#### Recomended pass through the study plan

# Name of the pass: Bachelor specialization Software Engineering, part-time, in Czech, 2021

Faculty/Institute/Others:

Department:

Pass through the study plan: Bachelor Specialization Software Engineering, part-time, in Czech, 2021

Branch of study guranteed by the department: Welcome page

Guarantor of the study branch: Program of study: Informatika Type of study: Bachelor combined

Note on the pass: Vedle ist volitelných p edm t si m žete zapsat jako volitelné p edm ty i povinné p edm ty sousedních specializací. Chcete-li splnit skupinu "BI-ZKA.21 Zkouška z angli tiny 2021" p edložením certifikátu, který prokazuje vaši znalost angli tiny srovnatelnou nebo p evyšující úrove B2 Spole ného evropského referen ního rámce pro jazyky, m žete tak u init v kterémkoliv aktivním semestru b hem studia.

Coding of roles of courses and groups of courses:

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

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

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

#### Number of semester: 1

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BIK-DML.21	Discrete Mathematics and Logic Eva Pernecká Eva Pernecká Eva Pernecká (Gar.)	Z,ZK	5	14KP+4KC	Z	PP
BIK-LA1.21	Linear Algebra 1 Karel Klouda Karel Klouda (Gar.)	Z,ZK	5	14KP+4KC	Z	PP
BIK-PA1.21	Programming and Algorithmics 1 Radek Hušek, Josef Vogel, Ladislav Vagner, Jan Trávní ek Jan Trávní ek Jan Trávní ek (Gar.)	Z,ZK	7	14KP+8KC	Z	PP
BIK-TZP.21	Technological Fundamentals of Computers  Martin Da hel, Kate ina Hyniová Martin Da hel Martin Da hel (Gar.)	Z,ZK	5	14KP+4KC	Z	PP
BIK-GIT.21	SW Development Technologies Petr Pulc Petr Pulc Petr Pulc (Gar.)	Z	3	14KP	Z	PP
BIK-UOS.21	Unix-like Operating Systems Petr Zemánek, Jakub Žitný Petr Zemánek Petr Zemánek (Gar.)	KZ	5	14KP+4KC	Z	PP

#### Number of semester: 2

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BIK-DBS.21	Database Systems Michal Valenta, Monika Borkovcová, Andrii Plyskach Monika Borkovcová Monika Borkovcová (Gar.)	Z,ZK	5	14KP+6KC	L	PP
BIK-MA1.21	Mathematical Analysis 1 Petr Olšák Ivo Petr Ivo Petr (Gar.)	Z,ZK	5	14KP+4KC	L	PP
BIK-PSI.21	Computer Networks Vladimír Smotlacha, Yelena Trofimova, Josef Zápotocký Vladimír Smotlacha Vladimír Smotlacha (Gar.)	Z,ZK	5	14KP+4KC	L	PP
BIK-PA2.21	Programming and Algorithmics 2 Radek Hušek, Ond ej Štorc, Josef Vogel, Barbora Kolomazníková, Ladislav Vagner, Jan Trávní ek Jan Trávní ek (Gar.)	Z,ZK	7	14KP+6KC	L	PP
BIK-SAP.21	Computer Structure and Architecture  Martin Da hel Martin Da hel Martin Da hel (Gar.)	Z,ZK	5	14KP+6KC	L	PP
		Min. cours.				
BIK-V.2021	ist volitelné p edm ty bakalá ského programu,	0	Min/Max			
	kombinovaná forma výuky, verze 2021 až 2024 BIK-ADW.1,BIK-STO, (see the list of groups below)	Max. cours.	0/31			V
		8				

## Number of semester: 3

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BIK-AG1.21	Algorithms and Graphs 1 Radek Hušek, Dušan Knop Dušan Knop (Gar.)	Z,ZK	5	14KP+4KC	Z	PP
BIK-AAG.21	Automata and Grammars Jan Janoušek, Jan Holub Jan Holub (Gar.)	Z,ZK	5	14KP+4KC	Z	PP
BIK-MA2.21	Mathematical Analysis 2 Petr Olšák Tomáš Kalvoda Tomáš Kalvoda (Gar.)	Z,ZK	6	21KP+4KC	Z	PP
BIK-PPA.21	Programming Paradigms Jan Janoušek, Filip Gregor Jan Janoušek Jan Janoušek (Gar.)	Z,ZK	5	14KP+4KC	Z	PS
BIK-TJV.21	Java Technology Ond ej Rozinek Ond ej Rozinek (Gar.)	Z,ZK	5	14KP+4KC	Z	PS
BIK-IDO.21	Introduction to DevOps Tomáš Vondra, Ji í Mlejnek Tomáš Vondra Ji í Mlejnek (Gar.)	Z,ZK	5	14KP+4KC	Z	PS

#### Number of semester: 4

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BIK-KAB.21	Cryptography and Security Ji í Bu ek, Ji í Dostál, Róbert Lórencz, Ivana Trummová, Jaroslav K íž, František Ková, David Pokorný, Filip Kodýtek Róbert Lórencz Róbert Lórencz (Gar.)	Z,ZK	5	14KP+4KC	L	PP
BIK-OSY.21	Operating Systems Michal Šoch, Pavel Tvrdík, Jan Trdli ka Michal Šoch Michal Šoch (Gar.)	Z,ZK	5	14KP+4KC	L	PP
BIK-SWI.21	Software Engineering Ji í Mlejnek, Zden k Rybola Zden k Rybola Ji í Mlejnek (Gar.)	Z,ZK	5	14KP+2KC	L	PS
BIK-SP1.21	Team Software Project 1  Ji í Mlejnek Ji í Mlejnek (Gar.)	KZ	5	8KC		PS
BIK-SI-PV.21	Povinn volitelné p edm ty specializace Softwarové inženýrství, kombinovaná forma, verze 2021 BIK-EPP.21,BIK-FBI.21, (see the list of groups below)	Min. cours.	Min/Max			
		Max. cours.	5/15			PV
BIK-V.2021		Min. cours.				
	ist volitelné p edm ty bakalá ského programu, kombinovaná forma výuky, verze 2021 až 2024	0	Min/Max			V
	BIK-ADW.1,BIK-STO, (see the list of groups below)	Max. cours.	0/31			V

## Number of semester: 5

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BIK-BPR.21	Bachelor project Zden k Muziká Zden k Muziká Zden k Muziká (Gar.)	Z	1		Z,L	PP
BIK-PST.21	Probability and Statistics Daniel Vašata Pavel Hrabák Pavel Hrabák (Gar.)	Z,ZK	5	14KP+4KC	Z	PP
BIK-KOM.21	Conceptual Modelling Robert Pergl, Mohamed Bettaz Robert Pergl Robert Pergl (Gar.)	Z,ZK	5	14KP+4KC	Z	PS
BIK-OOP.21	Object-Oriented Programming Filip K ikava Filip K ikava Filip K ikava (Gar.)	Z,ZK	5	14KP+4KC	Z	PS
BIK-SP2.21	Team Software Project 2 Ji í Mlejnek Ji í Mlejnek (Gar.)	KZ	5	4KC		PS
		Min. cours.				
BIK-V.2021	ist volitelné p edm ty bakalá ského programu, kombinovaná forma výuky, verze 2021 až 2024	0	Min/Max			.,
	kombinovana forma výuky, verze 2021 až 2024   BIK-ADW.1,BIK-STO, (see the list of groups below)	Max. cours.	0/31			V
	2.1.7.2.1.7,2.1.4 C. C., (CCC d.C. list of groups below)	8				

Number of semester: 6

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BI-BAP.21	Bachelor Thesis Zden k Muziká <b>Zden k Muziká</b> Zden k Muziká (Gar.)	Z	14		L,Z	PP
BIK-TDP.21	Documentation and Presentation Tomáš Nová ek, Dana Vynikarová Tomáš Nová ek Dana Vynikarová (Gar.)	KZ	3	14KP+4KC	Z,L	PP
BI-ZKA.21	Zkouška z angli tiny 2021  BI-ANG1,BIE-EEC, (see the list of groups below)	Min. cours.  1 Max. cours. 1	Min/Max 2/4			PJ
BIK-V.2021	ist volitelné p edm ty bakalá ského programu, kombinovaná forma výuky, verze 2021 až 2024 BIK-ADW.1,BIK-STO, (see the list of groups below)	Min. cours. 0 Max. cours. 8	Min/Max 0/31			V

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

Kód		Name of the group of group (for specificat	of courses and ion see here of	d codes of members of this or below the list of courses)	Com	pletion	Credi	ts Scope	Semester	Role
BI-ZK	A.21		ouška z angli		Min.	cours. 1 . cours. 1	Min/Ma 2/4			PJ
BI-ANG1	English La	nguage Examination wit	BIE-EEC	English language external certif		BI-ANG		English Langu	age, Internal C	Certi
BIK-SI-	PV.21	Povinn volitelno inženýrství,	é p edm ty si kombinovaná	pecializace Softwarové forma, verze 2021		cours. 1 . cours. 3	<b>Min/M</b> : 5/15			PV
BIK-EPP.21	Economic	Business Processes	BIK-FBI.21	Financial Business Intelligence		BIK-PAI.:	21	Law and Infor	matics	
BIK-V.	2021	ist volitelné kombinovaná	p edm ty bak forma výuky	salá ského programu, verze 2021 až 2024		cours. 0 . cours. 8	Min/Ma 0/31	ax		v
BIK-ADW.1	Windows A	Administration	BIK-STO	Storage and Filesystems		BIE-DIF		Differential eq	uations	
BIK-EJA	Enterprise	e Java BIK-HMI History of Mathematics and Infor		BIK-SQL.1		1	Language SQ	L		
BIK-OOP.21	Object-Ori	iented Programming BIK-PJV Programming in Java		BIK-PRR.21		2.21	Project manag	gement		
BIK-PKM	Introductio	on to Mathematics BIK-TAB.21 Applications of Security in Tech		TVV			Physical educ	ation		
	DI	dunation	TVV0	Physical education	TV2K1 Physica		Physical Education 2			
TV1	Physical E	ducation	1	1 Hydrodi daddalion				Introduction to Web and User Int		

## List of courses of this pass:

Code	Name of the course	Completion	Credits	
BI-ANG	English Language, Internal Certificate	ZK	2	
	Course information and teaching materials can be found at https://moodle-vyuka.cvut.cz/course/search.php?search=BI-ANG			
BI-ANG1	English Language Examination without Preparatory Courses	Z,ZK	2	
BI-BAP.21	Bachelor Thesis	Z	14	
BIE-DIF	Differential equations	Z,ZK	5	

This course provides a foundational overview of differential equations, starting with basic motivation and examples of ODEs and progressing to essential solution methods like separation of variables. Key theorems on existence and uniqueness establish when solutions can be guaranteed. Linear and system-based ODEs are covered with methods like characteristic polynomial analysis, followed by examples of non-linear models such as predator-prey and epidemiological models to showcase real-world applications. Finally, an introduction to partial differential equations (PDEs) extends these concepts to multi-variable contexts. The course will also cover numerical methods for solving ODEs and PDEs, including implicit and explicit Euler methods, Runge-Kutta methods, and finite element methods for both ODEs and PDEs.

BIE-EEC	English language external certificate	Z	4
The BIE-ECC cours	se can be recognized for any active semester after the submission of a certificate certificate that demonstrates their proficiency in Engli	sh comparable to o	r exceeding
DIK AAC 21	the B2 level of the Common European Framework of Reference for Languages.  Automata and Grammars	Z,ZK	5
BIK-AAG.21 Students are introd	Automata and Grammars		
	nars, translation finite automata, construction and use of pushdown automata, hierarchy of formal languages. Knowledge acquired thr	. •	
	to creation of algorithms for pattern matching, data compression, translation, simple parsing, and creation of digital circuits		
BIK-ADW.1	Windows Administration This course is presented in Czech.	Z,ZK	4
BIK-AG1.21	Algorithms and Graphs 1	Z,ZK	5
	resented in Czech. The course covers the basics from the efficient algorithm design, data structures, and graph theory, belonging to t		_
	um. Students learn techniques of proofs of correctness of algorithms and techniques of asymptotic mathematics for estimation of their the course includes basics from probability theory needed for understanding randomized algorithms). Within exercises students learn ap		
	for solving practical problems.		
BIK-BPR.21	Bachelor project	Z	1
perform during the external supervisor The completed and	ig of the semester, the student reserves the topic of the bachelor's thesis and connects with the supervisor. He / she will arrange the semester to process the assignment. If he completes these tasks, the supervisor will award him a credit from the subject BI-BPR at the enters the information on granting the credit using the form "Granting credit from the external supervisor of the final thesis" (http://fit.cvu disigned form must be delivered in person or by email to the SZZ coordinator, who will arrange for the credit to be granted. 3. If the top mulated more generally, the tasks assigned to him by the supervisor for the semester should be aimed primarily at fine-tuning the assigned.	the end of the seme t.cz/student/studijni pic of the work that	ester. 2. The i/formulare). the student
	can be supplemented and approved at the end of the semester.		
using a conceptual	Database Systems  lainted with the architecture of the database engine and typical user roles. They learn to design the structure of a smaller data store ( model and then implement them in a relational database engine. They get acquainted with the SQL language and also with its theoret et acquainted with the principles of relational database schema normalization. They understand the basic concepts of transaction pro user access to a single data source. At the end of the course, students will be introduced to alternative nonrelational database n	tical basis - relationations	al database
BIK-DML.21	Discrete Mathematics and Logic	Z,ZK	5
_	equainted with the basic concepts of propositional logic and predicate logic and learn to work with their laws. Necessary concepts fro	-	
Special attention is	s paid to relations, their general properties, and their types, especially functional relations, equivalences, and partial orders. The cours combinatorics and number theory, with emphasis on modular arithmetics.	e also lays down tr	ne basics of
BIK-EJA	Enterprise Java	KZ	4
	Java technologies (Jakarta EE, Microprofile, etc.) which are used for the development of EIS (Enterprise Information Systems). These sistent data, are accessible to clients via the REST API and are created in the microservice architecture and deployed into orchestra		ally manage
BIK-EPP.21	Economic Business Processes	Z,ZK	5
in the market envir	irse is to present typical processes related to the usual life cycle of a company. The course focuses mainly on the basic economic and ronment of the Czech Republic and the basics of management. In the course, students are acquainted with the typical phases of the ne company, through the management of property and capital structure, financing of the company, determining the cost function of the evaluating the financial health of the company and its eventual rehabilitation or termination.	company's life cycl	le, from the
BIK-FBI.21	Financial Business Intelligence	Z,ZK	5
The aim of the cou	rse is to acquaint students primarily with financial accounting as a tool for recording business operations and documents for business	analysis, determini	ing its value
	rs for comparison with other companies and management decision process at the tactical and strategic level. The second view is mar Tement and prediction of business development. Management accounting allows monitoring of the financial status and performance of l	_	-
	ds, enables a multidimensional view of business data, enables to control effectively factors affecting the return on invested capital and		
assess options re	lated to future business decisions. The principles of management accounting, described in this course, are the basis of Business Inte information systems, decision support systems, and other knowledge-oriented systems.	Iligence modules in	n business
BIK-GIT.21	SW Development Technologies	Z	3
	ed at one of the rudimental team software development technology - version control. To be more specific, we will introduce students to	1	
	from hell, as Linus Torvalds nicknamed it, and provide a comprehensive guide into its depths, as well as for day-to-day use	<b>)</b> .	
BIK-HMI	History of Mathematics and Informatics	ZK	3
BIK-IDO.21	This course is presented in Czech.  Introduction to DevOps	Z,ZK	5
	with the topic of DevOps and prepares future developers and administrators for a modern culture of development and operation of sys		
	support software development, testing and compilation. It also focuses on tools for automating infrastructure management and build		
the Cloud. It is an	introduction to technologies that will then be discussed in more detail in related follow-up courses. The student will also get acquaint used in practice.	ed with modern ted	chnologies
BIK-KAB.21	Cryptography and Security	Z,ZK	5
	derstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to ems based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in appi		-
-	erits based on them and learn the basics of sale use of symmetric and asymmetric cryptographic systems and hash functions in app actical skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic proce		
BIK-KOM.21	Conceptual Modelling	Z,ZK	5
	ised on developing abstract thinking and precise formulation skills using conceptual models. Students learn skills of discerning key te		
-	cify correct relations in complex systems of social reality, mostly enterprises and institutions. Students learn basics of ontological struc r learn how to express business rules and constraints using the OCL language and foundations of OWL/RDF semantic data represent	_	
-	ns of enterprise engineering, being a discipline for conceptual modelling of enterprises and institutes and their processes. The DEMO r		
BIK-KSA	will be taught. The course is designed with the respect to continuation in software implementations.  Cultural and Social Anthropology	ZK	2
	course aims to acquaint students with the basics of social and cultural anthropology as a scientific discipline dealing with the diversit	1	
anthropological res	search from our culture as well as from the "exotic" ones (topics: kinship, religion, social exclusion, migration, globalization, , material cu	lture, language, hea	alth, history,
DIZ I A4 O4	death, etc). The course is an interesting alternative to other humanities, taught at FIT.	7 71/	
BIK-LA1.21 We will introduce s	Linear Algebra 1 students to the basic concepts of linear algebra, such as vectors, matrices, vector spaces. We will define vector spaces over the field	Z,ZK of real and comple	5 ex numbers
	fields. We will present the concepts of basis and dimension and learn to solve systems of linear equations using the Gaussian elimin-	•	

the connection with linear manifolds. We define the regularity of matrices and learn to find their inversions using GEM. We will also learn to find eigenvalues and eigenvectors of a matrix. We will also demonstrate some applications of these concepts in computer science. Mathematical Analysis 1 BIK-MA1.21 7 7K 5 We begin the course by introducing students to the set of real numbers and its properties, and we note its differences with the set of machine numbers. Then we study real sequences and real functions of a real variable. We gradually introduce the notions of limits of sequences and functions, continuous functions, and derivatives of functions. This theoretical foundation is then applied to root-finding problems (iterative method of bisection and Newtons method), construction of cubic interpolation (spline), and formulation and solution of simple optimization problems (i.e., the issue of finding extrema of functions). The course is closed with the Landaus asymptotic notation and methods of mathematical description of complexity of algorithms. Mathematical Analysis 2 The course completes the theme of analysis of real functions of a real variable initiated in BIK-MA1 by introducing the Riemann integral. Students will learn how to integrate by parts and use the substitution method. The next part of the course is devoted to number series, and Taylor polynomials and series. We apply Taylors theorem to the computation of elementary functions with a prescribed accuracy. Then we study the linear recurrence equations with constant coefficients, the complexity of recursive algorithms, and its analysis using the Master theorem. Finally, we introduce the student to the theory of multivariate functions. After establishing basic concepts of partial derivative, gradient, and Hessian matrix, we study the analytical method of localization of local extrema of multivariate functions as well as the numerical descent method. We conclude the course with the integration of multivariate functions. This course can be enrolled only after successful completion of the course BIK-MA1, which can be replaced by the course BIK-ZMA in the case of repetitive students. BIK-OOP.21 Object-Oriented Programming Object-oriented programming has been used in the last 50 years to solve computational problems by using graphs of objects that collaborate together by message passing. In this course students get acquainted with the main principles of object-oriented programming and design, used in modern programming languages. The emphasis is on practical techniques for developing software, which includes testing, error handing, refactoring, and application of design pattern. BIK-OSY.21 Operating Systems In this course that is a follow-up of the Unix-like operating systems course students deepen their knowledge in areas of OS kernels, process and thread implementations, race conditions, critical regions, thread scheduling, shared resource allocation and deadlocks, management of virtual memory and data storages, file systems, OS monitoring. They are able to design and implement simple multithreaded applications. General principles are illustrated on operating systems Solaris, Linux, or MS Windows. BIK-PA1.21 Programming and Algorithmics 1 Students gain the ability to formulate algorithms for solving basic problems and write them in the C language. They understand data types (simple, structured, pointers), expressions, statements, functions, concept of recursion. They learn to analyse simple cases of algorithm complexity. They know fundamental algorithms for searching, sorting, and manipulating with linked lists. BIK-PA2.21 Programming and Algorithmics 2 Students know the instruments of object-oriented programming and are able to use them for specifying and implementing abstract data types (stack, queue, enlargeable array, list, set, table). They learn these skills using the C++ programming language and are introduced to all C++ features needed in object-oriented programming (e.g., template programming, copying/moving of objects, operator overloading, inheritance, polymorphism). BIK-PAI.21 Law and Informatics ZK 5 The aim of the course is to introduce students into the basic legal instruments that they will encounter in their practice. Students will gain knowledge of doing business in the Czech Republic and will be alerted to the pitfalls that await them in business from the point of view of law. They will understand the process of concluding contracts in real and Internet environment, will know their responsibilities in working with the Internet, will be familiar with the institutes of intellectual property law, and will be able to use commercial license types and open-source licenses. Emphasis will also be put on the legal protection of data on the Internet, the registration of Internet domains and protection against their misuse. Students will also be alerted to such behaviour in the field of IT that can be classified as criminal under the Czech law. The course will also include analyses of real cases from practice. **BIK-PJV** Programming in Java Z.ZK This course is presented in Czech. However, there is an English variant in the full-time program Informatics (B1801 / 4753) **BIK-PKM** Ζ Introduction to Mathematics 4 This course is presented in Czech. BIK-PPA.21 **Programming Paradigms** Z.ZK 5 The course deals with basic paradigms of high-level programming languages, including their basic execution models, benefits, and limitations of particular approaches. Functional programming paradigm and its basic principles are explained in details. Logic programming is introduced as another way of declarative programming. The principles are demonstrated on lambda calculus and on Lisp (Racket) and Prolog programming languages. Moreover, usage of these principles is demonstrated on modern mainstream programming languages such as C++ and Java. BIK-PRR.21 Project management Z,ZK 5 Project management not only as a common dictionary and setting necessary processes while preparing and / or managing projects, but also as a social art. 20 years of experience not only in IT in various positions and different projects available at your hands. Computer Networks The course introduces students to the principles of computer networking. It covers basic technologies, protocols, and services commonly used in local networks and in the Internet as well. The lectures will be amended by proseminars that introduce students into network programming and demonstrate the abilities of advanced network technologies. Students practically verify configurations and management of network devices in the lab within the environment of the operating systems Linux and Cisco IOS. Probability and Statistics Students will learn the basics of probabilistic thinking, the ability to synthesize prior and posterior information and learn to work with random variables. They will be able to apply basic models of random variable distributions and solve applied probabilistic problems in informatics and computer science. Using the statistical induction they will be able to perform estimations of unknown distributional parameters from random sample characteristics. They will also be introduced to the methods for testing statistical hypotheses and determining the statistical dependence of two or more random variables. BIK-SAP.21 Computer Structure and Architecture Z,ZK 5 Students will get acquainted with the basic architecture and units of a digital computer, understand the structure, function, and implementation of arithmetic-logic unit, controllers, memory, I/O communication, methods of data transfers between the units. The logic design and the implementation of a program-controlled simple processor is practically implemented in the labs using programmable circuits (FPGA), a single-chip microcomputer, and modern design (EDA) tools. BIK-SP1.21 Team Software Project 1 K7 Students gain hands-on experience with the analysis, design, and prototyping of a large-scale software system. Theoretical support is provided in the BIE-SWI course that runs concurrently and that teaches students necessary techniques and principles. Teams consisting of 4-6 students will work on a specific project. The teacher, in the role of the team and project leader, regularly consults with the team (at the seminars) both the formal and material aspects of the software design. The resulting software artefact will be further developed and finished in the BIE-SP2 course. BIK-SP2.21 Team Software Project 2 ΚZ 5 This course is presented in Czech. However, there is an English variant in the program Informatics (B1801 / 4753). BIK-SQL.1 ΚZ Language SQL Course is based on knowledge obtained in BI-DBS. Students become familiar with advanced relational and non-relational features of SQL language. In particular stored program unites, triggers, recursive queries, OLAP support, object-relational constructions. Part of the course is dedicated to practical database optimization from the point of view of specialized database structures like indexes, clusters, index-organized tables, and materialized views. as well as from the point of view query optimization. Execution plan and possibilities of its. changes

will be discusse	ed. Lectures will usually discuss SQL standard, but many features will be demonstrated on Oracle DBMS. Seminars are based on Oracle PostgreSQL.	acle DBMS and pa	rtially on
BIK-STO	Storage and Filesystems	Z,ZK	4
	rn principles and current solutions of storage systems architecture. The module explains principles of data store, protection, and arch load balancing and high availability.		age scaling,
BIK-SWI.21	Software Engineering	Z,ZK	5
Students get acqua	ainted with methods of analysis and design of larger software projects that are typically designed and implemented in teams. They co	nsolidate and prac	tically verify
using the visual la	ring the analysis and design of larger software systems that will be developed in the concurrent course BIE-SP1. Students get hands- nguage UML for modeling and solving software problems. Students learn the basics of object-oriented analysis, architecture design a udents also gain a theoretical basis in the field of project management, estimation of costs of software projects, and methods of their	and testing. Within	
BIK-TAB.21		Z.ZK	5
	Applications of Security in Technology urse is to introduce students to selected topics from cybersecurity technical applications that are utilized in different industries. Stude	1 ,	_
The goal of the co	cybersecurity applications and extend their knowledge from the cryptology, the secure code, and system, network, and hardware	•	overview or
DIV TDD04		KZ	
BIK-TDP.21	Documentation and Presentation	I	3
	sed on the basics of creating electronic documentation with emphasis on the creation of technical reports of a larger scope, typically fi	•	
	of a technical report in the LaTeX system, process an electronic presentation using the LaTeX Beamer system, and practically prese course is intended primarily for those students who have chosen the topic of their bachelor's thesis or will choose it within the first 14		
the teacher. The	exercises of the course, an active approach to the creation of individual parts of the bachelor's thesis is assumed.	days of teaching.	vviuiiii uie
BIK-TJV.21	Java Technology	Z.ZK	5
	pava Technology Irse is to provide knowledge and skills needed for the development of smaller and larger information systems. Students will get acqua	,	1 -
	be able to apply these concepts using libraries and tools from the ecosystem of the Java programming language. After completing th	•	
concepto and min	to participate in the development of software systems on the Java platform.	o oou.oo otaao.no	50 05.0
BIK-TUR.21	User Interface Design	Z,ZK	5
	asic overview of methods for designing and testing common user interfaces. They get experience to solve the problems where softwa	1	-
•	the user optimally, since the needs and characteristics of users are not taken into account during product development. Students gai	•	
	bring users into the development process to ensure optimal interface for them.		
BIK-TZP.21	Technological Fundamentals of Computers	Z.ZK	5
	inted with the fundamentals of digital and analog circuits, as well as basic methods of analyzing them. Students learn how computer s	,	at the lowest
	oduced to the function of a transistor. They will understand why processors generate heat, why cooling is necessary, and how to redu		
limits to the maxim	um operating frequency are and how to raise them; why a computer bus needs to be terminated, what happens if it is not; how a con	nputer power supp	ly looks like
	(in principle). In the labs, students model the behavior of basic electrical circuits in SW Mathematica.		
BIK-UOS.21	Unix-like Operating Systems	KZ	5
	systems represent a large family mostly open-source codes that kept bringing during the history of computers efficient innovative fu	inctions of multiuse	er operating
	uters and their networks and clusters. The most popular OS today, Android, has a unix kernel. Students get overview of basic properly		
processes and thre	eads, access rights and user identity, filters, or handling files in a file system. They learn to use practically these systems at the level of	of advanced users	who are not
only able	e to utilize powerful system tools that are available to users, but are also able to automatize routine agenda using the unix scripting in	terface, called she	<del>II.</del>
BIK-ZWU	Introduction to Web and User Interfaces	Z,ZK	4
	This course is presented in Czech.		1
TV1	Physical Education	Z	0
		<del></del>	<del></del>

Physical Education 2

Physical education

Physical education

Z

0

For updated information see <a href="http://bilakniha.cvut.cz/en/FF.html">http://bilakniha.cvut.cz/en/FF.html</a> Generated: day 2025-11-28, time 09:09.

TV2K1

TVV

TVV0