Studijní plán

Název plánu: Bachelor branch Computer Science, in English, 2015-2020

Sou ást VUT (fakulta/ústav/další): Fakulta informa ních technologií Katedra: Obor studia, garantovaný katedrou: Úvodní stránka Garant oboru studia.: Program studia: Informatics, valid until 2024 Typ studia: Bakalá ské prezen ní P edepsané kredity: 157 Kredity z volitelných p edm t : 23 Kredity v rámci plánu celkem: 180 Poznámka k plánu: The study plan is intended for those students who have been accepted to study since the academic year 2015/2016.

Název bloku: Povinné p edm ty programu Minimální po et kredit bloku: 116 Role bloku: PP

Kód skupiny: BIE-PP.2015

Název skupiny: Compulsory Courses od Study Program Infomatics, Presented in English, Version 2015 Podmínka kredity skupiny: V této skupin musíte získat 116 kredit

Podmínka p edm ty skupiny: V této skupin musíte absolvovat 20 p edm t Kredity skupiny: 116

Poznámka ke skupině:

| Kód | Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garanti (gar.) | Zakon ení | Kredity | Rozsah | Semestr | Role |
|-----------|--|-----------|---------|----------|---------|------|
| BIE-AG1 | Algorithms and Graphs 1 <i>Dušan Knop</i> | Z,ZK | 6 | 2P+2C | Z | PP |
| BIE-AAG | Automata and Grammars | Z,ZK | 6 | 2P+2C | Z | PP |
| BIE-BPR | Bachelor Project Zden k Muziká Zden k Muziká (Gar.) | Z | 2 | | Z,L | PP |
| BIE-BAP | Bachelor Thesis Zden k Muziká Zden k Muziká (Gar.) | Z | 14 | | L,Z | PP |
| BIE-PSI | Computer Networks | Z,ZK | 5 | 2P+1R+1C | L | PP |
| BIE-SAP | Computer Structures and Architectures | Z,ZK | 6 | 2P+1R+2C | L | PP |
| BIE-DBS | Database Systems | Z,ZK | 6 | 3L | Z,L | PP |
| BIE-CAO | Digital and Analog Circuits | Z,ZK | 5 | 2P+2C | Z | PP |
| BIE-DPR | Documentation, Presentation, Rhetorics Dana Vynikarová Dana Vynikarová Dana Vynikarová (Gar.) | KZ | 4 | | L | PP |
| BIE-ZMA | Elements of Calculus Antonella Marchesiello Tomáš Kalvoda Tomáš Kalvoda (Gar.) | Z,ZK | 6 | 3P+2C | Z | PP |
| BIE-ZDM | Elements of Discrete Mathematics Ji ina Scholtzová, Jan Legerský Ji ina Scholtzová Josef Kolá (Gar.) | Z,ZK | 5 | 2P+2C | Z | PP |
| BIE-LIN | Linear Algebra Antonella Marchesiello Antonella Marchesiello Antonella Marchesiello (Gar.) | Z,ZK | 7 | 4P+2C | L | PP |
| BIE-MLO | Mathematical Logic Kate ina Trlifajová Kate ina Trlifajová Kate ina Trlifajová (Gar.) | Z,ZK | 5 | 2P+2C | Z | PP |
| BIE-OSY | Operating Systems | Z,ZK | 5 | 2P+1R+1L | L | PP |
| BIE-PST | Probability and Statistics | Z,ZK | 5 | 2P+1R+1C | Z | PP |
| BIE-PA1 | Programming and Algorithmics 1 | Z,ZK | 6 | 2P+2R+2C | Z | PP |
| BIE-PA2 | Programming and Algorithmics 2 Jan Trávní ek | Z,ZK | 7 | 2P+1R+1C | L | PP |
| BIE-PS1 | Programming in Shell 1 | KZ | 5 | 2P+2C | Z | PP |
| BIE-BEZ | Security Ji í Bu ek | Z,ZK | 6 | 2P+1R+1C | L | PP |
| BIE-SI1.2 | Software Engineering I Zden k Rybola Zden k Rybola Zden k Rybola (Gar.) | Z,ZK | 5 | 2P+1C | Z,L | PP |

Charakteristiky p edmet této skupiny studijního plánu: Kód=BIE-PP.2015 Název=Compulsory Courses od Study Program Infomatics, Presented in English, Version 2015

| r resented in Engli | | | γ |
|-----------------------------|--|----------------------|--------------------|
| BIE-AG1 | Algorithms and Graphs 1 | Z,ZK | 6 |
| The course covers the b | asics from the efficient algorithm design, data structures, and graph theory, belonging to the core knowledge of every comp | uting curriculum. I | t is interlinked |
| with the concurrent BIE- | AAG and BIE-ZDM courses in which the students gain the basic skills and knowledge needed for time and space complexity | y of algorithms and | d learn to handle |
| practically the asymptoti | c mathematics. | | |
| BIE-AAG | Automata and Grammars | Z,ZK | 6 |
| Students are introduced | to basic theoretical and implementation principles of the following topics: construction, use and mutual transformations of fill | nite automata, reg | ular expressions |
| and regular grammars, t | ransiation finite automata, construction and use of pushdown automata, nierarchy of formal languages, relationships betwee | n formal language | s and automata. |
| | bugh the module is applicable in designs or algorithms for searching in text, data compression, simple parsing and translate | | |
| BIE-BPR | Bachelor Project | | 2 |
| At the beginning of the s | semester the student will contact the supervisor of the bachelor mests he has booked. I ney will discuss the partial tasks that | t student will perio | irm during the |
| | be tasks, the supervisor will award him? Her at the end of the semester with the bi-bFK course. | 7 | 4.4 |
| BIE-BAP | Bachelor Thesis | | 14 |
| BIE-PSI | Computer Networks | Z,ZK | 5 |
| Students understand the | basic common techniques, protocols, technologies, and algorithms necessary to communicate in computer networks focus | sing primarily the 2 | 2nd to 4th layer |
| of the ISO OSI model. I | hey also get a basic understanding of communication media, security, and network administration. Students will be able to v | vrite a simple netw | vork application |
| | Personal and Architectures | 7 71/ | |
| BIE-SAP | Computer Structures and Architectures | Z,ZK | 6 |
| Students understand ba | sic digital computer units and their structures, functions, and hardware implementation: ALU, control unit, memory system, i | nputs, outputs, da | ta storage and |
| transfer. In the labs, stud | tents gain practical experience with the design and implementation of the logic of a simple processor using modern digital d | esign tools. | |
| BIE-DBS | Database Systems | Z,ZK | 6 |
| Students are introduced | to the database engine architecture and typical user roles. I ney are briefly introduced to various database models. I ney lea | arn to design smal | II databases |
| (Including Integrity const | raints) using a conceptual model and implement them in a relational database engine. I ney get a hands-on experience with the relational database model. They lear the principles of correcting database engine. Iney get a hands-on experience with | the SQL language | e, as well as with |
| | - the relational database model, they learn the principles of normalizing a relational database scrienta, they understand the r | and to special way | s of storing data |
| in relational databases v | variance user access to a single data source, as well as recovering a database engine non a tailore. They are binery infloduce with respect to speed of access to large quantities of data. This introductory layal module does not cover: Administration of c | tatabasa systems | debugging and |
| optimizing database app | vinnespect to speed of access to large quantities of data. This infroductory-level module does not cover. Administration of c | latabase systems, | debugging and |
| | Diaital and Analog Circuits | 7.7% | 5 |
| Students get the fundam | Digital and Analog Circuits tental understanding of technologies underlying electronic digital systems. They understand the basic theoretical models an | d principles of fun | ctionality of |
| transistors gates circuit | is and conductors. They are able to design simple circuits and evaluate circuit parameters. They understand the differences | between analog a | and digital modes |
| of electronic devices. | ······································ | g | |
| BIF-DPR | Documentation Presentation Rhetorics | K7 | 4 |
| This subject is aimed to t | be professional communication and writing of the scientific texts (bachelor's and diploma thesis). Students will learn to create an | d prepare interact | ive presentations |
| and presenting before a | n audience. Students will also learn to write technical reports and scientific texts. | | |
| BIF-7MA | Elements of Calculus | 7 7K | 6 |
| Students acquire knowle | edge and understanding of the fundamentals of classical calculus so that they are able to apply mathematical way of thinkin | a and reasoning a | ind are able to |
| use basic proof techniqu | ies. They get skills to practically handle functions of one variable in solving the problems in informatics. They understand the | links between the | e integrals and |
| sums of sequences. The | ey are able to estimate lower or upper bounds of values of real functions and to handle simple asymptotic expressions. This | course is last taug | t in the winter |
| semester 2021/22 (B211 |). Latecomers who fail to meet it can replace it with a pair of courses BIE-MA1.21 and BIE-MA2.21. | · · · · | |
| BIE-ZDM | Elements of Discrete Mathematics | Z.ZK | 5 |
| Students get both a mat | hematical sound background, but also practical calculation skills in the area of combinatorics, value estimation and formula a | approximation, and | tools for solving |
| recurrent equations. | | | Ū. |
| BIE-LIN | Linear Algebra | Z.ZK | 7 |
| Students understand the | e theoretical foundation of algebra and mathematical principles of linear models of systems around us, where the dependen | cies among comp | onents are only |
| linear. They know the ba | sic methods for operating with polynomials and linear spaces. They are able to perform matrix operations and solve system | s of linear equatio | ns. They can |
| apply these mathematic | al principles to solving problems in 2D or 3D analytic geometry. They understand error-detecting and error-correcting codes | | - |
| BIE-MLO | Mathematical Logic | Z.ZK | 5 |
| An introduction to propo | sitional and predicate logic. | 1 , 1 | 1 |
| BIE-OSY | Operating Systems | Z,ZK | 5 |
| Students understand the | e classical theory of operating systems (OS) in addition to the knowledge gained in the BI-PS1 module. They get a solid kno | wledge of OS keri | nels, processes |
| and threads implementa | tions. They understand the problems of race conditions and principles and algorithms for critical sections, thread scheduling | , resource allocat | ion, deadlocks. |
| They understand the tec | chniques of managing virtual memory, principles and architectures of disks and disk arrays, file systems and peripheral devi | ces. They gain bas | sic knowledge |
| necessary for developing | g system applications or for system administration. They are able to design and implement simple multithreaded application | S. | |
| BIE-PST | Probability and Statistics | Z,ZK | 5 |
| The students will learn the | he basics of probabilistic thinking, the ability to synthesize prior and posterior information and learn to work with random var | iables. They will be | able to to apply |
| basic models of random | variable distributions and solve applied probabilistic problems in informatics and computer science. Using the statistical ind | uction they will be | able to perform |
| estimations of unknown | distributional parameters from random sample characteristics. They will also be introduced to the methods of determining the | ne statistical deper | ndence of two or |
| more random variables. | | | |
| BIE-PA1 | Programming and Algorithmics 1 | Z,ZK | 6 |
| Students learn to constru | uct algorithms for solving basic problems and write them in the C language. They understand data types (simple, structured, p | pointers), expressi | ons, statements, |
| functions, concept of rec | cursion. They learn the basics of algorithm complexity analysis. They know fundamental algorithms for searching, sorting, ar | id manipulating wi | th linked lists. |
| BIE-PA2 | Programming and Algorithmics 2 | Z,ZK | 7 |
| Students know the instru | uments of object-oriented programming and are able to use them for specifying and implementing abstract data types (stack | د, queue, enlargea | ble array, set, |
| table). They can impleme | ent linked structures. They learn these skills using the programming language C++. Although this is not a module of programming language C++. | ing in C++, studen | ts are introduced |
| to all C++ features need | ed to achieve the main objective (e.g., operator overloading, templates). | | |
| BIE-PS1 | Programming in Shell 1 | KZ | 5 |
| Students understand the | e basic principles of operating systems (processes and threads, file systems, access rights, memory management, network i | nterface) with a for | cus on UNIX like |
| operating systems. In pr | actically oriented exercises, they will learn to use shell, basic commands and filters for processing text data. | | |

| BIE-BEZ | Security | Z,ZK | 6 | | | |
|--|--|---------------------|-------------------|--|--|--|
| Students understand the mathematical fundamentals of cryptography and have an overview of current cryptographic algorithms and applications: symmetric and asymmetric cryptosystem | | | | | | |
| and hash functions. The | y also learn the fundamentals of secure programming and IT security, the fundamentals of designing and using modern cryp | tosystems for cor | nputer systems. | | | |
| They are able to proper | ly and securely use cryptographic primitives and systems that are based on these primitives. Students are introduced to lega | l aspects of inforr | nation security, | | | |
| security standards, social engineering, and basic principles of security management. | | | | | | |
| BIE-SI1.2 | Software Engineering I | Z,ZK | 5 | | | |
| Students learn the meth | ods of analysis and design of large software systems, which are typically designed and implemented in teams. Students will | get acquainted w | ith CASE tools | | | |
| using a visual modeling | language UML for modeling and solving software-related problems. Students will get an overview of object-oriented analysis | , design, architec | ture, validation, | | | |
| verification, and testing processes. The knowledge obtained in the lectures is practiced on a team project. If enrolled for the BIE-SP1 course running in parallel (only summer semester), | | | | | | |
| the students can work on a single more complex project and they are classified to both courses for a single project. This course does not teach the students programming, nor any | | | | | | |
| particular technology, framework or programming language. The students are required to have some knowledge of these to apply them on their team project. | | | | | | |

Název bloku: Povinné p edm ty oboru Minimální po et kredit bloku: 31 Role bloku: PO

Kód skupiny: BIE-PO-TI.2015

Název skupiny: Compulsory Courses of Bachelor Branch Computer Science, Presented in English, Version 2015

Podmínka kredity skupiny: V této skupin musíte získat 31 kredit

Podmínka p edm ty skupiny: V této skupin musíte absolvovat alespo 7 p edm t Kredity skupiny: 31

Poznámka ke skupině:

| Kód | Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garanti (gar.) | Zakon ení | Kredity | Rozsah | Semestr | Role |
|-----------|--|-----------|---------|--------|---------|------|
| BIE-AG2 | Algorithms and Graphs 2 Ond ej Suchý | Z,ZK | 5 | 2P+2C | L | PO |
| BIE-APS.1 | Architectures of Computer Systems | Z,ZK | 5 | 2P+2C | Z | PO |
| BIE-VZD | Data Mining Daniel Vašata, Rodrigo Augusto Da Silva Alves Daniel Vašata Daniel Vašata (Gar.) | Z,ZK | 4 | 2P+2C | Z | PO |
| BIE-PAI | Law and Informatics | ZK | 3 | 2P | Z | PO |
| BIE-OOP | Object-Oriented Programming Filip K ikava Filip K ikava Filip K ikava (Gar.) | Z,ZK | 4 | 2P+2C | Z | PO |
| BIE-PJP | Programming Languages and Compilers | Z,ZK | 5 | 2P+1C | L | PO |
| BIE-PPA | Programming Paradigms | Z,ZK | 5 | 2P+2C | Z | PO |

Charakteristiky p edmet této skupiny studijního plánu: Kód=BIE-PO-TI.2015 Název=Compulsory Courses of Bachelor Branch Computer Science, Presented in English, Version 2015

| BIE-AG2 | Algorithms and Graphs 2 | Z,ZK | 5 | | |
|--|--|----------------------|--------------------|--|--|
| BIE-APS.1 | Architectures of Computer Systems | Z,ZK | 5 | | |
| Students will learn the o | onstruction principles of internal architecture of computers with universal processors at the level of machine instructions. Specific and the second se | ecial emphasis is | given on the | | |
| pipelined instruction pro | cessing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the p | principles of instru | ction processing | | |
| not only in scalar proces | ssors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of | the sequential mo | del of programs. | | |
| The course further elab | orates the principles and architectures of shared memory multiprocessor and multicore systems and the memory coherence | and consistency | in such systems. | | |
| BIE-VZD | Data Mining | Z,ZK | 4 | | |
| Students are introduced | to the basic methods of discovering knowledge in data. In particular, they learn the basic techniques of data preprocessing, m | ultidimensional d | ata visualization, | | |
| statistical techniques of | data transformation, and fundamental principles of knowledge discovery methods. Students will be aware of the relationships | between model bi | as and variance, | | |
| and know the fundamer | ttals of assessing model quality. Data mining software is extensively used in the module. Students will be able to apply basic | data mining tools | to common | | |
| problems (classification | , regression, clustering). | | | | |
| BIE-PAI | Law and Informatics | ZK | 3 | | |
| Students have knowledge | e of fundamental protection of intangible property, overview of contractual aspects of copyright. They are able to design an ap | propriate contract | -based copyright | | |
| protection and do resea | rch and verification of the outputs concerning trademarks, patents, industrial design rights. They are able to participate active | ely in the proceed | ings to register | | |
| intangible property. The | y have a good overview of the Czech Republic legislation as well as the EU legislation. | | | | |
| BIE-OOP | Object-Oriented Programming | Z,ZK | 4 | | |
| Object-oriented program | ming has been used in the last 50 years to solve computational problems by using graphs of objects that collaborate togeth | er by message pa | assing. In this | | |
| course we look at some | of the main principles of object-oriented programming and design. The emphasis is on practical techniques for software dev | elopment includin | ig testing, error | | |
| handing, refactoring and | d design patterns. | | | | |
| BIE-PJP | Programming Languages and Compilers | Z,ZK | 5 | | |
| Students master basic r | nethods of implementation of common high-level programming languages. They get experience with the design and implement | ntation of individu | al compiler parts | | |
| for a simple programming language: data types, subroutines, and data abstractions. Students are able to formally specify a translation of a text that has a certain syntax into a target | | | | | |
| form and write a compiler based on such a specification. The notion of compiler in this context is not limited to compilers of programming languages, but extends to all other programs | | | | | |
| for parsing and process | ing text in a language defined by a LL(1) grammar. | | | | |
| BIE-PPA | Programming Paradigms | Z,ZK | 5 | | |

Název bloku: Povinn volitelné ekonomicko-manažerské

Kód skupiny: BIE-PV-EM.2015

Název skupiny: Compulsory Elective Economics, and Management Courses, in English, Version 2015 Podmínka kredity skupiny: V této skupin musíte získat alespo 4 kredity (maximáln 10) Podmínka p edm ty skupiny: V této skupin musíte absolvovat alespo 1 p edm t Kredity skupiny: 4

Poznámka ke skupině:

| Kód | Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garanti (gar.) | Zakon ení | Kredity | Rozsah | Semestr | Role |
|-----------|--|-----------|---------|--------|---------|------|
| BIE-EPR | Economic project Tomáš Evan Tomáš Evan Tomáš Evan (Gar.) | Z | 1 | | L | VE |
| BIE-FTR.1 | Financial Markets Pavla Vozárová | Z,ZK | 5 | 2P+2C | L | VE |
| BIE-MIK | Fundamentals of Microeconomics Tornáš Evan, Pavla Vozárová Tomáš Evan Pavla Vozárová (Gar.) | Z,ZK | 4 | 2P+2C | L | VE |
| BIE-EHD | Introduction to European Economic History Tomáš Evan Tomáš Evan Tomáš Evan (Gar.) | Z,ZK | 3 | 2P+1C | L | VE |

Charakteristiky p edmet této skupiny studijního plánu: Kód=BIE-PV-EM.2015 Název=Compulsory Elective Economics, and Management Courses, in English, Version 2015

| BIE-EPR | Economic project | Z | 1 | | | | |
|--|---|----------------------|--------------------|--|--|--|--|
| This course is an extens | This course is an extension of the course Introduction to European Economic History (BIE-EHD). | | | | | | |
| BIE-FTR.1 | Financial Markets | Z,ZK | 5 | | | | |
| Financial sector has been | en deeply transformed in the recent years, which led to a development of structured financial products, a new point of view o | n the issue of cree | dit risk, and | | | | |
| globalization of market a | activities. The need to use and properly apply mathematical and technical tools is emphasized. To manage their financial acti | vities, many firms | need graduates | | | | |
| from technical schools w | who have sufficient knowledge ICT and mathematics, and who have at the same time an understanding of the functioning of | financial markets. | The Financial | | | | |
| Markets course thus en | globes both a description of financial markets and related economic theories, and an overview of mathematical and statistica | al tools used in thi | s field. | | | | |
| BIE-MIK | Fundamentals of Microeconomics | Z,ZK | 4 | | | | |
| This a introductory cour | se of microeconomics designed for students without previous economic background. It describes different market regimes a | nd ways how firm | can react to | | | | |
| consumer demand, corr | apetitor strategies, government intervention, uncertainty and information asymmetry. All concepts are illustrated on real life ex | kamples. | | | | | |
| BIE-EHD | Introduction to European Economic History | Z,ZK | 3 | | | | |
| The course introduces a | selection of themes from European economic history. It gives the student basic knowledge about forming of the global econ | omy through the c | lescription of the | | | | |
| key historical periods. As European countries have been dominant actors in this process it focuses predominantly on their roles in economic history. From the large economic area of | | | | | | | |
| the Roman Empire to the fragmentation of the Middle Ages, from the destruction of WWII to the current affairs, the development of modern financial institutions is deciphered. The | | | | | | | |
| course does not cover the detailed economic history of particular European countries but rather the impact of trade and the role of particular events, institutions and organizations in | | | | | | | |
| history. Class meetings will consist of a mixture of lectures and discussions. | | | | | | | |
| | | | | | | | |

Název bloku: Povinné ekonomické Minimální po et kredit bloku: 4 Role bloku: PE

Kód skupiny: BIE-PP-EM.2015

Název skupiny: Compulsory Economics and Management Bachelor Courses, in English, Version 2015 Podmínka kredity skupiny: V této skupin musíte získat 4 kredity

Podmínka p edm ty skupiny: V této skupin musíte absolvovat 1 p edm t Kredity skupiny: 4

Poznámka ke skupině:

| Kód | Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garanti (gar.) | Zakon ení | Kredity | Rozsah | Semestr | Role |
|---------|--|-----------|---------|--------|---------|------|
| BIE-EMP | Economic and management principles Tomáš Evan Tomáš Evan (Gar.) | KZ | 4 | 2P+2C | Z,L | PE |

Charakteristiky p edmet této skupiny studijního plánu: Kód=BIE-PP-EM.2015 Název=Compulsory Economics and Management Bachelor Courses, in English, Version 2015

BIE-EMP Economic and management principles

This course is aimed to fundamental problems of business economy. The course makes students familiar with a life cycle of business, specifically with fields: enterprise foundation, enterprise putting into state economic environment (CR), management of property and capital structure, business transaction records keeping during an accounting period, a relation between business production and costs, evaluation of enterprise financial health and business rehabilitation or termination.

ΚZ

4

Název bloku: Povinn volitelné humanitní Minimální po et kredit bloku: 2

Kód skupiny: BIE-PV-HU.2015

Název skupiny: Compulsory Elective Bachelor Social Courses, Presented in English, Ver. 2015 Podmínka kredity skupiny: V této skupin musíte získat alespo 2 kredity (maximáln 9) Podmínka p edm ty skupiny: V této skupin musíte absolvovat alespo 1 p edm t (maximáln 3) Kredity skupiny: 2

| Poznámka ke sku | ipine: Faculty guarantees the | Faculty guarantees the availability of these modules. | | | | |
|-----------------|--|---|---------|--------|---------|------|
| Kód | Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garanti (gar.) | Zakon ení | Kredity | Rozsah | Semestr | Role |
| BIE-HMI | History of Mathematics and Informatics Alena Šolcová Alena Šolcová Alena Šolcová (Gar.) | Z,ZK | 3 | 2P+1C | L | VH |
| FI-HPZ | Humanitní p edm t z výjezdu v zahrani í | Z | 3 | 0+0 | Z,L | VH |
| BIE-EHD | Introduction to European Economic History Tomáš Evan Tomáš Evan Tomáš Evan (Gar.) | Z,ZK | 3 | 2P+1C | L | VH |
| BE0B16FI1 | Philosophy 1 Peter Zamarovský Peter Zamarovský Peter Zamarovský (Gar.) | KZ | 4 | 2P+2S | Z,L | VH |

Charakteristiky p edmet této skupiny studijního plánu: Kód=BIE-PV-HU.2015 Název=Compulsory Elective Bachelor Social Courses, Presented in English, Ver. 2015

| BIE-EHD | Introduction to European Economic History | Z,ZK | 3 | | |
|---|--|---------------------|--------------------|--|--|
| The course introduces a | selection of themes from European economic history. It gives the student basic knowledge about forming of the global economic | omy through the c | lescription of the | | |
| key historical periods. A | s European countries have been dominant actors in this process it focuses predominantly on their roles in economic history. | From the large ed | conomic area of | | |
| the Roman Empire to th | e fragmentation of the Middle Ages, from the destruction of WWII to the current affairs, the development of modern financial | institutions is dec | iphered. The | | |
| course does not cover the | ne detailed economic history of particular European countries but rather the impact of trade and the role of particular events, | institutions and c | organizations in | | |
| history. Class meetings | will consist of a mixture of lectures and discussions. | | | | |
| BIE-HMI | History of Mathematics and Informatics | Z,ZK | 3 | | |
| Students will master the | methods traditionally used in mathematics and related disciplines - informatics - from different periods of the development of n | nathematics, and | will thus become | | |
| acquainted with mathem | natical methods suitable for applications in contemporary computer science. | | | | |
| FI-HPZ | Humanitní p edm t z výjezdu v zahranií | Z | 3 | | |
| P edm t "Humanitní p e | dm t z výjezdu v zahrani í" zast ešuje ve studijním plánu povahou humanitní p edm ty získané studenty v rámci jejich výje | zdu v zahrani í. P | edpokládá se | | |
| tedy spln ní náhradou a | o uznání rozhoduje prod kan pro studijní a pedagogickou innost v zastoupení d kana a to na základ žádosti studenta | | | | |
| BE0B16FI1 | Philosophy 1 | KZ | 4 | | |
| Probírají se postavy a myšlenky antické filozofie a v dy. Na historickém pozadí se otevírají i aktuální problémy dneška. Jde zejména o otázky související s rozvojem dnešní fyziky, | | | | | |
| matematiky a p írodov dy, dále s rozvojem a spole enskými aspekty techniky a otázek ekonomiky, etiky a politiky. | | | | | |

Název bloku: Volitelné p edm ty

Minimální po et kredit bloku: 0 Role bloku: V

Kód skupiny: BIE-V-PRO_MG

Název skupiny: Elective Courses, Suitable for those who intend to apply for Master's program at FIT, in English Podmínka kredity skupiny:

Podmínka p edm ty skupiny:

Kredity skupiny: 0

Poznámka ke skupině:

Modules in this group are recommended for students who intend to enroll to master program at FIT.

| Kód | Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garanti (gar.) | Zakon ení | Kredity | Rozsah | Semestr | Role |
|---------|--|-----------|---------|--------|---------|------|
| BIE-EFA | Efficient Algorithms Ji ina Scholtzová | Z,ZK | 5 | 2P+2C | Z | V |
| BIE-GRA | Graph Algorithms and Complexity Theory Josef Kolá | Z,ZK | 5 | 2P+2C | L | V |

Charakteristiky p edmet této skupiny studijního plánu: Kód=BIE-V-PRO_MG Název=Elective Courses, Suitable for those who intend to apply for Master's program at FIT, in English

 BIE-EFA
 Efficient Algorithms
 Z,ZK
 5

 Students get an overview of efficient algorithms and data structures for solving classical algorithmic problems, such as searching and sorting, on dynamically changing data sets.
 Students are able to design and implement such algorithms, to use methods for analysing their computational and memory complexity. They understand the sorting algorithms with O(n.log n) time complexity, special sorting algorithms with linear complexity, algorithms for associative and address searching. They are able to use the efficient dynamic data structures, such as hash tables, search trees, balanced search trees, heaps, B-trees, and others. They are able to work with recursive algorithms and dynamic programming.

| BIE-GRA | Graph Algorithms and Complexity Theory | Z,ZK | 5 |
|-------------------------|---|-------------------|-------------------|
| Students get an overvie | w of typical usages of graph models in computing. They learn algorithmic methods of solving graph problems. They understand | algorithms for th | e key application |
| domains of graph theor | y (flows in networks, heuristic search, approximation of complex problems). Students get basic competence in computer scie | nce background: | they understand |
| Turing machine models | and issues of NP-completeness and NP-hardness. | | |

Kód skupiny: BIE-TI-VO.2017 Název skupiny: Elective Vocational Courses for Bachelor Branch BIE-TI, Version 2017 Podmínka kredity skupiny: Podmínka p edm ty skupiny: Kredity skupiny: 0 Poznámka ke skupině: Oborové předměty všech oborů včetně povinných předm

Oborové předměty všech oborů včetně povinných předmětů zaměření s výjimkou oboru BIE-TI-VO.2017

| Kód | Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garanti (gar.) | Zakon ení | Kredity | Rozsah | Semestr | Role |
|-----------|--|-----------|---------|--------|---------|------|
| BIE-KOM | Conceptual Modelling Marek Suchánek, Robert Pergl Robert Pergl (Gar.) | Z,ZK | 5 | 2P+2C | Z | V |
| BIE-BIG | DB Technologies for Big Data | KZ | 4 | 2P+2C | Z | V |
| BIE-HWB | Hardware Security Filip Kodýtek, Róbert Lórencz, Ji í Bu ek Ji í Bu ek Róbert Lórencz (Gar.) | Z,ZK | 5 | 2P+2C | Z | V |
| BIE-TJV | Java Technology Ond ej Guth | Z,ZK | 4 | 2P+2C | Z | V |
| BIE-VWM | Searching Web and Multimedia Databases | Z,ZK | 5 | 2P+1C | L | V |
| BIE-BEK | Secure Code Róbert Lórencz | Z,ZK | 5 | 2P+2C | L | V |
| BIE-SI2.3 | Software Engineering 2 Michal Valenta Michal Valenta Michal Valenta (Gar.) | Z,ZK | 3 | 2P | Z | V |
| BIE-SSB | System and Network Security Ji í Dostál Ji í Dostál Ji í Dostál (Gar.) | Z,ZK | 5 | 2P+2C | Z | V |
| BIE-SP1 | Team Software Project 1 Zden k Rybola | KZ | 4 | 2C | Z,L | V |
| BIE-SP2 | Team Software Project 2 | KZ | 6 | | Z | V |
| BIE-ADU.1 | Unix Administration | Z,ZK | 5 | 2P+2C | L | V |
| BIE-TWA.1 | Web Application Design | Z,ZK | 5 | 2P+2C | Z | V |
| BIE-ADW.1 | Windows Administration Miroslav Prágl, Ji í Kašpar Miroslav Prágl Miroslav Prágl (Gar.) | Z,ZK | 4 | 2P+1C | Z | V |
| BIE-XML | XML Technology | Z,ZK | 4 | 2P+2C | Z | V |

Charakteristiky p edmet této skupiny studijního plánu: Kód=BIE-TI-VO.2017 Název=Elective Vocational Courses for Bachelor Branch BIE-TI, Version 2017

| | | , | |
|----------------------------|--|----------------------|---------------------|
| BIE-KOM | Conceptual Modelling | Z,ZK | 5 |
| The course focuses on the | e development of abstract thinking skills and precise specifications in the form of conceptual models. Students will learn the | ability to distingui | sh key concepts |
| in the domain, categorize | and also determine the right links in complex systems of social reality, especially enterprises and institutions. Students will | learn the basics | of ontological |
| structural modeling in Or | toUML notation. They will also learn to express the rules and limitations of everyday reality using the OCL language. Studer | nts will also learn | the basics of |
| Enterprise Engineering a | is a discipline enabling conceptual modeling of the structure of enterprises and institutions and their process and learn the D | EMO methodolog | gy. The course is |
| also designed with regar | d to the continuity of software implementations. | | |
| BIE-BIG | DB Technologies for Big Data | KZ | 4 |
| Students are introduced | into the field of Big Data. These are data that the standard relational databases cannot process efficientlydue to the size, and | d at the same tim | e, their real-time |
| processing can provide i | nformation that can have key importance for thecompetitiveness of a company or organization. The course is focused practic | cally. Students lea | rn the most |
| important professionalte | chnologies, such as Apache Cassandra, Apache Hadoop, Apache Solr, and others. The course brings to students theoretica | Ifoundation of alg | orithms used in |
| Big data systems. In the | labs, students learn to develop their own applications on topof these technologies. | | |
| BIE-HWB | Hardware Security | Z,ZK | 5 |
| The course deals with ha | ardware resources used to ensure security of computer systems including embedded ones. The students become familiar wi | th the operating p | orinciples of |
| cryptographic modules, t | he security features of modern processors, and storage media protection through encryption. They will gain knowledge abou | it vulnerabilities o | f HW resources, |
| including side-channel at | tacks and tampering with hardware during manufacture. Students will have an overview of contact and contactless smart card | technology includ | ling applications |
| and related topics for mu | Iti-factor authentication (biometrics). Students will understand the problems of effective implementation of ciphers. | | |
| BIE-TJV | Java Technology | Z,ZK | 4 |
| The subject goal is to int | roduce the programming language Java. The student gains practical experiences for smaller enterprise application programm | ming. This subjec | presents how |
| to build the three and mo | re layers enterprise systems. The student practically exercises all communication interfaces for each layers (JDBC, RestWei | b services, JNDI | etc.). At the |
| course end is student ab | le to create three layers enterprise application. | | |
| BIE-VWM | Searching Web and Multimedia Databases | Z,ZK | 5 |
| Students gain basic know | vledge concerning retrieval techniques on the web, where the web environment is viewed as a large distributed and heteroge | nous data reposit | ory. In particular, |
| the students will underst | and the techniques for retrieving text and hypertext documents (the web pages). Moreover, they will be aware of similarity re | trieval methods fo | cused on |
| heterogenous multimedia | a databases (unstructured data collections, respectively). | | |
| BIE-BEK | Secure Code | Z,ZK | 5 |
| Studenti se nau í posuzo | ovat a zohled ovat bezpe nostní rizika p i návrhu svého kódu a ešení v b žné inženýrské praxi. Od teorie modelování bezp | e nostních rizik p | o istoupí k praxi, |
| ve které si vyzkouší b h | program pod nižšími oprávn ními a jak tato oprávn ní stanovovat, protože ne každý program musí nutn b žet s administrá | atorským oprávn | ním. Budou také |
| prakticky demonstrována | rizika spojená s p ete ením bufferu. Dále se studenti budou krátce v novat zabezpe ení dat a jak toto zabezpe ení souvisí s | databázovými sy | stémy a webem. |
| V záv ru se budou v no | vat útok m typu DoS (Denial of Service) a obran proti nim. | | |
| | | | |

| BIE-SI2.3 Software Engineering 2 | | Z,ZK | 3 | | | |
|---|---|---|--|--|--|--|
| Students will learn to work methodically with respect to software development methodic, especially Unified Process methodic and Unified N | /lodeling Langua | ge (UML). They | / will understand | | | |
| the functions of individual roles in a typical software team, as well as get a practical experience with them in the concurrent BIE-SP2 module. Students will also get an idea about | | | | | | |
| software testing and measuring software quality. This knowledge will get extended with a practical experience thanks to the concurrently | y running BIE-SP | P2 module. | | | | |
| BIE-SSB System and Network Security | | Z,ZK | 5 | | | |
| The students will understand the public key infrastructure (PKI), its strengths and weaknesses, its vulnerabilities againstattacks. The stu | idents will also ui | nderstand the | analysis of | | | |
| network protocols from the perspectives of: authentication and authorisation, key exchange, and encryption. They get an overview of the | e security mechar | nisms of opera | ting systems | | | |
| (OSs), of the ways virtualization canbe used to protect OSs, and of the security mechanisms for the OS memory. The students will learn | h basic methods | of forensic and | alysisof storage | | | |
| media and networks. The students will also understand security of the networking infrastructure and its protocols andwill be able to desi | ign and impleme | nt a secured a | nd survivable | | | |
| network. Students will also get an overview of securing data in clouds, database systems, and servers. | | | | | | |
| BIE-SP1 Team Software Project 1 | | KZ | 4 | | | |
| In this course, students work on a complex team project applying all the knowledge obtained in the BIE-SI1.2 course. There are no lectu | ures and no semi | inars/tutorials | in this course. | | | |
| This course is to be enrolled in parallel with BIE-SI1.2 course. | | | | | | |
| BIE-SP2 Team Software Project 2 | | KZ | 6 | | | |
| Students gain hands-on experience with the iterative development process while working on a large-scale software project. The first itera | tion is the result of | of the BEI-SP1 | course project. | | | |
| However, this time, the functionality, testing and documenting of the system being developed will be emphasized. Students will work in the | eams of 4-6 peop | ple. The teach | er, in the role of | | | |
| the team and project leader, regularly consults with the team (at the seminars) with regard to the formal as well as material aspects of their solution. The BEI-SI2 course that runs | | | | | | |
| The team and project leader, regularly consults with the team (at the seminars) with regard to the formal as well as material aspects of the | neir solution. The | e BEI-SI2 cours | se that runs | | | |
| concurrently will provide the students with supporting knowledge, especially in the area of teamwork, testing and quality assurance of the | neir solution. The ne software produ | e BEI-SI2 cour: luct. | se that runs | | | |
| concurrently will provide the students with supporting knowledge, especially in the area of teamwork, testing and quality assurance of the BIE-ADU.1 Unix Administration | neir solution. The ne software produ | e BEI-SI2 cours luct. Z,ZK | se that runs | | | |
| BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the pri | neir solution. The ne software produ inciples of their pl | e BEI-SI2 cours luct. Z,ZK | se that runs 5 nst unauthorized | | | |
| Image: Second and project leader, regularly consults with the team (at the seminars) with regard to the formal as were as material aspects of the concurrently will provide the students with supporting knowledge, especially in the area of teamwork, testing and quality assurance of the BIE-ADU.1 BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the private information from the lectures on real life examples from practice. They will understand the difference of the information of the in | neir solution. The ne software produ inciples of their pl ences between us | e BEI-SI2 cour uct. Z,ZK protection agair ser and admin | 5 se that runs 5 st unauthorized istrator roles. | | | |
| BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the private internal systems and practical knowledge of tools for tracking, analyzing, debugging and securing systems, implementing and mana | neir solution. The ne software produ- inciples of their pl ences between us ging file systems | ⇒ BEI-SI2 cours luct. Z,ZK protection again ser and admin s, disk subsyste | 5 se that runs 5 st unauthorized istrator roles. ems, processes, | | | |
| Image: Second | inciples of their production of the software production of their production of their production of the systems | BEI-SI2 cours uct. Z,ZK protection agair ser and admin s, disk subsyste | 5 5 st unauthorized istrator roles. ems, processes, | | | |
| BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the private internal systems and with the private internal systems, with the administration of their basic subsystems and with the private internal structure of unix-like systems, with the administration of their basic subsystems and with the private internal structure of unix-like systems, with the administration of their basic subsystems and with the private internal structure of unix-like systems, and you be administration of their basic subsystems and with the private internal structure of the | neir solution. The ne software produ- inciples of their pr ences between us ging file systems | ≥ BEI-SI2 cour: uct. Z,ZK protection agair ser and admin s, disk subsyste Z,ZK | 5 se that runs 5 st unauthorized istrator roles. ems, processes, 5 | | | |
| BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the private internal structure of unix-like systems, with the administration of their basic subsystems and with the private. In the seminars they will verify the information from the lectures on real life examples from practice. They will understand the difference of the services, shared file systems, name services, remote access, and system boot. BIE-TWA.1 Web Application Design The basic course of web application development. Initially, the students become familiar with HTTP and its possibilities and partly with s | neir solution. The ne software produ- inciples of their pr ences between us ging file systems | BEI-SI2 cours uct. Z,ZK protection again ser and admin s, disk subsyste Z,ZK of language de | 5 se that runs 5 st unauthorized istrator roles. ems, processes, 5 escribing the | | | |
| Interearing and project leader, regularly consults with the learn (at the seminars) with regard to the formal as wen as material aspects of the concurrently will provide the students with supporting knowledge, especially in the area of teamwork, testing and quality assurance of the BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the private. In the seminars they will verify the information from the lectures on real life examples from practice. They will understand the different they gain theoretical and practical knowledge of tools for tracking, analyzing, debugging and securing systems, implementing and mana memory, network services, shared file systems, name services, remote access, and system boot. BIE-TWA.1 Web Application Design The basic course of web application development. Initially, the students become familiar with HTTP and its possibilities and partly with s structure (HTML) and presentation of document on the Web (CSS). These skills provide the necessary basis for the development of We | inciples of their produces of their produces of their process between us ging file systems | BEI-SI2 cours uct. Z,ZK protection agair ser and admin s, disk subsyste Z,ZK of language de which will be de | 5 st unauthorized istrator roles. ems, processes, 5 escribing the emonstrated in | | | |
| Interearing and project leader, regularly consults with the team (at the seminars) with regard to the formal as wen as material aspects of the concurrently will provide the students with supporting knowledge, especially in the area of teamwork, testing and quality assurance of the BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the private. In the seminars they will verify the information from the lectures on real life examples from practice. They will understand the difference of the gain theoretical and practical knowledge of tools for tracking, analyzing, debugging and securing systems, implementing and mana memory, network services, shared file systems, name services, remote access, and system boot. BIE-TWA.1 Web Application Design The basic course of web application development. Initially, the students become familiar with HTTP and its possibilities and partly with s structure (HTML) and presentation of document on the Web (CSS). These skills provide the necessary basis for the development of Web modern libraries facilitate the development of Web pages applications. Server side will be demonstrated on PHP technology using frame | inciples of their production. I ne software production inciples of their production inciples of their productions of the systems grant file systems some properties of the applications, we werks Symfony | BEI-SI2 cours uct. Z,ZK protection agair ser and admin s, disk subsyste Z,ZK of language de vhich will be de 2, Doctrine 2. | 5 st unauthorized istrator roles. ems, processes, 5 escribing the emonstrated in Developments | | | |
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| Interearing and project leader, regularly consults with the team (at the seminars) with regard to the formal as wen as material aspects of the concurrently will provide the students with supporting knowledge, especially in the area of teamwork, testing and quality assurance of the BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the private. In the seminars they will verify the information from the lectures on real life examples from practice. They will understand the differe They gain theoretical and practical knowledge of tools for tracking, analyzing, debugging and securing systems, implementing and mana memory, network services, shared file systems, name services, remote access, and system boot. BIE-TWA.1 Web Application Design The basic course of web application development. Initially, the students become familiar with HTTP and its possibilities and partly with s structure (HTML) and presentation of document on the Web (CSS). These skills provide the necessary basis for the development of We modern libraries facilitate the development of Web pages applications. Server side will be demonstrated on PHP technology using frame on the client side will be demonstrated using a JavaScript language with library jQuery and possibly MV* framework AngularJS. BIE-ADW.1 Windows Administration Students understand the architecture and internals of the Windows OS and acquire the skills to administrate the Windows OS. They are security tools and apply advanced ActiveDirectory administration methods. They are able to solve problems by applying appropriate troo | inciples of their produces of their produces of their produces of their produces between us ging file systems come properties of the applications, we works Symfony eable use the statubleshooting met | a BEI-SI2 cours uct. Z,ZK protection again ser and admin s, disk subsyste Z,ZK of language de vhich will be de 2, Doctrine 2. Z,ZK andard adminis thods and adminis | 5 st unauthorized istrator roles. ems, processes, 5 escribing the emonstrated in Developments 4 stration and ninistrate | | | |
| Interearing and project leader, regularly consults with the team (at the seminars) with regard to the formal as wen as material aspects of the concurrently will provide the students with supporting knowledge, especially in the area of teamwork, testing and quality assurance of the BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the private. In the seminars they will verify the information from the lectures on real life examples from practice. They will understand the differer They gain theoretical and practical knowledge of tools for tracking, analyzing, debugging and securing systems, implementing and mana memory, network services, shared file systems, name services, remote access, and system boot. BIE-TWA.1 Web Application Design The basic course of web application development. Initially, the students become familiar with HTTP and its possibilities and partly with s structure (HTML) and presentation of document on the Web (CSS). These skills provide the necessary basis for the development of We modern libraries facilitate the development of Web pages applications. Server side will be demonstrated on PHP technology using frame on the client side will be demonstrated using a JavaScript language with library jQuery and possibly MV* framework AngularJS. BIE-ADW.1 Windows Administration Students understand the architecture and internals of the Windows OS and acquire the skills to administrate the Windows OS. They are security tools and apply advanced ActiveDirectory administration methods. They are able to solve problems by applying appropriate trouble heterogeneous systems. Students are able to effectively configure centralised administrat | some properties of the software produ- inciples of their produ- inciples of their pro- ences between us ging file systems some properties of the applications, we were symfony e able use the sta ubleshooting met | BEI-SI2 cours uct. Z,ZK protection again ser and admin s, disk subsyste Z,ZK of language de vhich will be de 2, Doctrine 2. Z,ZK andard adminis thods and adm | 5 st unauthorized istrator roles. ems, processes, 5 escribing the emonstrated in Developments 4 stration and inistrate | | | |
| Interearing and project leader, regularly consults with the team (at the seminars) with regard to the formal as wen as material aspects of the concurrently will provide the students with supporting knowledge, especially in the area of teamwork, testing and quality assurance of the BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the private. In the seminars they will verify the information from the lectures on real life examples from practice. They will understand the differer They gain theoretical and practical knowledge of tools for tracking, analyzing, debugging and securing systems, implementing and mana memory, network services, shared file systems, name services, remote access, and system boot. BIE-TWA.1 Web Application Design The basic course of web application development. Initially, the students become familiar with HTTP and its possibilities and partly with s structure (HTML) and presentation of document on the Web (CSS). These skills provide the necessary basis for the development of Web modern libraries facilitate the development of Web pages applications. Server side will be demonstrated on PHP technology using frame on the client side will be demonstrated using a JavaScript language with library jQuery and possibly MV* framework AngularJS. BIE-ADW.1 Windows Administration Students understand the architecture and internals of the Windows OS and acquire the skills to administrate the Windows OS. They are security tools and apply advanced ActiveDirectory administration methods. They are able to solve problems by applying appropriate trouble heterogeneous systems. Students are able to effectively configure centralised administration of a computer network. | some properties of balance between us ging file systems some properties of bapplications, we eworks Symfony able use the sta ubleshooting met | BEI-SI2 cours uct. Z,ZK protection again ser and admin s, disk subsyste Z,ZK of language de vhich will be de 2, Doctrine 2. Z,ZK andard adminis thods and adm Z,ZK | 5 st unauthorized istrator roles. ems, processes, 5 escribing the emonstrated in Developments 4 stration and inistrate 4 | | | |
| Interearing and project reader, regularly consults with the team (at the seminars) with regard to the formal as well as material aspects of the concurrently will provide the students with supporting knowledge, especially in the area of teamwork, testing and quality assurance of the BIE-ADU.1 Unix Administration Students became familiar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the private. In the seminars they will verify the information from the lectures on real life examples from practice. They will understand the differer They gain theoretical and practical knowledge of tools for tracking, analyzing, debugging and securing systems, implementing and mana memory, network services, shared file systems, name services, remote access, and system boot. BIE-TWA.1 Web Application Design The basic course of web application development. Initially, the students become familiar with HTTP and its possibilities and partly with s structure (HTML) and presentation of document on the Web (CSS). These skills provide the necessary basis for the development of We modern libraries facilitate the development of Web pages applications. Server side will be demonstrated on PHP technology using frame on the client side will be demonstrated using a JavaScript language with library jQuery and possibly MV* framework AngularJS. BIE-ADW.1 Windows Administration Students understand the architecture and internals of the Windows OS and acquire the skills to administrate the Windows OS. They are security tools and apply advanced ActiveDirectory administration methods. They are able to solve problems by applying appropriate trouble heterogeneous systems. Students are able to effectively configure centralised administra | ein solution. I ne ne software produ inciples of their p ences between us ging file systems some properties of b applications, w eworks Symfony e able use the sta ubleshooting met | BEI-SI2 cours uct. Z,ZK rotection agair ser and admin s, disk subsyste Z,ZK of language de vhich will be de 2, Doctrine 2. Z,ZK andard administ thods and adm Z,ZK | 5 ast unauthorized istrator roles. ems, processes, 5 escribing the emonstrated in Developments 4 stration and unistrate 4 | | | |

| Kod skupiny: BIE- | V.2017 |
|--------------------|--|
| Název skupiny: P | urely Elective Bachelor Courses, Version 2017 |
| Podmínka kredity | skupiny: |
| Podmínka p edm | ty skupiny: |
| Kredity skupiny: 0 | |
| Poznámka ke sku | pině: |
| Kód | Název p edm tu / Název skupiny p edm t (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garanti (gar.) |
| BIE-7UM | Artificial Intelligence Fundamentals |

| Kód | (u skupiny p edm t seznam kód jejích len) Vyu ující, auto i a garanti (gar.) | Zakon ení | Kredity | Rozsah | Semestr | Role |
|------------|---|-----------|---------|--------|---------|------|
| BIE-ZUM | Artificial Intelligence Fundamentals Pavel Surynek Pavel Surynek Pavel Surynek (Gar.) | Z,ZK | 4 | 2P+2C | L | V |
| BIE-ZRS | Basics of System Control | Z,ZK | 4 | 2P+2C | L | V |
| BIE-CCN | Compiler Construction Christoph Kirsch Christoph Kirsch (Gar.) | Z,ZK | 5 | 3P | L | V |
| BIE-SCE1 | Computer Engineering Seminar I Miroslav Skrbek, Hana Kubátová Hana Kubátová (Gar.) | Z | 4 | 2C | Z | V |
| BIE-SCE2 | Computer Engineering Seminar II Hana Kubátová Hana Kubátová (Gar.) | Z | 4 | 2C | L | V |
| BIE-CZ0 | Czech Language for Foreigners Markéta Hofmannová, Ivana Vondrá ková, Tomáš Houdek, Petra Korfová Zden k Muziká Zden k Muziká (Gar.) | КZ | 2 | 4C | Z,L | V |
| BIE-CZ1.21 | Czech Language for Foreigners II Ivana Vondrá ková, Petra Korfová Zden k Muziká Zden k Muziká (Gar.) | ΚZ | 2 | 4C | Z,L | V |
| BIE-FTR.1 | Financial Markets Pavla Vozárová | Z,ZK | 5 | 2P+2C | L | V |
| BIE-EHD | Introduction to European Economic History Tomáš Evan Tomáš Evan Tomáš Evan (Gar.) | Z,ZK | 3 | 2P+1C | L | V |
| BIE-IMA | Introduction to Mathematics | Z | 4 | 3C | Z | V |
| BIE-IMA2 | Introduction to Mathematics 2 | Z | 2 | 1C | Z | V |
| BIE-ST1 | Network Technology 1 Alexandru Moucha Alexandru Moucha (Gar.) | Z | 3 | 2C | Z | V |
| BIE-OOP | Object-Oriented Programming Filip K ikava Filip K ikava Filip K ikava (Gar.) | Z,ZK | 4 | 2P+2C | Z | V |
| BIE-PKM | Preparatory Mathematics Jitka Rybní ková Tomáš Kalvoda (Gar.) | Z | 4 | | Z | V |

| BIE-PJV | Programming in Java | Z,ZK | 4 | 2P+2C | Z | V |
|---|--|--|--|--|--|---|
| BIE-PS2 | Programming in shell 2 | Z,ZK | 4 | 2P+2C | L | V |
| BIE-PRR.21 | Project ma19nagement David Pešek David Pešek David Pešek (Gar.) | Z,ZK | 5 | 2P+2C | Z,L | V |
| BIE-VAK.21 | Selected Combinatorics Applications Tomáš Valla, Dušan Knop, Ond ej Suchý, Šimon Schierreich, Maria Saumell Mendiola Tomáš Valla Tomáš Valla (Gar.) | Z | 3 | 2R | L | V |
| BI-SCE1 | Seminá po íta ového inženýrství l Hana Kubátová Hana Kubátová Hana Kubátová (Gar.) | Z | 4 | 2C | L,Z | V |
| TV2K1 | T lesná výchova 2 | Z | 1 | | L | V |
| BIE-SEP | World Economy and Business Tomáš Evan Tomáš Evan (Gar.) | Z,ZK | 4 | 2P+2C | Z | V |
| BIE-3DT.1 | 3D Printing | KZ | 4 | 3C | L | V |
| Charakteristiky p edm BIE-OOP Ob Object-oriented programming course we look at some of th handing, refactoring and des | této skupiny studijního plánu: Kód=BIE-V.2017 Název=Pu ject-Oriented Programming g has been used in the last 50 years to solve computational problems by using graphs e main principles of object-oriented programming and design. The emphasis is on pra ign patterns. | of objects that contribution | Bachelon Illaborate to for software | gether by m | s, Versio ,,ZK essage pas nt including | n 2017 4 sing. In this testing, error |
| BIE-FTR.1 Fin | ancial Markets | | | Z | "ZK | 5 |
| Financial sector has been de globalization of market activit from technical schools who h Markets course thus englobe | eply transformed in the recent years, which led to a development of structured financi- lies. The need to use and properly apply mathematical and technical tools is emphasi- lave sufficient knowledge ICT and mathematics, and who have at the same time an use so both a description of financial markets and related economic theories, and an overv | al products, a new zed. To manage the nderstanding of the view of mathemati | v point of vie neir financial e functionin cal and stati | ew on the ise activities, n g of financia istical tools o | sue of credi nany firms r I markets. T used in this | t risk, and leed graduates The Financial field. |
| BIE-EHD Intr | oduction to European Economic History | about forming of | the alobal e | | .,ZK | 3 scription of the |
| key historical periods. As Eur the Roman Empire to the frag course does not cover the de history. Class meetings will c | ropean countries have been dominant actors in this process it focuses predominantly gmentation of the Middle Ages, from the destruction of WWII to the current affairs, the stailed economic history of particular European countries but rather the impact of trade onsist of a mixture of lectures and discussions. | on their roles in e development of r e and the role of p | conomic his nodern finar articular eve | tory. From the notal institution in the notal institutin institution in the notal institution in the notal instit | ne large ecc ons is decip ons and org | nomic area of hered. The ganizations in |
| BIE-ZUM Art | ificial Intelligence Fundamentals | | | Z | "ZK | 4 |
| students are introduced to the space search, multi-agent sy | e fundamental problems in the Artificial intelligence, and the basic methods for their so stems, game theory, planning, and machine learning. Modern soft-computing methods | s, including the ev | olutionary a | e classical ta Igorithms ar | sks from the | e areas of state Il networks, will |
| be presented as well. | ing of Quetage Quetage | | | | 71/ | 4 |
| Volitelný p edm t základy íz budou pro naše absolventy ji Zam íme se zejména na íz systém . Seznámíme vás s r PID, PSD a fuzzy regulátor . nastavování parametr regul p íklad a praktických pr my | ení systém je ur en pro všechny zájemce o aplikovanou informatiku v bakalá ském s st konkuren ní výhodou a zhodnotí je bezesporu v pr myslové praxi. Studenti získaj ení inženýrských a fyzikálních sysém . Poskytneme vám základní informace z oblasti netodami vytvá ení popisu a modelu systém , základní analýzou lineárních dynamick Pozornost je v nována rovn ž sníma m a ak ním len m v regula ních obvodech, c átoru a n kterým aspekt m pr myslových realizací spojitých a íslicových regulátor . slových realizací. | studiu. Alespo p í znalosti v dynam zp tnovazebního ých systém a ná tázkám stability re Jednotlivá témata | ehledové zr nicky se rozv i ízení lineá vrhem a ov egula ních o p ednášek | nalosti oboru víjejícím obc urních dynan ením jedno obvod , jedn jsou prováz | automatick oru s velkou nických jedr oduchých zp orázovému ena množst | tého ízení budoucností. norozm rových tnovazebních a pr b žnému vím užite ných |
| BIE-CCN Co | mpiler Construction | | | Z | "ZK | 5 |
| This is an introductory class understand the design and ir | on compiler construction for bachelor students in computer science. The goal of the c nplementation of programming languages. Seeing and actually understanding self-co | lass is to introduce mpilation is the ov | e basic prino erarching th | ciples of con the of the | npilers for s class. | tudents to |
| BIE-SCE1 Co The Seminar of Computer En are approached individually v articles and other profession semester. | mputer Engineering Seminar I gineering is a (s)elective course for students who want to deal with deeper topics of dig within the subject. Each student or group of students solves some interesting topic wit al literature and/or work in K N laboratories. The capacity of the subject is limited by t | jital design, reliabi h the selected sup he possibilities of | lity and resis pervisor. Par the seminar | stance to fail t of the subj teachers. T | Z ures and at ect is work he topics ar | 4 tacks. Students with scientific re new for each |
| BIE-SCE2 Co The Seminar of Computer En are approached individually v articles and other profession semester. | mputer Engineering Seminar II gineering is a (s)elective course for students who want to deal with deeper topics of dig within the subject. Each student or group of students solves some interesting topic wit al literature and/or work in K N laboratories. The capacity of the subject is limited by t | jital design, reliabi h the selected sup he possibilities of | lity and resis pervisor. Par the seminar | stance to fail t of the subj teachers. T | Z ures and at ect is work he topics ar | 4 tacks. Students with scientific re new for each |
| BIE-CZ0 Czech for foreigners | ech Language for Foreigners offers the basic topics of conversation: Introductions, Orientation, Shopping, Work / S | tudv. Travel. Time. | Family. | | KZ | 2 |
| BIE-CZ1.21 Czc The course is intended for St basic vocabulary and clarifies | ech Language for Foreigners II udents of English programmes who have completed BIE-CZ0 course or have basic ki s the structure of the Czech language structure with regard to the practical needs of S | nowledge of the C Students residing i | zech langua | age. The cou Republic. | KZ | 2 expands the |
| BIE-IMA Intr Students refresh and extend examples. | oduction to Mathematics knowledge of elementary functions and their properties. Students understand basic n | nathematical princ | iples and th | ey are able | Z to apply the | 4 em in particular |
| BIE-IMA2 Intr Students refresh and extend examples. | oduction to Mathematics 2 knowledge of elementary functions and their properties. Students understand basic n | nathematical princ | iples and th | ey are able | Z to apply the | 2 m in particular |
| BIE-ST1 Ne P edm t je zam en na získa programu - CCNA1 - R& | twork Technology 1 ání základních znalosti z oblasti poíta ových sítí a praktických zkušeností se sí ovým ;S Introduction to Networks. | ii technologiemi. F | edm todp | ovída látce | Z kurikula Cis | 3 co Netacad |
| BIE-PKM Pre | paratory Mathematics Mathematics is to help students revise the most important topics of high-school mathe | amatics | | | Z | 4 |

| BIE-PJV | Programming in Java | Z,ZK | 4 |
|----------------------------|---|------------------------|-------------------|
| Tento kurz je prezentova | án v angli tin . Existuje ale také eská varianta BI-PJV a BIK-PJV. | | |
| BIE-PS2 | Programming in shell 2 | Z,ZK | 4 |
| Students get a general | overview of scripting languages, introduction into syntax, semantics, programming style, data structures, pros and cons. In a | ddition, they gain | a deeper insight |
| into Bourne Again shell | and some other particular scripting languages and will get practical experience with shell script programming. Note to Erasmu | s students: We are | e ready do adapt |
| the lectures to provide e | wen very basic Bourne shell usage. Depending on actual knowledge of the students, orientation in user filesystem tools (cp, | In, mkdir, rm) ar | nd useful basic |
| data filtering tools (cut, | r, sort, uniq) can be provided. The advantage of this module is that we do not stop at this point - we will show you also a so | election of advanc | ed scripting |
| techniques used in prac | tice. | | |
| BIE-PRR.21 | Project ma19nagement | Z,ZK | 5 |
| The aim of the course is | to introduce students into the basic concepts and principles of project management, i.e. methods of planning, teamwork, ar | nalysis, crisis man | agement in a |
| project, communication, | argumentation and meeting management. Students will practice project management techniques (e.g. SWOT analysis, risk | assessment and | management, |
| Gantt charts, resource s | schedule, resource balancing, network graphs) and creation of project documentation. The course is designed especially for | students who are | interested in |
| deepening their knowled | lge outside IT, consider starting their own company, or have ambitions to work in middle or senior management positions in | large companies. | The course is |
| also suitable for all thos | e who will develop software or hardware in the form of team projects. | | |
| BIE-VAK.21 | Selected Combinatorics Applications | Z | 3 |
| The course aims to intro | duce students in an accessible form to various branches of theoretical computer science and combinatorics. In contrast to the | ie basic courses, i | 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 b | asic data structure | es. Furthermore, |
| with the active participa | tion 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 b | e solved will include, for example, graph theory, combinatorial and algorithmic game theory, approximation algorithms, optim | ization and more. | Students will |
| also try to implement so | lutions to the studied problems with a special focus on the effective use of existing tools. | | |
| BI-SCE1 | Seminá po íta ového inženýrství l | Z | 4 |
| Seminá po íta ového i | nženýrství je výb rový p edm t pro studenty, kte í se cht jí zabývat hloub ji tématy íslicového návrhu, spolehlivosti a odoln | osti proti poruchá | m a útok m. Ke |
| student m se v rámci p | edm tu p istupuje individuáln a každý student i skupinka student eší n jaké zajímavé aktuální téma s vybraným školite | em. Sou ástí p eo | dm tu je práce s |
| v deckými lánky a jino | u odbornou literaturou a/nebo práce v laborato ích K N. Kapacita p edm tu je omezena možnostmi u itel seminá e.Probíra | ná témata jsou pr | o každý semestr |
| nová. | | | |
| TV2K1 | T lesná výchova 2 | Z | 1 |
| BIE-SEP | World Economy and Business | Z,ZK | 4 |
| The minimum of enrolle | d students is 8. If the capacity is not fulfilled, the course will not be taught. The course introduces students of technical unive | rsities to internation | onal business. It |
| does that predominantly | by comparing individual countries and key regions of the world economy. Students get to know about different religions and | cultures, necessa | ary for doing |
| business in diverse soci | eties as well as indexes of economic freedom, corruption and economic development, which are needed for the right investr | nent decision. Ser | ninars help to |
| improve knowledge in th | e form of discussions based on individual readings. | | |
| BIE-3DT.1 | 3D Printing | KZ | 4 |
| Students learn to design | n three-dimensional objects optimized for printing on a RepRap printer and the printing itself. They will be able to design obje | cts, prepare for p | inting and print |
| in 3D. | | | |
| | | | |

Seznam p edm t tohoto pr chodu:

| Kód | Název p edm tu | Zakon ení | Kredity |
|---------------------|--|----------------------|---------------|
| BE0B16FI1 | Philosophy 1 | KZ | 4 |
| Probírají se posta | avy a myšlenky antické filozofie a v dy. Na historickém pozadí se otevírají i aktuální problémy dneška. Jde zejména o otázky souvisej | ící s rozvojem dne | šní fyziky, |
| | matematiky a p írodov dy, dále s rozvojem a spole enskými aspekty techniky a otázek ekonomiky, etiky a politiky. | | |
| BI-SCE1 | Seminá po íta ového inženýrství l | Z | 4 |
| Seminá po íta ov | ého inženýrství je výb rový p edm t pro studenty, kte í se cht jí zabývat hloub ji tématy íslicového návrhu, spolehlivosti a odolnosti | proti poruchám a | útok m. Ke |
| student m se v rán | nci p edm tu p istupuje individuáln a každý student i skupinka student eší n jaké zajímavé aktuální téma s vybraným školitelem. | Sou ástí p edm t | u je práce s |
| v deckými lánky a | jinou odbornou literaturou a/nebo práce v laborato ích K N. Kapacita p edm tu je omezena možnostmi u itel seminá e. Probíraná t | émata jsou pro ka | ždý semestr |
| | nová. | | |
| BIE-3DT.1 | 3D Printing | KZ | 4 |
| Students learn to o | lesign three-dimensional objects optimized for printing on a RepRap printer and the printing itself. They will be able to design objects, | prepare for printin | ng and print |
| | in 3D. | | |
| BIE-AAG | Automata and Grammars | Z,ZK | 6 |
| Students are introd | uced to basic theoretical and implementation principles of the following topics: construction, use and mutual transformations of finite a | automata, regular | expressions |
| and regular gramm | ars, translation finite automata, construction and use of pushdown automata, hierarchy of formal languages, relationships between for | mal languages an | d automata. |
| Knowledge acquir | ed through the module is applicable in designs of algorithms for searching in text, data compression, simple parsing and translation, | and design of digi | tal circuits. |
| BIE-ADU.1 | Unix Administration | Z,ZK | 5 |
| Students became fa | amiliar with the internal structure of Unix-like systems, with the administration of their basic subsystems and with the principles of their p | rotection against u | nauthorized |
| use. In the semina | ars they will verify the information from the lectures on real life examples from practice. They will understand the differences between | user and administ | rator roles. |
| They gain theoretic | al and practical knowledge of tools for tracking, analyzing, debugging and securing systems, implementing and managing file systems | , disk subsystems | , processes, |
| | memory, network services, shared file systems, name services, remote access, and system boot. | | |
| BIE-ADW.1 | Windows Administration | Z,ZK | 4 |
| Students unders | and the architecture and internals of the Windows OS and acquire the skills to administrate the Windows OS. They are able use the | standard administr | ation and |
| security tools a | nd apply advanced ActiveDirectory administration methods. They are able to solve problems by applying appropriate troubleshooting | methods and adm | inistrate |
| | heterogeneous systems. Students are able to effectively configure centralised administration of a computer network. | | |
| BIE-AG1 | Algorithms and Graphs 1 | Z,ZK | 6 |
| The course covers | s the basics from the efficient algorithm design, data structures, and graph theory, belonging to the core knowledge of every computir | ng curriculum. It is | interlinked |
| with the concurrent | BIE-AAG and BIE-ZDM courses in which the students gain the basic skills and knowledge needed for time and space complexity of a | algorithms and lea | rn to handle |
| | practically the asymptotic mathematics. | | |
| BIE-AG2 | Algorithms and Graphs 2 | Z,ZK | 5 |

| DIE-APS.I | Architectures of Computer Systems | Z,ZK | 5 |
|--|--|--|--|
| Students will lear | in the construction principles of internal architecture of computers with universal processors at the level of machine instructions. Spec | cial emphasis is giv | en on the |
| pipelined instruction | n processing and on the memory hierarchy. Students will understand the basic concepts of RISC and CISC architectures and the princ recessors, but also in superscalar processors that can execute multiple instructions in one cycle, while ensuring the correctness of the | ciples of instruction | of processing |
| The course further | elaborates the principles and architectures of shared memory multiprocessor and multicore systems and the memory coherence and | consistency in su | ch systems |
| BIF-BAP | Bachelor Thesis | 7 | 14 |
| BIE-BEK | Secure Code | 7.7K | 5 |
| Studenti se nau í p | posuzovat a zohled ovat bezpe nostní rizika p i návrhu svého kódu a ešení v b žné inženýrské praxi. Od teorie modelování bezpe i | nostních rizik p isto | oupí k praxi, |
| ve které si vyzkouš | í b h program pod nižšími oprávn ními a jak tato oprávn ní stanovovat, protože ne každý program musí nutn b žet s administrátor | ským oprávn ním. | Budou také |
| prakticky demonstr | ována rizika spojená s p ete ením bufferu. Dále se studenti budou krátce v novat zabezpe ení dat a jak toto zabezpe ení souvisí s da | tabázovými systém | ny a webem. |
| | V záv ru se budou v novat útok m typu DoS (Denial of Service) a obran proti nim. | | - |
| BIE-BEZ | Security | | 6 |
| and hash functions | to the mathematical fundamentals of cryptography and have an overview of current cryptographic algorithms and applications, symmetric a structure to a structure to be structure and applications. Symmetric a structure to a structure to be structure to a structure to | vstems for comput | er systems |
| They are able to p | roperly and securely use cryptographic primitives and systems that are based on these primitives. Students are introduced to legal as | spects of information | on security. |
| ., | security standards, social engineering, and basic principles of security management. | | · · · · · · · · · · · · · · · · · · · |
| BIE-BIG | DB Technologies for Big Data | KZ | 4 |
| Students are introd | luced into the field of Big Data. These are data that the standard relational databases cannot process efficientlydue to the size, and a | t the same time, th | eir real-time |
| processing can p | provide information that can have key importance for thecompetitiveness of a company or organization. The course is focused practical | ally. Students learn | the most |
| important professio | onaltechnologies, such as Apache Cassandra, Apache Hadoop, Apache Solr, and others. The course brings to students theoreticalfor | undation of algorith | ims used in |
| | Big data systems. In the labs, students learn to develop their own applications on topol these technologies. | 7 | 2 |
| At the beginning of | Dachelor Flogeol | ∠ udent will perform | ∠ durina the |
| , « « « » » » « « » « » « « « » « « « « | semester. If he fulfill these tasks, the supervisor will award him / her at the end of the semester with the BI-BPR course. | adont im peneim | aanng no |
| BIE-CAO | Digital and Analog Circuits | Z,ZK | 5 |
| Students get the | fundamental understanding of technologies underlying electronic digital systems. They understand the basic theoretical models and | principles of functi | onality of |
| transistors, gates, o | circuits, and conductors. They are able to design simple circuits and evaluate circuit parameters. They understand the differences betw | veen analog and di | igital modes |
| | of electronic devices. | | |
| BIE-CCN | Compiler Construction | Z,ZK | 5 |
| i nis is an introdi | uctory class on compiler construction for bachelor students in computer science. The goal of the class is to introduce basic principles | of compliers for st | |
| BIE-CZ0 | | K7 | 3. 2 |
| DIL-020 | Course Czech for foreigners offers the basic topics of conversation: Introductions. Orientation. Shopping. Work / Study. Travel. Time | e. Family. | 2 |
| BIE-CZ1.21 | Czech Language for Foreigners II | KZ | 2 |
| The course is inte | ended for Students of English programmes who have completed BIE-CZ0 course or have basic knowledge of the Czech language. Th | e course further ex | cpands the |
| basic | weeshulary and elarifies the structure of the Czech language structure with regard to the practical people of Students residing in the | | |
| 240.0 | | Czech Republic. | |
| BIE-DBS | Database Systems | Czech Republic. Z,ZK | 6 |
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| Studente will meete | inisity of Mathematics and informatics | ,∠r | 3 |
|--|--|---|--|
| | er the methods traditionally used in mathematics and related disciplines - informatics - from different periods of the development of math acquainted with mathematical methods suitable for applications in contemporary computer science. | nematics, and will th | nus become |
| BIE-HWB | Hardware Security | 7.7K | 5 |
| The course deals | s with hardware resources used to ensure security of computer systems including embedded ones. The students become familiar with | h the operating pri | nciples of |
| cryptographic modu | ules, the security features of modern processors, and storage media protection through encryption. They will gain knowledge about vi | ulnerabilities of HW | / resources, |
| including side-chan | nel attacks and tampering with hardware during manufacture. Students will have an overview of contact and contactless smart card tec | chnology including a | applications |
| | and related topics for multi-factor authentication (biometrics). Students will understand the problems of elective implementation of | | 4 |
| Students refresh ar | nd extend knowledge of elementary functions and their properties. Students understand basic mathematical principles and they are a | ∠ able to apply them i | 4 in particular |
| | examples. | | n partioulai |
| BIE-IMA2 | Introduction to Mathematics 2 | Z | 2 |
| Students refresh ar | nd extend knowledge of elementary functions and their properties. Students understand basic mathematical principles and they are a | able to apply them i | in particular |
| | examples. | | |
| BIE-KOM | Conceptual Modelling | Z,ZK | 5 |
| The course focuses | s on the development of abstract thinking skills and precise specifications in the form of conceptual models. Students will learn the abi | lity to distinguish ke | ey concepts |
| in the domain, cat | tegorize and also determine the right links in complex systems of social reality, especially enterprises and institutions. Students will leave and institutions of social reality, especially enterprises and institutions. Students will be a social system of social reality, especially enterprises and institutions. Students will be a social system of social reality, especially enterprises and institutions. Students will be a social system of social reality, especially enterprises and institutions. Students will be a social system of social reality, especially enterprises and institutions. Students will be a social system of social reality, especially enterprises and institutions. | earn the basics of c | ontological |
| Enterprise Enginee | in OntoOML notation. They will also learn to express the rules and limitations of everyday reality using the OCL language. Students | s will also learn the | e Dasics of |
| | also designed with regard to the continuity of software implementations. | to methodology. H | |
| BIE-LIN | Linear Algebra | Z.ZK | 7 |
| Students understa | nd the theoretical foundation of algebra and mathematical principles of linear models of systems around us, where the dependencies | among componer | nts are only |
| linear. They know | the basic methods for operating with polynomials and linear spaces. They are able to perform matrix operations and solve systems of | of linear equations. | They can |
| ap | oply these mathematical principles to solving problems in 2D or 3D analytic geometry. They understand error-detecting and error-corr | ecting codes. | |
| BIE-MIK | Fundamentals of Microeconomics | Z,ZK | 4 |
| This a introducto | ry course of microeconomics designed for students without previous economic background. It describes different market regimes and | d ways how firm ca | n react to |
| consur | mer demand, competitor strategies, government intervention, uncertainty and information asymmetry. All concepts are illustrated on r | real life examples. | |
| BIE-MLO | Mathematical Logic | Z,ZK | 5 |
| | An introduction to propositional and predicate logic. | 774 | 4 |
| DIE-UUP Object-oriented n | ODJECI-OTIETILEU PTOVIGITITITIIIO | ∠,∠n by message passi | 4 ing In this |
| course we look at | some of the main principles of object-oriented programming and design. The emphasis is on practical techniques for software develo | poment including te | stina. error |
| | handing, refactoring and design patterns. | | g, |
| BIE-OSY | Operating Systems | Z,ZK | 5 |
| Students understa | nd the classical theory of operating systems (OS) in addition to the knowledge gained in the BI-PS1 module. They get a solid knowle | dge of OS kernels, | processes |
| and threads implei | mentations. They understand the problems of race conditions and principles and algorithms for critical sections, thread scheduling, re | esource allocation, | deadlocks. |
| Those understand | | | |
| They understand | the techniques of managing virtual memory, principles and architectures of disks and disk arrays, file systems and peripheral devices | s. They gain basic k | knowledge |
| | the techniques of managing virtual memory, principles and architectures of disks and disk arrays, file systems and peripheral devices cessary for developing system applications or for system administration. They are able to design and implement simple multithreaded | s. They gain basic k d applications. | knowledge |
| BIE-PA1 | the techniques of managing virtual memory, principles and architectures of disks and disk arrays, file systems and peripheral devices cessary for developing system applications or for system administration. They are able to design and implement simple multithreaded Programming and Algorithmics 1 | s. They gain basic led applications. | knowledge |
| BIE-PA1 Students learn to co | the techniques of managing virtual memory, principles and architectures of disks and disk arrays, file systems and peripheral devices cessary for developing system applications or for system administration. They are able to design and implement simple multithreaded Programming and Algorithmics 1 onstruct algorithms for solving basic problems and write them in the C language. They understand data types (simple, structured, point t of recursion. They learn the basics of algorithm complexity analysis. They know fundamental algorithms for searching, sorting, and r | s. They gain basic k d applications. Z,ZK ters), expressions, i manipulating with li | knowledge 6 statements, inked lists. |
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the lectures to provide even very basic Bourne shell usage. Depending on actual knowledge of the students, orientation in user filesystem tools (cp, In, mkdir, rm...) and useful basic data filtering tools (cut, tr, sort, uniq...) can be provided. The advantage of this module is that we do not stop at this point - we will show you also a selection of advanced scripting

| techniques used in practice. | | 1 0 |
|---|---|--|
| BIE-PSI Computer Networks | Z.ZK | 5 |
| Students understand the basic common techniques, protocols, technologies, and algorithms necessary to communicate in computer networks focusing | primarily the 2nd t | o 4th layer |
| of the ISO OSI model. They also get a basic understanding of communication media, security, and network administration. Students will be able to write | a simple network a | application |
| and configure a simple network. | | |
| BIE-PST Probability and Statistics | Z,ZK | 5 |
| The students will learn the basics of probabilistic thinking, the ability to synthesize prior and posterior information and learn to work with random variable | s. They will be able | to to apply |
| basic models of random variable distributions and solve applied probabilistic problems in informatics and computer science. Using the statistical induction of unlarge the statistical states are the statistical states are the statistical states are the states ar | on they will be able | to perform |
| estimations of unknown distributional parameters from random sample characteristics. They will also be introduced to the methods of determining the si more random variables | atistical dependenc | ce of two or |
| BIE-SAP Computer Structures and Architectures | 7 7K | 6 |
| Students understand basic digital computer units and their structures, functions, and hardware implementation; ALU, control unit, memory system, input | uts. outputs. data st | orage and |
| transfer. In the labs, students gain practical experience with the design and implementation of the logic of a simple processor using modern | digital design tools. | |
| BIE-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 resistance to | o failures and attack | s. 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 | h 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 teacher | s. The topics are ne | ew for each |
| BIE SCE2 | 7 | 4 |
| BIE-50E2 COMPUTER ENGINEERING SEMINAL 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 attack | 4 s 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 wit | h 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 teacher | s. The topics are ne | ew for each |
| semester. | | |
| BIE-SEP World Economy and Business | Z,ZK | 4 |
| The minimum of enrolled students is 8. If the capacity is not fulfilled, the course will not be taught. The course introduces students of technical universiti | es to international t | ousiness. It |
| does that predominantly by comparing individual countries and key regions of the world economy. Students get to know about different religions and c | ultures, necessary | for doing |
| business in diverse societies as well as indexes of economic freedom, corruption and economic development, which are needed for the right investme | nt decision. Semina | ars neip to |
| BIE-SI1 2 Software Engineering I | 7.7K | 5 |
| Students learn the methods of analysis and design of large software systems, which are typically designed and implemented in teams. Students will be | ∣ ,∠r,∠ t acquainted with C | CASE tools |
| using a visual modeling language UML for modeling and solving software-related problems. Students will get an overview of object-oriented analysis, d | esign, architecture, | validation, |
| verification, and testing processes. The knowledge obtained in the lectures is practiced on a team project. If enrolled for the BIE-SP1 course running in pa | rallel (only summer | semester), |
| the students can work on a single more complex project and they are classified to both courses for a single project. This course does not teach the stu | dents programming | g, nor any |
| particular technology, framework or programming language. The students are required to have some knowledge of these to apply them on the particular technology. | heir team project. | |
| BIE-SI2.3 Software Engineering 2 | | 3 understand |
| Students will learn to work methodically with respect to software development methodic, especially onlined Process methodic and onlined modeling Langua | Je (UML). They will s will also get an id | ea about |
| software testing and measuring software quality. This knowledge will get extended with a practical experience thanks to the concurrently runni | ng BIE-SP2 module | e. |
| BIE-SP1 Team Software Project 1 | KZ | 4 |
| In this course, students work on a complex team project applying all the knowledge obtained in the BIE-SI1.2 course. There are no lectures and no ser | ninars/tutorials in th | nis course. |
| This course is to be enrolled in parallel with BIE-SI1.2 course. | | |
| BIE-SP2 Team Software Project 2 | KZ | 6 |
| 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 BEI-SP1 cou | rse project. |
| However, this time, the functionality, testing and documenting of the system being developed will be emphasized. Students will work in teams of 4-6 per | be BEI-SI2 course | that runs |
| concurrently will provide the students with supporting knowledge, especially in the area of teamwork, testing and guality assurance of the | software product. | that runs |
| BIE-SSB System and Network Security | Z.ZK | 5 |
| The students will understand the public key infrastructure (PKI), its strengths and weaknesses, its vulnerabilities againstattacks. The students will also | | alvsis of |
| | o understand the ar | |
| network protocols from the perspectives of: authentication and authorisation, key exchange, and encryption. They get an overview of the security mech | o understand the ar anisms of operating | g systems |
| network protocols from the perspectives of: authentication and authorisation, key exchange, and encryption. They get an overview of the security mech (OSs), of the ways virtualization canbe used to protect OSs, and of the security mechanisms for the OS memory. The students will learn basic methods | o understand the ar anisms of operating of forensic analysis | g systems sof storage |
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| BIE-VWM | Searching Web and Multimedia Databases | Z,ZK | 5 | | | |
|--|--|-----------------------|---------------|--|--|--|
| Students gain basic knowledge concerning retrieval techniques on the web, where the web environment is viewed as a large distributed and heterogenous data repository. In particular, | | | | | | |
| the students will understand the techniques for retrieving text and hypertext documents (the web pages). Moreover, they will be aware of similarity retrieval methods focused on | | | | | | |
| | heterogenous multimedia databases (unstructured data collections, respectively). | | | | | |
| BIE-VZD | Data Mining | Z,ZK | 4 | | | |
| Students are introd | uced to the basic methods of discovering knowledge in data. In particular, they learn the basic techniques of data preprocessing, multi | dimensional data v | isualization, | | | |
| statistical techniques of data transformation, and fundamental principles of knowledge discovery methods. Students will be aware of the relationships between model bias and variance, | | | | | | |
| and know the fur | adamentals of assessing model quality. Data mining software is extensively used in the module. Students will be able to apply basic d | ata mining tools to | common | | | |
| | problems (classification, regression, clustering). | | | | | |
| BIE-XML | XML Technology | Z,ZK | 4 | | | |
| BIE-ZDM | Elements of Discrete Mathematics | Z,ZK | 5 | | | |
| Students get both a | mathematical sound background, but also practical calculation skills in the area of combinatorics, value estimation and formula appro | ximation, and tool | s for solving | | | |
| | recurrent equations. | | | | | |
| BIE-ZMA | Elements of Calculus | Z,ZK | 6 | | | |
| Students acquire | knowledge and understanding of the fundamentals of classical calculus so that they are able to apply mathematical way of thinking a | nd reasoning and | are able to | | | |
| use basic proof te | chniques. They get skills to practically handle functions of one variable in solving the problems in informatics. They understand the lin | iks between the int | egrals and | | | |
| sums of sequence | s. They are able to estimate lower or upper bounds of values of real functions and to handle simple asymptotic expressions. This cou | rse is last taught in | n the winter | | | |
| | semester 2021/22 (B211). Latecomers who fail to meet it can replace it with a pair of courses BIE-MA1.21 and BIE-MA2.21 | 1. | | | | |
| BIE-ZRS | Basics of System Control | Z,ZK | 4 | | | |
| Volitelný p edm | základy ízení systém je ur en pro všechny zájemce o aplikovanou informatiku v bakalá ském studiu. Alespo pehledové znalosti | oboru automatické | ého ízení | | | |
| budou pro naše ab | polventy jist konkuren ní výhodou a zhodnotí je bezesporu v pr myslové praxi. Studenti získají znalosti v dynamicky se rozvíjejícím | 1 oboru s velkou bu | udoucností. | | | |
| Zam íme se zejme | éna na ízení inženýrských a fyzikálních sysém. Poskytneme vám základní informace z oblasti zp tnovazebního ízení lineárních dy | namických jednorov | ozm rových | | | |
| systém . Seznámír | ne vás s metodami vytvá ení popisu a modelu systém , základní analýzou lineárních dynamických systém a návrhem a ov ením je | dnoduchých zp tn | ovazebních | | | |
| PID, PSD a fuzzy re | sgulátor. Pozornost je v nována rovn ž sníma ma ak ním len m v regula ních obvodech, otázkám stability regula ních obvod , | jednorázovému a p | or b žnému | | | |
| nastavování param | etr regulátoru a n kterým aspekt m pr myslových realizací spojitých a íslicových regulátor. Jednotlivá témata p ednášek jsou pro | vázena množstvím | n užite ných | | | |
| | p iklad a praktických pr myslových realizací. | | | | | |
| BIE-ZUM | Artificial Intelligence Fundamentals | Z,ZK | 4 | | | |
| Students are introd | uced to the fundamental problems in the Artificial Intelligence, and the basic methods for their solving. It focuses mainly on the classic | al tasks from the ar | eas of state | | | |
| space search, mult | -agent systems, game theory, planning, and machine learning. Modern soft-computing methods, including the evolutionary algorithm | s and the neural ne | etworks, will | | | |
| | be presented as well. | | | | | |
| FI-HPZ | Humanitní p edm t z výjezdu v zahrani í | Z | 3 | | | |
| P edm t "Humanit | ní p edm t z výjezdu v zahrani í" zast ešuje ve studijním plánu povahou humanitní p edm ty získané studenty v rámci jejich výjezdů | u v zahrani í. P ed | pokládá se | | | |
| te | edy spln ní náhradou a o uznání rozhoduje prod kan pro studijní a pedagogickou innost v zastoupení d kana a to na základ žádo | sti studenta | | | | |
| TV2K1 | T lesná výchova 2 | Z | 1 | | | |
| | | | | | | |

Aktualizace výše uvedených informací naleznete na adrese <u>http://bilakniha.cvut.cz/cs/FF.html</u> Generováno: dne 20.05.2024 v 11:04 hod.