graphs) and creation of project documentation. The course is designed especially for st nowledge outside IT, consider starting their own company, or have ambitions to work in middle or senior management positions in lar		
	also suitable for all those who will develop software or hardware in the form of team projects.		
BI-PRS.21	Practical Statistics	KZ	5
	e introduced to methods of applied statistics. They will learn how to work with various types of data, perform analyses, and choose more greecing and correlation analysis, analysis of variance and non parametric methods. Students will learn to use the statistical software	-	
will encompass re	gression and correlation analysis, analysis of variance and non-parametric methods. Students will learn to use the statistical software methods on data from real problems.	z is and will apply t	ire studied

BI-PS2 Programming in shell 2 Z,ZK 4 Students gain a general overview of available scripting languages, their syntax, semantics, programming style, data structures, pros and cons. In addition, they gain a deeper insight into shell and some other particular scripting languages and will get practical experience with shell script programming. Computer Networks The course introduces students to the principles of computer networking. It covers basic technologies, protocols, and services commonly used in local networks and in the Internet as well. The lectures will be amended by proseminars that introduce students into network programming and demonstrate the abilities of advanced network technologies. Students practically verify configurations and management of network devices in the lab within the environment of the operating systems Linux and Cisco IOS. BI-PST.21 Probability and Statistics Students will learn the basics of probabilistic thinking, the ability to synthesize prior and posterior information and learn to work with random variables. They will be able to apply basic models of random variable distributions and solve applied probabilistic problems in informatics and computer science. Using the statistical induction they will be able to perform estimations of unknown distributional parameters from random sample characteristics. They will also be introduced to the methods for testing statistical hypotheses and determining the statistical dependence of two or more random variables. BI-PYT.21 Python Programming The aim of the course is to get acquainted with basic efficient control and data structures of the Python programming language for text and binary data processing. The differences between philosophy of programming in Python and in other programming languages will be explained. Each topic is prepared for students in the format of a Jupyter notebook, which enables greater accent to individual student work. Before each lab, students pass a short test on the last week topic. Four homeworks plus a semester work will be assigned during the semester. **BI-QAP** Quantum algorithms and programming K7 5 Course aims at giving students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanics, on which quantum technologies are based, and algorithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software development kit Qiskit, which is based on Python language. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-VMM and experience with Python might be an advantage. No previous knowledge of physics is assumed. **Quality Assurance** This course introduces students to the fundamentals of testing and quality management. Students will learn what the role of a tester is in the context of different types of software development and will experience hands-on application testing using both manual and automated testing. At the end of the semester, the student should be prepared to perform a test analysis, design a set of test scenarios, prepare test data, automate an appropriate portion of the scenarios, and prepare a report on the bugs found in the product under test. Computer Structure and Architecture Students will get acquainted with the basic architecture and units of a digital computer, understand the structure, function, and implementation of arithmetic-logic unit, controllers, memory, I/O communication, methods of data transfers between the units. The logic design and the implementation of a program-controlled simple processor is practically implemented in the labs using programmable circuits (FPGA), a single-chip microcomputer, and modern design (EDA) tools. BI-SCE1 Computer Engineering Seminar I 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 K N laboratories. The capacity of the subject is limited by the possibilities of the seminar teachers. The topics are new for each semester. BI-SCF2 Computer Engineering Seminar II 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 K N laboratories. The capacity of the subject is limited by the possibilities of the seminar teachers. The topics are new for each semester. BI-SEP World Economy and Business Z,ZK 4 This course is presented in Czech. 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. Network Programming BI-SIP.21 7 5 The course covers fundamental topics of programming network applications. It consists of 4 parts. The introductory part is focused on low-level programming using BSD sockets. The second part is devoted to designing communication protocols and their verification. The third part introduces the principles and applications of middleware technologies. The final part introduces basic modern models of distributed computing - P2P and blockchain. All topics will be first explained theoretically and then practices in computer labs using a chosen programming language environment. BI-SKJ.21 Scripting Languages Students gain a general overview of available scripting languages, their syntax, semantics, programming style, data structures, pros and cons. In addition, they gain a deeper insight into shell and some other particular scripting languages and will get practical experience with shell script programming. BI-SOJ Machine Oriented Languages Z.ZK 4 Students of the course will gain an ability to create their own programs in the assembly language of the most common PC platform focusing on optimal use of microprocessor's features and efficient cooperation of software with hardware. Next, there will be discussed x86 specifics of the majority of OSes from the application point of view linked to higher level languages. This knowledge will be used during reverse engineering, optimization, and evaluation of code security. BI-SP1.21 Team Software Project 1 ΚZ 5 Students gain hands-on experience with the analysis, design, and prototyping of a large-scale software system. Theoretical support is provided in the BIE-SWI course that runs concurrently and that teaches students necessary techniques and principles. Teams consisting of 4-6 students will work on a specific project. The teacher, in the role of the team and project leader, regularly consults with the team (at the seminars) both the formal and material aspects of the software design. The resulting software artefact will be further developed and finished in the BIE-SP2 course. BI-SP2.21 ΚZ Team Software Project 2 5 Students gain hands-on experience with the iterative development process while working on a large-scale software project. The first iteration is the result of the BIE-SP1 course project. However, in this follow-up, the functionality, testing, and documentation of the software system being developed will be emphasized. Students will work in teams of 4-6 people. The teacher, in the role of the team and project leader, regularly consults with the team (at the seminars) the formal as well as material aspects of their solution. BI-SPS.21 Administration of Computer Networks and Services The aim of the course is to deepen the theoretical knowledge of network technologies and protocols in the environment of network servers administrated under the operating systems Linux and Windows. The course syllabus requires the knowledge at the level of courses BIE-PSI, BIE-VPS, and BIE-OSY. Practical skills will be gained by practical hands-on experience with real network infrastructure.

BI-SQL.1	Language SQL, advanced	KZ	4
Module is based or	knowledge obtained in BI-DBS. Students become familiar with advanced relational and non-relational features of SQL language. In pa	rticular stored pro	gram unites,
triggers, recursive	queries, OLAP support, object-relational constructions. Part of the course is dedicated to practical database optimization from the point	of view of specialize	ed database
structures like ind	exes, clusters, index-organized tables, and materialized views. as well as from the point of view query optimization. Execution plan ar	nd possibilities of it	s. changes
	ed. Lectures will usually discuss SQL standard, but many features will be demonstrated on Oracle DBMS. Seminars are based on Oracle DBMS.	-	_
Will be discusse		icie Dbivio and pai	tially Off
	PostgreSQL.		
BI-SRC.21	Real-time systems	Z,ZK	5
Students obtain t	ne basic knowledge in the real-time (RT) system theory and in the design methods for RT systems including the dependability issues	. Theoretical knowl	edge from
lectures will be exp	perimentally verified in computer labs. The course is mainly focused on embedded RT systems, therefore the design kits in the lab ar	e the same as in th	e BIE-VES
	course.		
BI-ST1	Network Technology 1	Z	3
	,	_	_
The subject is or	iented to providing the students basic information and practical skills from the area of digital and IP networks. The subject is acredite	d under the Cisco I	Netacad -
	CCNA1 - R&S Introduction to Networks.		
BI-ST2	Network Technology 2	Z	3
	This course is presented in Czech.	, '	
BI-ST3	· · · · · · · · · · · · · · · · · · ·	Z	3
	Network Technology 3	-	_
	r enhance their knowledge acquired from previous BI-ST1 and BI-ST2 courses. Principles of routing and switching presented during E		
get further exten	ded in the course. Students will be able to start fine-tune protocols' settings to gain certain advantages like increased efficiency, pred	ctability, extension	beyond a
	simple topology, security, etc.		
BI-ST4	Network Technology 4	Z	3
	er enhance their knowledge already acquired from previous BI-ST1, BI-ST2, and BI-ST3 courses. Principles of routing and switching	-	-
	ot further extended in BI-ST3. Students were able to start fine-tune protocols' settings to gain certain advantages like increased effici		
beyond a simple	topology, security, etc. This module teaches students to configure and fine-tune Wide Area Networks and to experience a completely	other type of netw	ork (Non
Broadcast Multipl	e Access) which radically differs from well-known Ethernet (broadcast) type of networks. Students will also manage router and switch	firmware, perform	password
recoveries, and er	nergency procedures. Also the security aspect is treated; students will learn possible intra- and inter-network attacks and the mitigati	on ways while mair	ntaining the
	network running.		3
DI OTO	<u> </u>	7 71/	
BI-STO	Storage and Filesystems	Z,ZK	4
The student will lea	arn principles and current solutions of storage systems architecture. The module explains principles of data store, protection, and arch	ving, as so as stora	age scaling,
	load balancing and high availability.		
BI-SVZ.21	Machine vision and image processing	Z,ZK	5
<u>-</u>	are becoming a common part of life by being universally available. Related to this phenomenon is the need to process and evaluate in	_	
introduces students	s to different types of camera systems and a variety of methods for image and video processing. The course is focused on practical use	of camera system	s for solving
	problems of practice that the graduates may encounter.		
BI-SWI.21	Software Engineering	Z.ZK	5
_	ainted with methods of analysis and design of larger software projects that are typically designed and implemented in teams. They co	l ' l	_
	ring the analysis and design of larger software systems that will be developed in the concurrent course BIE-SP1. Students get hands-	•	
_		•	
_	nguage UML for modeling and solving software problems. Students learn the basics of object-oriented analysis, architecture design a	-	ine course,
st	udents also gain a theoretical basis in the field of project management, estimation of costs of software projects, and methods of their	development.	
BI-TAB.21	Applications of Security in Technology	Z,ZK	5
The goal of the co	urse is to introduce students to selected topics from cybersecurity technical applications that are utilized in different industries. Stude	nts get a broader	overview of
	cybersecurity applications and extend their knowledge from the cryptology, the secure code, and system, network, and hardware	•	
DITDA			4
BI-TDA	Test driven architecture	KZ	4
	cused on practical examples of how to develop, test, and deploy software with tools like GitLab, Docker, Kubernetes, and more that a		
world. This co	ourse has a strong connection on courses like BI(E)-SI1 and BI(E)-SI2. The main goal of this course is to learn by examples that occu	r in the semester p	roject.
BI-TDP.21	Documentation and Presentation	KZ	3
	sed on the basics of creating electronic documentation with emphasis on the creation of technical reports of a larger scope, typically fi	l I	_
	of a technical report in the LaTeX system, process an electronic presentation using the LaTeX Beamer system, and practically presentation	-	
the teacher. The	course is intended primarily for those students who have chosen the topic of their bachelor's thesis or will choose it within the first 14	days of teaching. \	vitnin the
	exercises of the course, an active approach to the creation of individual parts of the bachelor's thesis is assumed.		
BI-TEX	TeX and Typography	Z,ZK	4
	ented in Czech. This course gives basics of programming in TeX (plain TeX, ConTeXt, LaTeX, OpTeX, LuaTeX). Te second part of the		typographic
	rules.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	., pog. upo
DI TIO OI		7 714	
BI-TIS.21	Information Systems	Z,ZK	5
The goal of this co	ourse is to familiarise students with the information systems topic and information systems implementation principles. During the cour	se, students are inf	troduced to
"on the market" e	xisting types of systems and their usage in specific industry segments. Students are familiarised with the CRM, ERP, MRP and other	types of information	n systems.
The fundamen	tal part of the course is the introduction to key ideas of an information system selection, evaluation of information system benefits, wa	ays of information s	ystems
	d information system implementation based on the project management principles. The emphasis is on the initial customer analysis,	=	-
· ·	better to implement any existing information system or to develop a new one from scratch. These factors determine the information sy	-	-
		· · · · · · · · · · · · · · · · · · ·	
	of the course information systems security, operation, support, maintenance, legislation impacts, and government information system		
BI-TJV.21	Java Technology	Z,ZK	5
The goal is to provi	de knowledge and skills for developing information systems and applications through concepts used in software development and exp	erience with librari	es and tools
	from Java language ecosystem. At the course end, the students are able to develop software systems in Java platform.		
BI_TDC 04	from Java language ecosystem. At the course end, the students are able to develop software systems in Java platform.	7 7V	5
BI-TPS.21	Computer Networks Technologies	Z,ZK	5
The course introd	Computer Networks Technologies uces students with basic and advanced technologies, components, and interfaces of contemporary computer networks at the physical	al layer with the ove	erlap to the
The course introd	Computer Networks Technologies	al layer with the ove	erlap to the
The course introd link layer. The lectu	Computer Networks Technologies uces students with basic and advanced technologies, components, and interfaces of contemporary computer networks at the physical	al layer with the ove	erlap to the strated and
The course introd link layer. The lectu	Computer Networks Technologies uces students with basic and advanced technologies, components, and interfaces of contemporary computer networks at the physical provide theoretical foundations of these technologies and explain relevant physical principles. In the labs, the respective technologies	al layer with the ove	erlap to the strated and
The course introd link layer. The lectu with the most impo	Computer Networks Technologies uces students with basic and advanced technologies, components, and interfaces of contemporary computer networks at the physical res provide theoretical foundations of these technologies and explain relevant physical principles. In the labs, the respective technologies retant ones students will get hands-on experience. Thematically, the course covers both local and long-range optical networks, Ethern always with focus on high-speed networks.	al layer with the over gies will be demon et, modern wireles	erlap to the estrated and s networks,
The course introd link layer. The lectu with the most impo	Computer Networks Technologies uces students with basic and advanced technologies, components, and interfaces of contemporary computer networks at the physical pressures provide theoretical foundations of these technologies and explain relevant physical principles. In the labs, the respective technologies and explain relevant physical principles. In the labs, the respective technologies and explain relevant physical principles. In the labs, the respective technologies and explain relevant physical principles. In the labs, the respective technologies are provided theoretical sequences. The physical principles in the labs, the respective technologies and explain relevant physical principles. In the labs, the respective technologies are provided theoretical sequences and physical principles. In the labs, the respective technologies and explain relevant physical principles. In the labs, the respective technologies are provided theoretical sequences and physical principles. In the labs, the respective technologies and explain relevant physical principles. In the labs, the respective technologies are provided theoretical sequences and physical principles. In the labs, the respective technologies are provided theoretical sequences are provided theoretical sequenc	al layer with the over gies will be demon et, modern wireles	erlap to the astrated and s networks,
The course introd link layer. The lectu with the most imposed BI-TS1 Theoretical seminary	Computer Networks Technologies uces students with basic and advanced technologies, components, and interfaces of contemporary computer networks at the physical provide theoretical foundations of these technologies and explain relevant physical principles. In the labs, the respective technologitation and students will get hands-on experience. Thematically, the course covers both local and long-range optical networks, Ethern always with focus on high-speed networks. Theoretical Seminar I or is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classic	al layer with the overgies will be demonet, modern wireles	erlap to the astrated and s networks, 4 he students
The course introd link layer. The lectu with the most imposed BI-TS1 Theoretical seminary	Computer Networks Technologies uces students with basic and advanced technologies, components, and interfaces of contemporary computer networks at the physical provide theoretical foundations of these technologies and explain relevant physical principles. In the labs, the respective technologies and explain relevant physical principles. In the labs, the respective technologies and students will get hands-on experience. Thematically, the course covers both local and long-range optical networks, Ethern always with focus on high-speed networks. Theoretical Seminar I It is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classic lially and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is a second concern.	al layer with the overgies will be demonet, modern wireles	erlap to the astrated and s networks, 4 he students
The course introd link layer. The lectu with the most imposed BI-TS1 Theoretical seminary	Computer Networks Technologies uces students with basic and advanced technologies, components, and interfaces of contemporary computer networks at the physical provide theoretical foundations of these technologies and explain relevant physical principles. In the labs, the respective technologitation and students will get hands-on experience. Thematically, the course covers both local and long-range optical networks, Ethern always with focus on high-speed networks. Theoretical Seminar I or is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classic	al layer with the overgies will be demonet, modern wireles	erlap to the astrated and s networks, 4 he students

BI-TS2 Theoretical Seminar II Ζ 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. BI-TS3 Theoretical Seminar III 7 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. BI-TS4 Theoretical Seminar IV 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. BI-TUR.21 User Interface Design Students gain a basic overview of methods for designing and testing common user interfaces. They get experience to solve the problems where software and other products do not communicate with the user optimally, since the needs and characteristics of users are not taken into account during product development. Students gain an overview of methods that bring users into the development process to ensure optimal interface for them. Design of Web Applications Z,ZK The basic course of web application development. Initially, the students become familiar with HTTP and its possibilities and partly with some properties of language describing the structure (HTML) and presentation of document on the Web (CSS). These skills provide the necessary basis for the development of Web applications, which will be demonstrated in modern libraries facilitate the development of Web pages applications. Server side will be demonstrated on PHP technology using frameworks Symfony 2, Doctrine 2. Developments on the client side will be demonstrated using a JavaScript language with library jQuery and possibly MV* framework React BI-TZP.21 Technological Fundamentals of Computers Z,ZK 5 Students get acquainted with the fundamentals of digital and analog circuits, as well as basic methods of analyzing them. Students learn how computer structures look like at the lowest level. They are introduced to the function of a transistor. They will understand why processors generate heat, why cooling is necessary, and how to reduce the consumption; what the limits to the maximum operating frequency are and how to raise them; why a computer bus needs to be terminated, what happens if it is not; how a computer power supply looks like (in principle). In the labs, students model the behavior of basic electrical circuits in SW Mathematica. BI-UKB.21 Introduction to Cybersecurity The goal of the course is to provide students with the introduction of basic concepts in modern approach to cybersecurity. Students will get a basic overview of threats in cyberspace and attacker techniques, security mechanisms in networks, operating systems and applications, as well as of basic cyberspace regulations. 2 BI-ULI Introduction to Linux Students become familiar with the basics of the Linux operating system using e-learning form. They learn to work with the command line and become familiar with basic commands and techniques of a Unix-like system. Topics can be studied first theoretically and then practically verified in a virtual machine (terminal) BI-UOS.21 Unix-like Operating Systems Unix-like operating systems represent a large family mostly open-source codes that kept bringing during the history of computers efficient innovative functions of multiuser operating systems for computers and their networks and clusters. The most popular OS today, Android, has a unix kernel. Students get overview of basic properties of this OS family, such as processes and threads, access rights and user identity, filters, or handling files in a file system. They learn to use practically these systems at the level of advanced users who are not only able to utilize powerful system tools that are available to users, but are also able to automatize routine agenda using the unix scripting interface, called shell Selected Applications of Combinatorics The course aims to introduce students in an accessible form to various branches of theoretical computer science and combinatorics. In contrast to the basic courses, we approach the issue from applications to theory. Together, we will first refresh the basic knowledge needed to design and analyze algorithms and introduce some basic data structures. Furthermore, with the active participation of students, we will focus on solving popular and easily formulated problems from various areas of (not only theoretical) informatics. Areas from which we will select problems to be solved will include, for example, graph theory, combinatorial and algorithmic game theory, approximation algorithms, optimization and more. Students will also try to implement solutions to the studied problems with a special focus on the effective use of existing tools. BI-VDC.21 Virtualization and Data Centers Z,ZK The aim of the course is to familiarize students with technology basis of cloud computer systems. It shows principles and techniques used in design and implementation of data center infrastructure, such as various kinds of virtualization and high availability of servers, storages, and software layers. The course guides through data center technologies from private to public and hybrid clouds. Student learn current trends in the architecture of IT infrastructure and its configuration for classic and cloud applications. Students will understand the design, validation, and operation of complex infrastructures for modern applications with respect to scalability and protection against overloads, outages, and data losses. BI-VES.21 **Embedded Systems** Z,ZK 5 Students learn to design embedded systems and develop software for them. They get basic knowledge of the most common microcontrollers and embedded processors, their integrated peripheral circuits, programming methods, and applications. They get practical skills with development kits and tools. **BI-VHS** Virtual game worlds ZK The course leads students to create a complex virtual world. The course is a continuation of basic graphical courses (MGA, PGR, BLE,). This current students knowledge is furthermore complemented by the theory of game design, principles of writing dialogues and characters in order to create a functional and complex virtual world. The course can be followed by the course MI-PVR with the task of converting scenes and their dynamics into a fully virtual environment suitable for VR devices. BI-VIZ.21 **Data Visualization** The course offers an overview of the types and characteristics of data as well as suitable visualization methods. This will aid the students in understanding data, their content and their application in areas such as data mining and machine learning. Within the course, students will be introduced to exploratory data analysis, preprocessing, and ways of visualizing different kinds of data such as text, social networks, time series or basic image data processing. Students will get hands-on experience in applications of selected methods to real-world examples in the Python programming language. BI-VMM Selected Mathematical Methods Z,ZK The lecture begins with an introduction to the analysis of complex functions of a complex variable. Next, we present the Lebesgue integral. We then address Fourier series and their properties. Further, we introduce and study the properties of the Discrete Fourier Transform (DFT) and its fast implementation (FFT). We discuss the wavelet transform. We examine the linear programming problem in more detail and its solution using the Simplex algorithm. Each topic is demonstrated with interesting examples. BI-VPS.21 Selected Topics in Computer Networking Z,ZK The course builds upon the Computer Networks course (BI-PSI), obligatory for the program. Students will learn in detail principles, protocols, and technologies used in modern computer networks from local area networks up to Internet, with focus on switching, routing, security, and virtualization. The emphasis will be on gaining practical experience with real network devices in the lab and learning important methods of local area and wide area networks from the viewpoint of functionality, performance, and security. BI-VR1 Virtual reality I Introduction to Virtual Reality (VR), virtual reality operating system and virtual reality creation. Another objective is to meet the rules and requirements of virtual worlds communication. The course focuses on the ways of teaching using virtual reality technologies and interactive activities in educational virtual 3D worlds. It improves computational thinking, empathy and shared social activities

BI-VR2	Virtual reality II	KZ	3
Continuation of the	course Virtual Reality I. The new course focuses on collaborative telepresence, spatial computing and social life of avatars. The objet for computer science and gamification in various social metaverse and desktop engines.	ctive is to develop	applications
BI-VWM.21	Searching the Web and Multimedia Databases	Z,ZK	5
-	c overview about search techniques in the web environment that is interpreted as a very large distributed and heterogeneous storage		
•	nformation about search techniques in text and hypertext documents (the web pages themselves) and about feature extraction from arity search in multimedia databases (generally in collections of unstructured data). They also learn techniques for programming web sedata types (documents).	1 0 , 0	′ I
BI-ZIVS	Intelligent Embedded System Fundamentals	KZ	4
_	ed system fundamentals course is focused on high-level technology embedded systems integrating artificial intelligence. The aim of t		
	robot control and development of applications in a graphical development environment. Lectures provide fundamentals of motion cont avigation and development tools. In labs, students program a set of basic task by using the robot simulator and real hardware to get p technologies.	_	
BI-ZNF	PHP Framework Nette - basics	KZ	3
Students will gain the	he basics of PHP framework Nette. They will learn how to practically work with MVP architecture and various libraries of this Czech po knowledge should serve for the efficient creation of a web backend in PHP language.	pular framework. T	he resulting
BI-ZPI	Process engineering	KZ	4
learn basics of the	tundamentals of process engineering in this subject. Students will get necessary foundations for understanding formal principles of pused notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of busible of process engineering for information systems development is discussed as well as its importance in the overall context of information an enterprise.	ness processes us	sing modern
BI-ZRS.21	Basics of System Control	Z,ZK	5
The course gives control of enginee basic linear dynamic model, the basic	an introduction to the field of automatic control. Students will gain knowledge in this rapidly evolving field of great future. We will focusiving and physical systems. We will provide basic information from the feedback control of linear dynamical SISO systems, description ic systems analysis and design verification, simple PID feedback, PSD, and fuzzy controllers. Students will learn the methods of creat linear dynamic systems analysis and design verification and simple PID feedback, PSD, and fuzzy controllers. Attention is also giver es of stability in control systems, single and continuous adjustment of the controller parameters, and certain aspects of the industrial and digital controllers and PLC control.	s our attention part n methods of syste ing a description of to sensors and ac	ticularly on em models, f the system ctuators in
BI-ZS10	Bachelor internship abroad for 10 credits	Z	10
	once within his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or re	_	-
internship. Auxiliary	an of the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profession courses BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits conforeign institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided intexceeds the academic year's dead-line.	respond to 4 weeks two subjects if th	s of full-time ne internship
BI-ZS20	Bachelor internship abroad for 20 credits once within his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or re	Z	20
internship. Auxiliary employment with a BI-ZS30 Each student can	an of the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profession of the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profession or courses BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits corporation for eight internship is 30 credits. This amount can be divided interced the academic year's dead-line. Bachelor internship abroad for 30 credits once within his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or re	respond to 4 weeks to two subjects if the Z search institution.	s of full-time ne internship 30 Before the
internship. Auxiliary employment with a	an of the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profession of the courses BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits conforeign institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided intexceeds the academic year's dead-line.	respond to 4 weeks o two subjects if th	s of full-time ne internship
•	Basics of System Security burse is to provide introduction to basic concepts in security of computer systems. Further, the course introduces the basics of forens analysis or incident response. After finishing the course student will get both theoretical and practical knowledge in the area of moder as well as skills needed for independent work in the area of operating system security incident analysis.	•	
BI-ZUM.21	Artificial Intelligence Fundamentals	Z,ZK	5
	roduction to artificial intelligence with emphasis on symbolic techniques. The design of an intelligent agent and the techniques neede decision-making level. The intelligent agent in the context of the course can be represented for example by a physical robot, but also leads to the course can be represented for example by a physical robot, but also leads to the course can be represented for example by a physical robot, but also leads to the course can be represented for example by a physical robot, but also leads to the course can be represented for example by a physical robot.		
	virtual assistant or a character in a computer game. We will not only introduce the basics, but also show the current state-of-the-art d		
BI-ZWU	Introduction to Web and User Interfaces This course is presented in Czech.	Z,ZK	4
BIE-CSI	Introduction to Computer Science	Z	2
	ory class on Elementary Computer Science for broad audiences: bachelor students in computer science, students majoring in other fi		1
and relate basic p	pol students, anybody with a background in basic math and the desire to understand the absolute basics of computer science. The grinciples of computer science for students to understand, early on, what computer science is, why things such as high-level programm are, and even how, on a basic yet representative and practically relevant level. After taking the class, students are able to answer not questions about themselves such as which courses to take next and which books to follow up with, ideally realizing if they are interest than expected, or even less than before.	ning languages an t just basic compu	nd tools are iter science
BIE-DIF	Differential equations	Z,ZK	5
This course provide	s s a foundational overview of differential equations, starting with basic motivation and examples of ODEs and progressing to essential s heorems on existence and uniqueness establish when solutions can be guaranteed. Linear and system-based ODEs are covered wi	olution methods like	- 1
-	sis, followed by examples of non-linear models such as predator-prey and epidemiological models to showcase real-world application		
	equations (PDEs) extends these concepts to multi-variable contexts. The course will also cover numerical methods for solving ODEs and explicit Euler methods, Runge-Kutta methods, and finite element methods for both ODEs and PDEs.		
BIE-EEC	English language external certificate	Z	4
	se can be recognized for any active semester after the submission of a certificate certificate that demonstrates their proficiency in Engli the B2 level of the Common European Framework of Reference for Languages.		1

2	l Z	Introduction to Mathematics 2	BIE-IMA2
_	_	extend knowledge of elementary functions and their properties. Students understand basic mathematical principles and they are	
1 0	_	examples.	DIE 050
0	Z	Systems Engineering	BIE-SEG
		class on systems engineering for bachelor students in computer science. The goal of the class is to introduce basic principles of	
		or and memory virtualization. Seeing and actually understanding virtualization is the overarching theme of the class. After taking erence between processes and threads as well as emulation and virtualization, what virtual memory is and how it works, what co	•
oposed to	illiculterity is, as of	parallelism, and how processes and threads synchronize efficiently to overcome concurrency for communication.	understand the t
4	Z,ZK	Artificial Intelligence Fundamentals	BIE-ZUM
1		d to the fundamental problems in the Artificial Intelligence, and the basic methods for their solving. It focuses mainly on the classic	
		lent systems, game theory, planning, and machine learning. Modern soft-computing methods, including the evolutionary algorithm be presented as well.	
2	7	Academic writing	FI-TOP
_	. –	tant and required part of research activity. It is not only about obtaining research results but also about applying them in the form	
earn how	rse, students will I article and reviewi	seful for students not only in their own publishing activities but also in the preparation of a bachelor's or master's thesis. In the co , what parts such an article should have, and how the peer review process works. Students will also try their hand at presenting ar rse will be taught in blocks, with one lecture at the beginning of the semester and one practicum in the middle of the semester. D on the availability of enrolled students.	blications can be te a scientific art
5	Z,ZK	Modern IT infrastructure	FIT-ITI
4	Z,ZK	World Economy and Business	FIT-SEP
		ited in Czech. The course introduces students of technical university to the international business. It does that predominantly by	-
		Id economy. Students get to know about different religions and cultures, necessary for doing business in diverse societies as well a	
		nic development, which are needed for the right investment decision. Seminars help to improve on the knowledge in the form of c readings. It is advised to take bachelor level of this course BIE-SEP as a prerequisite.	
3	Z,ZK	Introduction to European Economic History	FITE-EHD
		s a selection of themes from the European economic history. It gives the student basic knowledge about forming of the global ec	
		nistory. As European countries have been dominant actors in this process it focuses predominantly on their roles in the economic	
	-	to fragmentation of the Middle Ages, from destruction of WWII to the current affairs, the development of modern financial institu	
	•	ed economic history of particular European countries but rather the impact of trade and role of particular events, institutions and	
,	. .	meetings will consist of a mixture of lecture and discussion.	
5	KZ	Applied Functional Programming	NI-AFP
-	I	ed in Czech. Functional programming represents one of the traditional programming paradigms. Traditional and novel functional	
			-
_	ring this paradidm	d the functional paradigm becomes an important construct of traditionally imperative languages (C++, C#, Java), As such, maste	e rise nowadavs
_	ring this paradigm	d the functional paradigm becomes an important construct of traditionally imperative languages (C++, C#, Java). As such, maste necessary competence of a software engineer: the theory and especially the practice.	e rise nowadays
becomes		necessary competence of a software engineer: the theory and especially the practice.	
becomes	KZ	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining	NI-DDM
becomes 4 h large sc	KZ on experience with	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands	NI-DDM ourse focuses on
becomes 4 h large sc	KZ on experience with	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations	NI-DDM ourse focuses on
4 a large sc	KZ on experience with and will be capable	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language.	NI-DDM ourse focuses on ta processing fra
becomes 4 h large sc	KZ on experience with	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ste-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes	NI-DDM ourse focuses on
4 h large screet opropo	KZ on experience with and will be capable Z,ZK	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ste-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech.	NI-DDM ourse focuses on ta processing fra NI-DSP
4 a large screet to propo	KZ on experience with and will be capable Z,ZK Z,ZK	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining atte-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing	NI-DDM purse focuses on ta processing fra NI-DSP
4 large sce to propo	KZ on experience with and will be capable Z,ZK Z,ZK gorithms that are b	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining atte-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO his course prese
day a large sceeto proposed 4 day a large sceeto proposed 4 day a large sceeto proposed 4 day a large sceeto proposed by the day a large sceeto proposed by the large sceeto proposed by the large sceeto proposed by the large scenario proposed by the	KZ on experience with and will be capable Z,ZK Z,ZK gorithms that are b so valuable outside	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO his course prese plement and have
4 dan large screet or proportion of the large screet of proportion of the large screet	KZ on experience with and will be capable Z,ZK Z,ZK gorithms that are b so valuable outside compression, de-	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a sessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO nis course prese plement and have of digital image p
day a large scale to propose to propose to to propose to the domestic to the d	KZ on experience with and will be capable Z,ZK Z,ZK gorithms that are b so valuable outside compression, deversion, context errors.	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a	NI-DDM urse focuses on ta processing fra NI-DSP NI-DZO nis course prese plement and have of digital image p
4 h large sc e to propo	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK gorithms that are b so valuable outside compression, deversion, context endding depth, alpha	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a sessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray conse-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO nis course prese plement and have of digital image pupularly domain, interactive as-rig
4 h large sc e to propose to propose e the dom blurring ir chancement a matting.	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK gorithms that are b so valuable outside compression, deversion, context endding depth, alpha Z,ZK	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining atte-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a dessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray contributed.	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO his course prese plement and have of digital image pquency domain, interactive as-rig NI-IAM
4 h large sce to propose to propose to propose to propose the dom blurring in thancement a matting. 4 als (input	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK gorithms that are beso valuable outside compression, deversion, context endding depth, alpha Z,ZK usition of AV sign	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a design. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray conse-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a Internet and Multimedia	NI-DDM purse focuses on that processing fra NI-DSP NI-DZO his course prese polement and have of digital image puency domain, interactive as-rig NI-IAM The NI-IAM cours
4 h large sce to propose to propose to propose to propose the dom blurring in thancement a matting. 4 als (input s of real-til	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Jorithms that are beso valuable outside compression, deversion, context endding depth, alpha Z,ZK Juisition of AV signuse case scenarios	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a cessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray con as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a Internet and Multimedia s focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes ac	NI-DDM purse focuses on that processing fra NI-DSP NI-DZO this course prese polement and have of digital image puency domain, interactive as-rig NI-IAM The NI-IAM courses esentation of AV see that
4 h large sce to propose to propose the dom blurring in thancement a matting. 4 als (input s of real-tipponents	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Jorithms that are beso valuable outside compression, deversion, context endding depth, alpha Z,ZK Juisition of AV signuse case scenarios ect of various compression.	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a design. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray contas-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a linternet and Multimedia Internet and Multimedia Internet course of machine discovery. We will look at practical and stereoscopy. We will look at practical and stereoscopy. We will look at practical and stereoscopy.	NI-DDM purse focuses on that processing fra NI-DSP NI-DZO this course prese polement and have of digital image puency domain, interactive as-rig NI-IAM The NI-IAM courses esentation of AV sudiovisual transm
4 h large sce to propose to propose the dom blurring in thancement a matting. 4 als (input s of real-tipponents	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Jorithms that are beso valuable outside compression, deversion, context endding depth, alpha Z,ZK Juisition of AV signuse case scenarios ect of various compression.	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical an interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a design. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray contas-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a linternet and Multimedia Internet and Multimedia Internet and Multimedia Internet will practically assemble AV transmission chains using HW and SW technologies and verify the efficiency.	NI-DDM purse focuses on that processing fra NI-DSP NI-DZO this course prese polement and have of digital image puency domain, interactive as-rig NI-IAM The NI-IAM courses esentation of AV sudiovisual transm
4 h large sce to propose to propose the dom blurring in thancement a matting. 4 als (input s of real-tipponents	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Jorithms that are beso valuable outside compression, deversion, context endding depth, alpha Z,ZK Juisition of AV signuse case scenarios ect of various compression.	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical an interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a dessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray contains as processible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, as Internet and Multimedia Internet and Multimedia Internet and Multimedia Internet and Multimedia Internet and Sylvania and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the effort of AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording the of AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording the office of AV transmissions.	NI-DDM Durse focuses on that processing fra NI-DSP NI-DZO This course prese plement and have of digital image pupercy domain, interactive as-rig NI-IAM The NI-IAM courses esentation of AV sudiovisual transm
4 h large screet to propose to pr	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Z,ZK gorithms that are beso valuable outside compression, deversion, context endding depth, alpha Z,ZK juisition of AV signuse case scenarios ect of various come e scene up to the	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical an interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a design. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray contains as provided in the provided image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, as Internet and Multimedia Internet and Multimedia Internet and Multimedia Internet and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the efform of AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording the for audience.	NI-DDM purse focuses on that processing fra NI-DSP NI-DZO this course prese polement and have of digital image purposed for the process of
4 h large screet to propose to pr	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context endding depth, alpha Z,ZK juisition of AV sign use case scenarios ect of various come e scene up to the KZ out on the effective	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a sessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray con as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, as focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes actuals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the efform audience. Statistical Modelling Lab	NI-DDM purse focuses on that processing fra NI-DSP NI-DZO his course prese polement and have of digital image pupured domain, interactive as-rig NI-IAM The NI-IAM course esentation of AV sudiovisual transment quality and later NI-LSM The subject is original transment of the subject is original.
4 h large screet to propose to pr	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context endding depth, alpha Z,ZK juisition of AV sign use case scenarios ect of various come e scene up to the KZ out on the effective d analyses of their	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining the-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical almoratesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a design. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray contas-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, as Internet and Multimedia Internet and Multimedia Internet and Multimedia Internet and Multimedia Internet and Sultimedia Internet and	NI-DDM purse focuses on ita processing fra NI-DSP NI-DZO his course prese plement and have of digital image p quency domain, interactive as-ric NI-IAM The NI-IAM cours esentation of AV s adiovisual transm e quality and later NI-LSM the subject is orie
4 h large screet to propose to pr	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context endding depth, alpha Z,ZK juisition of AV sign use case scenarios ect of various come e scene up to the KZ out on the effective d analyses of their	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining te-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a design. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray contains-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, and internet and Multimedia focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes actuals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the efform audience. Statistical Modelling Lab and on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, and the modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, and	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO purse prese polement and have of digital image pursent and the nitractive as-rig NI-IAM the NI-IAM course presentation of AV sudiovisual transmin quality and later
4 an large scale to propose to pr	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context endding depth, alpha Z,ZK uisition of AV sign use case scenarios ect of various come escene up to the KZ out on the effective d analyses of their is). KZ	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining te-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical almost interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a bressing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray con as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes achals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the effor AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording the for audience. Statistical Modelling Lab and on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, and the processing o	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO purse prese plement and have to find digital image purser duency domain, interactive as-rig NI-IAM the NI-IAM course presentation of AV subject is originally and later NI-LSM the subject is originally information.
4 an large scale to propose to pr	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context ending depth, alpha Z,ZK uisition of AV sign use case scenarios ect of various come escene up to the KZ out on the effective d analyses of their is). KZ its ability to natura	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a sessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray con as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, as focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes ach als (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the ef of AV transmissions. Students will practically assemble AV transmission chains using HW and SW technologies and verify the ef of AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording the for audience. Statistical Modelling Lab and on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is and its modeling us	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO purse prese plement and have to find digital image purser due to the NI-IAM course presentation of AV subject is orie allable informatic
4 an large scale to propose to pr	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Z,ZK Z,ZK Gorithms that are be so valuable outside compression, deversion, context ending depth, alpha Z,ZK uisition of AV sign use case scenarios ect of various come escene up to the KZ out on the effective d analyses of their is). KZ its ability to naturals of design and imp	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining te-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical an interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a bessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray con as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes achals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the effort of AV transmissions. Students will practically assemble AV transmission chains using HW and SW technologies and verify the effort of audience. Statistical Modelling Lab ed on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, and at this point, the su	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO his course prese plement and have of digital image pquency domain, interactive as-rig NI-IAM The NI-IAM course presentation of AV sudiovisual transmer quality and later NI-LSM The subject is originally information of the subject of the subject of the subject of the subject oriented proused to build committee the subject or the subj
de to proposition de la constanta de la consta	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context endding depth, alpha Z,ZK uisition of AV signuse case scenarios ect of various come scene up to the KZ out on the effective d analyses of their is). KZ its ability to naturals of design and impleeds and areas of	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining atte-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a sessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray cor as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes achals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the effort AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording the for audience. Statistical Modelling Lab ad on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, and this point, the sub	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO purse prese plement and have of digital image purser durant and have of the nitrogen folial image pursers of the nitrogen folial image pursers of AV subject of AV subject is oriented properties of the nitrogen formation of AV subject is oriented properties of the nitrogen formation of AV subject is oriented properties of the nitrogen formation of AV subject is oriented properties of the nitrogen formation of AV subject is oriented properties of the nitrogen formation of AV subject is oriented properties of the nitrogen formation of AV subject is oriented properties of the nitrogen formation of AV subject is oriented properties of the nitrogen formation of AV subject is oriented properties of the nitrogen formation of AV subject is oriented formation of AV subject in the nitrogen formation of AV subject is oriented formation of AV subject in the nitrogen formation of AV subject is oriented formation of AV subject in the nitrogen formation of AV subject is oriented formation of AV subject in the nitrogen formation of AV subject is oriented formation of AV subject in the nitrogen formation of AV subject is oriented formation of AV subject in the nitrogen formation of AV subject in the nitrogen formation of AV subject is oriented formation of AV subject in the nitrogen formation of AV subject in
4 4 large scale to propose the domestic matting. 4 large scale the domestic matting. 4 large scale to propose the domestic matting. 5 large scale to propose the domestic proposental for propose the domestic matter of the scale the domestic matter of the scale the domestic matter of the scale the scale that scale that scale the scale that scale	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Z,ZK Gorithms that are be so valuable outside compression, deversion, context ending depth, alpha Z,ZK Luisition of AV signuse case scenarios ect of various come escene up to the complex of the depth analyses of their is). KZ Lot on the effective danalyses of their is). KZ Lot on the effective danalyses of their is). KZ Lot on the effective danalyses of their is). Lot on the effective danalyses of their is).	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining ate-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical an interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a ressing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray cor as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes ace hals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the ef of AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording the for audience. Statistical Modelling Lab and on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, at At this point, the	NI-DDM urse focuses on ta processing fra NI-DSP NI-DZO nis course prese plement and have of digital image p quency domain, interactive as-ric NI-IAM he NI-IAM cours sentation of AV s ridiovisual transm quality and later NI-LSM he subject is oric ailable informatic NI-MOP ject-oriented pro lised to build com object systems dition to deepeni
4 4 large scale to propose the domestic matting. 4 large scale the domestic matting. 4 large scale to propose the domestic matting. 5 large scale to propose the domestic proposental for propose the domestic matter of the scale the domestic matter of the scale the domestic matter of the scale the scale that scale that scale the scale that scale	KZ on experience with and will be capable Z,ZK Z,ZK Z,ZK Z,ZK Gorithms that are be so valuable outside compression, deversion, context ending depth, alpha Z,ZK Luisition of AV signuse case scenarios ect of various come escene up to the complex of the depth analyses of their is). KZ Lot on the effective danalyses of their is). KZ Lot on the effective danalyses of their is). KZ Lot on the effective danalyses of their is). Lot on the effective danalyses of their is).	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining atte-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical at interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a sessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray cor as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes actuals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmissions of audiovisual (AV) signals. The syllabus includes actuals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmissions of audiovisual (AV) signals. The syllabus includes actuals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV	NI-DDM urse focuses on ta processing fra NI-DSP NI-DZO nis course prese plement and have of digital image p quency domain, interactive as-ric NI-IAM he NI-IAM cours sentation of AV s ridiovisual transm quality and later NI-LSM he subject is oric ailable informatic NI-MOP ject-oriented pro lised to build com object systems dition to deepeni
de domes 4 de la lage screet de to proposition de la la destraction de la destraction de la	KZ on experience with and will be capable and will be capable z,ZK Z,ZK Z,ZK Z,ZK Z,ZK Gorithms that are be see valuable outside compression, deversion, context ending depth, alpha z,ZK Luisition of AV sign are case scenarios ect of various come escene up to the complex come and the effective department of the effective department in the Pharo (a z) KZ Its ability to natural soft design and impreeds and areas of on interesting projement in the Pharo (a z)	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining Ite-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands ework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all in interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a sessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray cor as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes acroals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the effor audience. Statistical Modelling Lab ad on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, an At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thes Modern Object-Oriented	NI-DDM Durse focuses on that a processing france in the processing
4 an large scale to propose to propose the dome blurring in the same and matting. 4 as of real-tile ponents a presental to propose the dome to propose the dome to present the propose the same to present the propose the same to present the propose the same to present the propose th	KZ on experience with and will be capable and will be capable z,ZK Z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context endding depth, alpha z,ZK quistion of AV sign use case scenarios ect of various come escene up to the KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is).	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining Inter-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical all in interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a sessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray con as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a Internet and Multimedia Intern	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO his course prese olement and have of digital image requency domain, interactive as-rig NI-IAM The NI-IAM course prese element and have of a quality and later of the subject is originally and la
4 an large scale to propose to propose the dome blurring in the same and matting. 4 as of real-tile ponents a presental to propose the dome to propose the dome to present the propose the same to present the propose the same to present the propose the same to present the propose th	KZ on experience with and will be capable and will be capable z,ZK Z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context endding depth, alpha z,ZK quistion of AV sign use case scenarios ect of various come escene up to the KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is).	necessary competence of a software engineer: the theory and especially the practice. Distributed Data Mining tee-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands awork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical an interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a bessing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray cor as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes ac a focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes ac focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes ac focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes ac focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes ac focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes a focused on principles and modern technologies for network transmissions of audio	NI-DDM purse focuses on ita processing fra NI-DSP NI-DZO his course prese plement and have of digital image in quency domain, interactive as-rig NI-IAM the NI-IAM course sentation of AV si adiovisual transm of quality and later NI-LSM the subject is orig ailable information NI-MOP ject-oriented pro ised to build com object systems dition to deepeni chnologies in ter NI-MPL NI-MSI
decomes 4 large scene to proportion to prop	KZ on experience with and will be capable and will be capable z,ZK Z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context endding depth, alpha z,ZK quistion of AV sign use case scenarios ect of various come escene up to the KZ out on the effective d analyses of their is). KZ Solution the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is).	Distributed Data Mining tele-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical air interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a resising. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray cor as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a Internet and Multimedia is focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes ac nals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the ef of AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording the for audience. Statistical Modelling Lab and on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, an At this point, the subject is on the border of own research and may result in	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO his course prese plement and have of digital image prese plement and have of digital image in the nitrogen fractive as-rig nitrogen fractive as-rig nitrogen fractive as-rig nitrogen fraction of AV subjects and later nitrogen fraction of avoid all able information of the subject is originally and later nitrogen fraction of the nitrogen fr
decomes 4 large scale to proportion 5 large scale to proportion 5 large scale to proportion 6 large scale to proportion 7 large scale to proportion 8 large scale to proportion 9 large scale to proportion 1 large scale to proportion 1 large scale to proportion 1 large scale to proportion 5 large scale to proportion 6 large scale to proportion 7 large scale to proportion 8 large scale to proportion 9 large scale to proportion 1 large scale to proportion 2 large scale to proportion 3 large scale to proportion 4 large scale to proportion 5 large scale to proportion 6 large	KZ on experience with and will be capable and will be capable z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context endding depth, alpha z,ZK quisition of AV sign use case scenarios ect of various come e scene up to the KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is of design and impreeds and areas of on interesting projection interesting projection in the Pharo C ZK Z,ZK t model of lambda	Distributed Data Mining te-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands twork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical al interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a reseasing. This course will introduce algorithms solving the following practical applications: edge-avered editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray cor as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes acralls (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmissions chains using HW and SW technologies and verify the effor audience. Statistical Modelling Lab and on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, and it his point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor these modern pure object system Pharo (https://pharo.org). The second half of the semester is focused on the design o	NI-DDM Durse focuses on that processing fra NI-DSP NI-DZO his course prese plement and have of digital image requency domain, interactive as-rig NI-IAM The NI-IAM course presentation of AV subjection of AV s
de to proportion de la calculus. 4 a large scale to proportion de la calculus. 4 a large scale to proportion de la calculus. 4 a la calculus. 4 a la abstracto de la calculus.	KZ on experience with and will be capable and will be capable z,ZK Z,ZK Z,ZK Z,ZK gorithms that are be so valuable outside compression, deversion, context endding depth, alpha z,ZK quisition of AV sign use case scenarios ect of various come e scene up to the KZ out on the effective d analyses of their is). KZ out on the effective d analyses of their is). KZ out on interesting projects and areas of on interesting project in the Pharo C ZK Z,ZK t model of lambda Z,ZK owerful processors	Distributed Data Mining tele-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands swork Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations approaches to parallelize other algorithms. The course is prezented in czech language. Database Systems in Practes This course is presented in Czech. Digital Image Processing a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical air interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is a resising. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDF straction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray cor as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, a Internet and Multimedia is focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes ac nals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical ions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the ef of AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording the for audience. Statistical Modelling Lab and on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, an At this point, the subject is on the border of own research and may result in	NI-DDM purse focuses on ta processing fra NI-DSP NI-DZO his course prese plement and have of digital image requency domain, interactive as-rig NI-IAM The NI-IAM course presentation of AV subject is orie allable information. NI-LSM The subject is orie allable information of the subject is orie allable information. NI-MOP object-oriented professed to build come of object systems dition to deepenic chnologies in ter NI-MPL NI-MSI Mathematical se NI-OLI e Linux operating

NI-PDD	Data Preprocessing	Z,ZK	5
	pata Treprocessing orepare raw data for further processing and analysis. They learn what algorithms can be used to extract information from various data s	'	1
	and learn the skills to apply these theoretical concepts to solve specific problems in individual projects - e.g., extraction of characteris		•
time series, etc., a	pages.	dos nom images c	n nom web
NI-PSD		KZ	4
	Public Services Design		1 -
	roduce students to specifics of UX, Service design and development for public sector. We will look into the design and development p	•	•
suppliers (devs a	and designesr) as well as clients. In small teams students will work on projects from partner organizations and will try out collaboration	n with client repres	sentatives.
NII DOI	Course is aimed at students-designers as well as clients.	7.71/	
NI-PSL	Programming in Scala	Z,ZK	4
	uces the modern programming language Scala which exploits object-functional paradigm. Scala comprises advance language featur	٠.	•
advance standard i	library. Scala enables to use of applications functional patterns e.g. H-List, Monads, etc. Scala is used by many powerful frameworks and	libraries e.g. Play	, Cassandra,
	Scalaz, etc.		
NI-REV	Reverse Engineering	Z,ZK	5
	cquainted with the essentials of reverse engineering of computer software. They will learn how processes start and what happens before		
	s will understand how executable files are organized and how they interact with 3rd party libraries. Another part of the course is dedicated as a second of the course is dedi		
* *	tten in C++. Students will also understand principles of disassemblers and obfuscation techniques. A part of the course will also be di	•	•
debuggers and de	ebugging work and which methods can be used to detect it. One of the lectures will be dedicated to the latest trends on the computer	malware scene. T	he focus of
	the course is on the seminars, where students will solve practically oriented tasks from the real world.	ı	
NI-SYP	Parsing and Compilers	Z,ZK	5
The module builds	upon the knowledge of fundamentals of automata theory, formal language and formal translation theories. Students gain knowledge of va	arious variants and	applications
	of LR parsing and are introduced to special applications of parsers, such as incremental and parallel parsing.		
NI-TSP	Testing and Reliability	Z,ZK	5
Students will gain	knowledge about circuit testing and about methods for increasing reliability and security. They will get practical skills to be able to pre	pare a test set witl	n the help of
the intuitive path se	ensitization and to use an ATPG for automatic test generation. They will be able to design easily testable circuits and systems with bu	ilt-in-self-test equi	pment. They
	will be able to compute, analyze, and control the reliability and availability of the designed circuits.		
NI-VCC	Virtualization and Cloud Computing	Z,ZK	5
Students will gai	in knowledge of architectures of large computer systems that are used in data centers and computer infrastructure of companies and	organizations. Th	ey will get
acquainted with vi	irtualization principles, tools and technologies that serve to facilitate and automate configuration, testing and monitoring, and to efficie	ently operate and o	optimize the
performance pa	trameters of modern computer systems. Theoretically and practically, they will get acquainted with containerization as the most effect	ive technology tod	ay for the
management of co	mplex computer systems and with specific technologies of cloud systems. Finally, they will learn the principles and gain practical skills in	n the use of moder	n integration
	and development tools (Continuous integration and development).		
NI-VYC	Computability	Z,ZK	4
	Classical theory of recursive functions and effective computability.	,	1
TV1	Physical Education	Z	0
TV2	Physical Education	Z	0
TV2K1	Physical Education 2	Z	1
TVK1	Physical Education	Z	1
TVKLV	Physical Education Course	Z	0
TVKZV	Physical Education Course	Z	0
TVV	Physical education	Z	0
TVV0	Physical education	Z	0
	1 Hydrodi Oddodilott	_	

For updated information see http://bilakniha.cvut.cz/en/FF.html Generated: day 2025-07-03, time 21:56.