## Recomended pass through the study plan

## Name of the pass: Bc. specialization Computer Graphics, 2024 with omitting BI-SVZ

Faculty/Institute/Others:

Department:

Pass through the study plan: Bc. specialization Computer Graphics with omitting BI-SVZ

Branch of study guranteed by the department: Welcome page

Guarantor of the study branch:

Program of study: Informatika

Type of study: Bachelor full-time

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 se	emester: 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
BI-DML.21	Discrete Mathematics and Logic Ji ina Scholtzová, Daniel Dombek, Jan Sp vák Daniel Dombek Jan Sp vák (Gar.)	Z,ZK	5	2P+1R+1C	z	PP
BI-LA1.21	Linear Algebra 1 Jakub Krásenský, Karel Klouda, Lud k Kleprlík Lud k Kleprlík Karel Klouda (Gar.)	Z,ZK	5	2P+1R+1C	z	PP
BI-PA1.21	Programming and Algorithmics 1 Radek Hušek, Josef Vogel, Miroslav Balík, Ladislav Vagner, Jan Trávní ek Jan Trávní ek Jan Trávní ek (Gar.)	Z,ZK	7	2P+2R+2C	z	PP
BI-TZP.21	Technological Fundamentals of Computers Jan ezní ek, Martin Novotný, Vojt ch Miškovský, Jaroslav Borecký, Martin Kohlík, Robert Hülle, Matúš Olekšák <b>Martin Novotný</b> Martin Novotný (Gar.)	Z,ZK	5	2P+2C	Z	PP
BI-GIT.21	SW Development Technologies Robin Ob rka, Petr Pulc Robin Ob rka Petr Pulc (Gar.)	Z	3	2P	Z	PP
BI-UOS.21	Unix-like Operating Systems Jan Trdli ka, Zden k Muziká, Yelena Trofimova, Jakub Žitný, Tomáš Vondra, Jakub Jan i ka, Ji í Borský, Lukáš Ba inka, Viktor erný, Zden k Muziká Zden k Muziká (Gar.)	ΚZ	5	2P+2C	Z	PP
TV1	Physical Education	Z	0	0+2	Z	PT

Number of seme	ster: 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
BI-DBS.21	Database Systems Jan Matoušek, Michal Valenta, Pavel K íž, Št pán Pechman, Monika Borkovcová, Dominik Roudný, Jan Bittner, Ji í Hunka, Pemysl D dic, Ji í Hunka Michal Valenta (Gar.)	Z,ZK	5	2P+2R+1L	. L	PP
BI-MA1.21	Mathematical Analysis 1 Pavel Paták, Tomáš Kalvoda, Pavel Hrabák, Ivo Petr, Petr Olšák Tomáš Kalvoda Tomáš Kalvoda (Gar.)	Z,ZK	5	2P+1R+1C	; L	PP
BI-PA2.21	Programming and Algorithmics 2 Radek Hušek, Josef Vogel, Ladislav Vagner, Jan Trávní ek Jan Trávní ek Jan Trávní ek (Gar.)	Z,ZK	7	2P+1R+2C	; L	PP
BI-SAP.21	Computer Structure and Architecture Jaroslav Borecký, Martin Kohlík, Hana Kubátová, Petr Fišer Hana Kubátová Hana Kubátová (Gar.)	Z,ZK	5	2P+1R+2C	; L	PP
BI-LA2.21	Linear Algebra 2 Daniel Dombek, Karel Klouda, Lud k Kleprlík, Marta Nollová, Jakub Šístek Lud k Kleprlík Karel Klouda (Gar.)	Z,ZK	5	2P+2C	L	PS

Τ٧Κ1	Physical Education Luboš Neuman Ji í Drnek (Gar.)	Z	1	L,Z	PT
	ist volitelné p edm ty bakalá ského programu Informatika, verze od 2021/22 do 2024/25 BI-ADW.1,BI-ALO, (see the list of groups below)	Min. cours.			
BL V 0004		0	Min/Max		
BI-V.2021		Max. cours.	0/404		V
		94			

Number of se	emester: 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
BI-AG1.21	Algorithms and Graphs 1 Radek Hušek, Dušan Knop, Tomáš Valla, Ond ej Suchý, Michal Opler <b>Dušan</b> Knop Dušan Knop (Gar.)	Z,ZK	5	2P+2C	Z	PP
BI-AAG.21	Automata and Grammars Jan Janoušek, Jan Holub <b>Jan Holub</b> Jan Holub (Gar.)	Z,ZK	5	2P+2C	Z	PP
BI-MA2.21	Mathematical Analysis 2 Pavel Paták, Tomáš Kalvoda, Pavel Hrabák, Ivo Petr, Petr Olšák <b>Tomáš</b> Kalvoda Tomáš Kalvoda (Gar.)	Z,ZK	6	3P+2C	Z	PP
BI-MVT.21	Modern Visualisation Technologies Petr Pauš, Ji í Chludil Petr Pauš Petr Pauš (Gar.)	Z,ZK	5	2P+2C	Z	PS
BI-MGA.21	Multimedia and Graphics Applications Lukáš Ba inka, Ji í Chludil, Jan Buriánek, Šimon Tan v Lukáš Ba inka Ji í Chludil (Gar.)	Z,ZK	5	2P+2C	Z	PS
BI-PYT.21	<b>Python Programming</b> Ond ej Bouchala, Mohamed Bettaz, Martin Šlapák, Ji í Hanuš, Jan Šafa ík <b>Martin Šlapák</b> Martin Šlapák (Gar.)	КZ	5	3C	Z,L	PS

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-KAB.21	Cryptography and Security Ivana Trummová, Josef Kokeš, Róbert Lórencz, Ji í Bu ek, Julia Plotnikova, David Pokorný, Jakub Tetera, Tomáš Rabas, Tomáš Zahradnický, Róbert Lórencz Róbert Lórencz (Gar.)	Z,ZK	5	2P+2C	L	PP
BI-OSY.21	<b>Operating Systems</b> Ladislav Vagner, Ji í Kašpar, Jan Trdli ka, Petr Zemánek, Michal Štepanovský, Pavel Tvrdík <b>Pavel Tvrdík</b> Michal Štepanovský (Gar.)	Z,ZK	5	2P+1R+1L	. L	PP
BI-PSI.21	Computer Networks Yelena Trofimova, Viktor erný, Petr Hoda , Josef Zápotocký, Michal Polák, Michal Hažlinský, Jan Fesl, Vladimír Smotlacha, Josef Koumar, Jan Fesl Jan Fesl (Gar.)	Z,ZK	5	2P+1R+1C	E L	PP
BI-PGR.21	Computer graphics programming Petr Felkel, Jaroslav Sloup Jaroslav Sloup Petr Felkel (Gar.)	Z,ZK	5	2P+2C	L	PS
BI-SWI.21	Software Engineering Michal Valenta, Zden k Rybola, Ji í Mlejnek Zden k Rybola Michal Valenta (Gar.)	Z,ZK	5	2P+1C	L	PS
BI-TUR.21	User Interface Design Jan Schmidt Jan Schmidt Jan Schmidt (Gar.)	Z,ZK	5	2P+2C	L	PS

Number of sei	mester: 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
BI-BPR.21	Bachelor project Zden k Muziká Zden k Muziká (Gar.)	Z	1	0P+0C	Z,L	PP
BI-PST.21	Probability and Statistics Pavel Hrabák, Kamil Dedecius, Jana Vacková, Petr Novák, Jitka Hrabáková Pavel Hrabák Pavel Hrabák (Gar.)	Z,ZK	5	2P+2C	Z	PP
BI-PGA.21	Programming of Graphic Applications Ji í Chludil, Radek Richtr Radek Richtr Radek Richtr (Gar.)	Z,ZK	5	2P+2C	Z	PS
		Min. cours.				
	Povinn volitelné p edm ty pro specializaci Po íta ová	1	Min/Max			
BI-PV-PG.21	grafika, verze 2021 BI-SP2.21,BI-VHS.21	Max. cours.	5/10			PV
		2				

		Min. cours.			
BI-V.2021	ist volitelné p edm ty bakalá ského programu Informatika, verze od 2021/22 do 2024/25 BI-ADW.1,BI-ALO, (see the list of groups below)	0	Min/Max		
		Max. cours.	0/404		
		94			

Number of se	mester: 6					
Code	Tutors, authors and guarantors (gar.)		Credits	Scope	Semester	Role
BI-BAP.21	Bachelor Thesis Zden k Muziká Zden k Muziká Zden k Muziká (Gar.)	Z	14		L,Z	PP
BI-TDP.21	<b>Documentation and Presentation</b> Alena Libánská, Ond ej Guth, Petra Pavlí ková, Dana Vynikarová, Tomáš Nová ek <b>Dana Vynikarová</b> Dana Vynikarová (Gar.)	KZ	3	2P+2C	Z,L	PP
BI-ZKA.21	<b>Zkouška z angli tiny 2021</b> BI-ANG1,BIE-EEC, (see the list of groups below)	Min. cours. 1 Max. cours. 1	Min/Max 2/4			PJ
BI-V.2021	ist volitelné p edm ty bakalá ského programu Informatika, verze od 2021/22 do 2024/25 BI-ADW.1,BI-ALO, (see the list of groups below)	Min. cours. 0 Max. cours. 94	Min/Max 0/404			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 an ion see here	d codes of members of this or below the list of courses	Con	pletion	Credit	s Scope	Semester	Role	
BI-PV-	PG.21			o specializaci Po íta ová e 2021	Min	. cours. 1 . cours. 2	<b>Min/Ma</b> 5/10			PV	
BI-SP2.21	Team Soft	ware Project 2	BI-VHS.21	Virtual game worlds	1		1		11		
BI-V.	2021	ist volitelné p edn verz	n ty bakalá si e od 2021/22	kého programu Informatika, do 2024/25		. cours. 0 . cours. 94	<b>Min/Ma</b> 0/404	x		v	
BI-ADW.1	Windows	Administration	BI-ALO	Algebra and Logic		BI-AVI.2	1 4	Algorithms vis	ually		
BI-A2L		nguage, preparation fo	NI-AFP	Applied Functional Programming		BI-BLE		Blender	Juany		
NI-DSP	•	Systems in Practes	NI-PSD	Public Services Design		NI-DZO		Digital Image	Processing		
NI-DDM		Data Mining	BI-EP1.24	Effective programming 1		BI-EP2		Efficient Programming 2			
BI-ANGK		nguage, contact prepar	BI-EJK	Enterprise Java and Kotlin		BI-HAM	0 0			fic m	
BI-HMI		Mathematics and Infor	BI-ARD	Interactive applications on Ardu		NI-IAM	Internet and Multimedia			-	
BIE-CSI		n to Computer Science	FITE-EHD	Introduction to European Economi		BIE-IMA	2 1	ntroduction to	Mathematics	2	
BI-CS2		ge and data access	BI-CS3	Language C# - design of web app		BI-SQL.1	1 L	Language SQL, advance			
BI-QAP	-	algorithms and programmi	NI-LSM	Statistical Modelling Lab		BI-HAS			ts in Cryptogra	phy an	
NI-MPL		al Psychology	NI-MSI	Mathematical Structures in Compu	1	BI-MPP.2			terfacing periph		
BI-MIT	Mikrotik te	chnologies	NI-MOP	Modern Object-Oriented Program	ni	BI-MVT.2	21	Aodern Visua	lisation Techno	logie	
BI-MMP	Multimedia	a team project	BI-ORL	Operations Research and Linear F	·	NI-OLI	L	inux Drivers			
FIT-ACM1	Programm	ing Practices 1	FIT-ACM2	Programming Practices 2		BI-ACM2	2 F	Programming	Practices 2		
FIT-ACM3	Programm	ing Practices 3	BI-ACM3	Programming Practices 3		FIT-ACM	4 F	Programming	Practices 4		
BI-ACM4	Programm	ing Practices 4	FIT-ACM5	Programming Practices 5		FIT-ACM	6 F	Programming	Practices 6		
BI-AND.21		ing for the Android Oper	BI-CS1	Programming in C#		BI-PJV	F	Programming	in Java		
BI-KOT	Programin		NI-PSL	Programming in Scala		BI-PMA	F	Programming	in Mathematica	а	
BI-PS2	Programm	ing in shell 2	NI-PDD	Data Preprocessing		BI-PKM	1	ntroduction to	mathematics		
NI-REV	Reverse E	ngineering	BI-SCE1	Computer Engineering Seminar I		BI-SCE2		Computer En	gineering Semi	nar II	
BI-ST1	Network Te	echnology 1	BI-ST2	Network Technology 2		BI-ST3		Network Tech			
BI-ST4	Network Te	echnology 4	BI-SKJ.21	Scripting Languages		FIT-SEP	1	Vorld Econor	ny and Busines	s	
BI-SEP	World Eco	nomy and Business	NI-SYP	Parsing and Compilers		BIE-SEG	s   s	Systems Eng	neering		
TVK1	Physical E	ducation	TVV	Physical education		TV1	F	hysical Educ	ation		
TVV0	Physical e	ducation	TV2	Physical Education		TVKZV	F	hysical Educ	cation Course		
TVKLV	Physical E	ducation Course	BI-TS1	Theoretical Seminar I		BI-TS2	1	heoretical S	eminar II		

BI-ANG1	English Language Examination wit BIE-EEC English language external certif			BI-ANG		English Langua	age, Internal	Certi		
BI-ZKA.21 Zko		uška z angli	tiny 2021		cours. 1 cours. 1	Min/Ma	ax		PJ	
BI-ZWU	Introductio	n to Web and User Int	BI-3DT.1	3D Printing						
BI-ZIVS	Intelligent	Embedded System Fund	BI-ZPI	Process engineering BI-IOS			Fundamentals of iOS Application			
BI-ZS10	Bachelor in	ternship abroad for 1	BI-ZS20	I-ZS20 Bachelor internship abroad for 2				Bachelor interr	ship abroad	for 3
BI-VAK.21	Selected A	pplications of Combina	BI-VMM	Selected Mathematical Methods		NI-VYC		Computability		
NI-VCC	Virtualizati	on and Cloud Computi	BI-VR1	Virtual reality I		BI-VR2		Virtual reality I		
BI-TEX	TeX and Ty	pography	BI-KSA	Cultural and Social Anthropology		BI-ULI		Introduction to	Linux	
BI-QUA	Quality As	surance	FI-TOP Academic writing BI-C			BI-CCN		Compiler Cons	truction	
BI-TS3	Theoretica	I Seminar III	minar III BI-TS4 Theoretical Seminar IV			NI-TSP		Testing and Reliability		

## List of courses of this pass:

Code	Name of the course	Completion	Credits
BI-3DT.1	3D Printing	KZ	4
active part in the	English language, preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement language instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both th	ne midterm and the	e final term
tests with the succe	ess rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by ind class of the term.	ividual teachers du	ring the first
and regular gramm	Automata and Grammars luced to basic theoretical and implementation principles of the following topics: construction, use and mutual transformations of finite a lars, context-free grammars, construction and use of pushdown automata, and translation grammars and transducers. They know the ey understand the relationships between formal languages and automata. They are introduced to the Turing machine and complexity	hierarchy of forma	I languages
BI-ACM2	Programming Practices 2 This is a selective course for preparing talented student for representation in international programming contests.	KZ	5
BI-ACM3	Programming Practices 3 This is a selective course for preparing talented student for representation in international programming contests.	KZ	5
BI-ACM4	Programming Practices 4 This is a selective course for preparing talented student for representation in international programming contests.	KZ	5
BI-ADW.1	Windows Administration This course is presented in Czech. However, there is an English variant in the program Informatics (B1801 / 4753).	Z,ZK	4
develops the know	Algorithms and Graphs 1 rs the basics of efficient algorithm design, data structures, and graph theory, belonging to the core knowledge of every computing cu vledge from the course BI-DML.21, in which students acquire the knowledge and skills in combinatorics necessary for evaluating the rithms. The course also follows up knowledge from BI-MA1.21, the practical usage of asymptotic mathematics, in particular, the asym	time and space co	
BI-ALO	Algebra and Logic The course extends and deepens the study of topics touched upon in the basic course in logic.	Z,ZK	4
BI-AND.21	Programming for the Android Operating System This course is presented in Czech.	KZ	4
BI-ANG	English Language, Internal Certificate Course information and teaching materials can be found at https://moodle-vyuka.cvut.cz/course/search.php?search=BI-AN	G ZK	2
BI-ANG1	English Language Examination without Preparatory Courses	Z,ZK	2
active part in the	English language, contact preparation for the B2 level exam course corresponds to the preparation for the English exam at the B2 level. Requirements for course credit. Academic Achievement language instructionMeet the requirements for writing assignments - Summary, Abstract, Argumentation PaperSucceed in both th ess rate set at 70%80% and over in BOTH tests means ORAL EXAM ONLY (no written part). Requirements will be specified by ind class of the term.	ne midterm and the	e final term
kits and control va	Interactive applications on Arduino gned for students of first grade of bachelor study as introduction to embedded systems. Students will learn how to design simple applicat aried peripherals with help of available libraries. The goal of the subject is to show varied software approaches to control embedded s ay of a PC. Thanks to possible control on higher (objective) layer, this platform is frequently used for artist performance and therefore Software Engineering students.	ystems, i.e. to see	the results
	Algorithms visually ments other algorithm courses at FIT. It brings knowledge about particular important algorithms from different fields of the computer so ed in BI-AG1 and BI-AG2. A wide scope of covered subject is made possible due to using visualization bz Algovision (www.algovision.org& that make understanding the principles of algorithms easy.		
BI-BAP.21	Bachelor Thesis	Z	14

BI-BLE	Blender Inds knowledge of opensource program Blender from BI-MGA (Multimedia and Graphics Applications) course. It is intended for those i	Z,ZK	4
animation. It	offers a complete and practically oriented introduction to Blender environment. Students may continue to BI-PGA (Programming graph	hics applications) c	ourse.
-	Bachelor project ng of the semester, the student reserves the topic of the bachelor's thesis and connects with the supervisor. He / she will arrange the comparison will average the conjugation of the complete these takes the supervisor will average the supervisor.	-	
	semester to process the assignment. If he completes these tasks, the supervisor will award him a credit from the subject BI-BPR at t r enters the information on granting the credit using the form "Granting credit from the external supervisor of the final thesis" (http://fit.cvu		
-	d signed form must be delivered in person or by email to the SZZ coordinator, who will arrange for the credit to be granted. 3. If the top		
has reserved is for	mulated more generally, the tasks assigned to him by the supervisor for the semester should be aimed primarily at fine-tuning the assig can be supplemented and approved at the end of the semester.	gnment so that the	assignment
BI-CCN	Compiler Construction	Z,ZK	5
	uctory class on compiler construction for bachelor students in computer science. The goal of the class is to introduce basic principles		
BI-CS1	and the design and implementation of programming languages. Seeing and actually understanding self-compilation is the overarching Programming in C#	theme of the class	s. 4
	urse is to introduce .NET Framework as a multi-language development platform. Then, programming language C#, its fundamental co		
operators, array	s, loops, definitions and calls of functions will be discussed. Attention is focused on the object oriented programming in C# - class def	finition and class in	stancing,
	nods, properties, static members, Garbage Collector, inheritance and polymorphism, collections, delegates, and generics. Debugging well as work with files are emphasized.		_
BI-CS2 The C# language	C# language and data access and data access course objective is to introduce students several data access technologies - database, XML, NoSQL - on the Micros	KZ	4 tudents will
	ts used to retrieve data - Connection, Command, Data Reader and DataAdapter v ADO.NET. Next, they will learn to use current tech	•	
	erving and updating data, integrated directly with the .NET platform languages, which enable LINQ use with Objects, XML and SQL (L		
	.). Another objective is the Entity Framework - an object-relational mapper that enables .NET developers to work with relational data u of the course introduces Code First, Database First, Model First approaches. The students will also get to know the Conceptual Model		-
	(XML description).	,	
BI-CS3	Language C# - design of web applications	KZ	4
The students will b	e introduced to current technologies in web application development on the .NET platform. They will acquire a comprehensive overview on thisplatform. They will learn to create WebAPI and to use it by client programs.	of the development	possibilities
BI-DBS.21	Database Systems	Z,ZK	5
	roduced to the database engine architecture and typical user roles. They are briefly introduced to various database models. They lear	-	
	constraints) using a conceptual model and implement them in a relational database engine. They get a hands-on experience with the dation - the relational database model. They learn the principles of normalizing a relational database schema. They understand the funda		
	lling parallel user access to a single data source, as well as recovering a database engine from a failure. They are briefly introduced t	-	
in relational datab	ases with respect to speed of access to large quantities of data. This introductory-level course does not cover: Administration of datal	base systems, deb	ugging and
BI-DML.21	optimizing database applications, distributed database systems, data stores. Discrete Mathematics and Logic	Z,ZK	5
	cquainted with the basic concepts of propositional logic and predicate logic and learn to work with their laws. Necessary concepts fro	1 · · ·	
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 ti	he basics of
BI-EJK	Enterprise Java and Kotlin	Z,ZK	4
	dvanced technologies in the Java and Kotlin programming languages. The focus is on technologies for developing enterprise informat architecture, that can be deployed to the cloud.		nicroservice
BI-EP1.24	Effective programming 1 The course is taught in Czech.	KZ	4
BI-EP2	Efficient Programming 2 fficient Programming 1. Students will practice implementation of algorithms by solving typical problems. Various ways of solving indivi	dual problems are	discussed
Continuation of L	with the aim to choose the best one and avoid implementation errors.		uiscusseu,
BI-GIT.21	SW Development Technologies	Z	3
This course is aim	ed at one of the rudimental team software development technology - version control. To be more specific, we will introduce students to from hell, as Linus Torvalds nicknamed it, and provide a comprehensive guide into its depths, as well as for day-to-day use		on manager
BI-HAM	HW accelerated network traffic monitoring	, KZ	4
This course intro	duces students to modern and widely used technologies and principles in the area of network infrastructure and traffic monitoring. The	ne monitoring and a	analysis of
	mandatory skills to network operators (planning and development of resources and infrastructure) and security analysts alike (as a s		
for analysis). The g	goals of the course are to acquaint students with the modern trends and cornerstone principles in the area of monitoring network traff level and to develop their practical abilities in this field.	ic on a nardware a	nd software
BI-HAS	Human Aspects in Cryptography and Security	Z,ZK	5
This course is for	students interested not only in technical scope of computer science, but also in making products usable - for users and for developers use their gained knowledge to design, plan and analyse their own projects in the context of human-centered security.	s. Students of this	course can
BI-HMI	History of Mathematics and Informatics	Z,ZK	3
	This course is presented in Czech.		
BI-IOS	Fundamentals of iOS Application Development for iPhone and iPad This course is presented in Czech.	KZ	4
BI-KAB.21	Cryptography and Security derstand the mathematical foundations of cryptography and gain an overview of current cryptographic algorithms. They will be able to	Z,ZK	5 keys and
	ems based on them and learn the basics of safe use of symmetric and asymmetric cryptographic systems and hash functions in appl		-
will gain pr	actical skills in using standard cryptographic methods with an emphasis on security and will also get acquainted with the basic proce		/sis.
BI-KOT	Programing in Kotlin	Z,ZK	4
	n, statically-styled object-functional language that exploits the extensive Java language ecosystem while delivering a number of advar ully Java compliant and allows for mixed projects that preserve existing parts written in Java, and continue with the development of a r		
	with minimum of boiler-plate code. Last but not least, Kotlin is suitable for designing of DSLs (Domain-Specific Languages)	-	

	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		
anthropological res	earch from our "exotic" cultures (topics: kinship, religion, social exclusion, migration, globalization, , material culture, language, healt shown. The course is presented in Czech.	h, history, death, et	c) will be
BI-LA1.21	Linear Algebra 1	Z,ZK	5
	students to the basic concepts of linear algebra, such as vectors, matrices, vector spaces. We will define vector spaces over the field		
	fields. We will present the concepts of basis and dimension and learn to solve systems of linear equations using the Gaussian elimin		
the connection w	ith linear manifolds. We define the regularity of matrices and learn to find their inversions using GEM. We will also learn to find eigen	values and eigenve	ctors of a
	matrix. We will also demonstrate some applications of these concepts in computer science.		
BI-LA2.21	Linear Algebra 2	Z,ZK	5
	p edm tu rozší í znalosti z p edm tu BI-LA1, kde se pracovalo pouze s vektory ve form n-tic ísel. Zde si zavedeme vektorový pros cé a palmem akalémi avy in a lina émi a branázií ani námedností vlkázet avy ident a lina émi akaberu, se ametri a		
	κé s pojmem skalární sou in a lineární zobrazení, což nám dovolí ukázat souvislost s lineární algebrou, geometrií a po íta ovou gral eární algebra, kde si ukážeme potíže s ešením soustav lineárních rovnic na po íta i a možnosti, jak se s tímto problémem vypo áda		
	Ukážeme si také aplikace lineární algebry v r zných oborech.		ady mato.
BI-MA1.21	Mathematical Analysis 1	Z,ZK	5
	e by introducing students to the set of real numbers and its properties, and we note its differences with the set of machine numbers.	I ' I	sequences
and real functions o	f a real variable. We gradually introduce the notions of limits of sequences and functions, continuous functions, and derivatives of functions	ons. This theoretica	foundation
	ot-finding problems (iterative method of bisection and Newtons method), construction of cubic interpolation (spline), and formulation and		· .
	ssue of finding extrema of functions). The course is closed with the Landaus asymptotic notation and methods of mathematical descript		-
BI-MA2.21	Mathematical Analysis 2	Z,ZK	6
	tes the theme of analysis of real functions of a real variable initiated in BI-MA1 by introducing the Riemann integral. Students will learn n method. The next part of the course is devoted to number series, and Taylor polynomials and series. We apply Taylors theorem to the	-	
	scribed accuracy. Then we study the linear recurrence equations with constant coefficients, the complexity of recursive algorithms, ar		
-	we introduce the student to the theory of multivariate functions. After establishing basic concepts of partial derivative, gradient, and I		
-	f localization of local extrema of multivariate functions as well as the numerical descent method. We conclude the course with the integ		
BI-MGA.21	Multimedia and Graphics Applications	Z,ZK	5
	uainted with multimedia technologies and applications for 2D/3D bitmap and vector graphics. During the course, current tools for wor		
0 1	tion will be introduced. Students learn several basic techniques of creation and editing content in computer graphics, introduction to gra	. ,	· ·
	v learn to use multimedia transmission and representation systems, including real-time multimedia processing. They understand the		on and use
BI-MIT	f graphics processing cards. They gain a number of practical skills, such as vectorizing raster images, retouching photos, or creating	SD models.	3
	Mikrotik technologies on of the subject stands in the introduction of the RouterOS operating system and some network Mikrotik technologies which are cor	1	-
	vice providers (ISPs). The students learn how to use and create the architectures of the network solutions which are based on the m		
	trate and practically deploy them. The successful completion of this subject requires the previous knowledge of elementary computer no	-	
	and technologies of the data-link, network and transport layer of the OSI model.		
BI-MMP	Multimedia team project	KZ	4
	This course is presented in Czech.		
BI-MPP.21	Methods of interfacing peripheral devices	Z,ZK	5
I he course is focus	ed on methods for interfacing of peripheral devices. Interfacing of real peripheral devices is focused on techniques based on Universa		
	ide and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of USI		
includes both PC s	ide and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of USE drivers, simple application development, and APIs of selected devices.	3 devices, Linux an	d Windows
includes both PC s BI-MVT.21	ide and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of USI drivers, simple application development, and APIs of selected devices. Modern Visualisation Technologies	3 devices, Linux an	d Windows 5
includes both PC s BI-MVT.21 The goal of the co	ide and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of USE drivers, simple application development, and APIs of selected devices.	3 devices, Linux an	d Windows 5 Ilization on
includes both PC s BI-MVT.21 The goal of the co	ide and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of USI drivers, simple application development, and APIs of selected devices. Modern Visualisation Technologies urse is to give an overview of modern visualization technologies and their principles, namely technologies related to virtual and augm	3 devices, Linux an	d Windows 5 Ilization on
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BI-MVT.21 The goal of the countries of the subject aims to the subject aims to the countries of the subject aims to the subject aims to the subject aims to the subject aims to the countries of the subject aims to the subject aim	ide and peripheral devices side. Labs are practically oriented. Students gain experience with implementation of relevant parts of USI drivers, simple application development, and APIs of selected devices.  Modern Visualisation Technologies  urse is to give an overview of modern visualization technologies and their principles, namely technologies related to virtual and augn lays (e.g., SAGE and video mapping) and their applications in practice. Several lectures deal with the content creation for the mentione and procedural visualization, scientific data visualization, and 3D model scanning.  Operations Research and Linear Programming  o introduce students to the issues of operational research and primarily to the practical application of linear programming as a fundar nal research primarily focuses on the use of engineering methods (with a mathematical background) to solve practical problems (success)	3 devices, Linux an Z,ZK nented reality, visua ed technologies, na KZ mental optimization ch as management	d Windows 5 ulization on mely fractal 5 technique.
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BI-PKM	Introduction to mathematics This course is presented in Czech.	Z	4
BI-PMA	Programming in Mathematica	Z,ZK	4
	rking with modern technical and scientific software. Students will learn how to use different programming styles (functional programm	1 '	ogramming,
	etc.), how to create dynamic interactive applications and visualisations, data processing and presentations.	1	1
BI-PS2	Programming in shell 2	Z,ZK	4
Students gain a ge	eneral overview of available scripting languages, their syntax, semantics, programming style, data structures, pros and cons. In additi into shell and some other particular scripting languages and will get practical experience with shell script programming.	on, they gain a dec	eper maight
BI-PSI.21	Computer Networks	Z,ZK	5
	ces students to the principles of computer networking. It covers basic technologies, protocols, and services commonly used in local r	networks and in the	e Internet as
	es will be amended by proseminars that introduce students into network programming and demonstrate the abilities of advanced network devices in the lab within the applicament of the operating evolution of the operating	-	Students
BI-PST.21	actically verify configurations and management of network devices in the lab within the environment of the operating systems Linux a Probability and Statistics	Z,ZK	5
	the basics of probabilistic thinking, the ability to synthesize prior and posterior information and learn to work with random variables. T		I
	om variable distributions and solve applied probabilistic problems in informatics and computer science. Using the statistical induction		-
estimations of unk	nown distributional parameters from random sample characteristics. They will also be introduced to the methods for testing statistical dependence of two or more random variables.	I hypotheses and o	letermining
BI-PYT.21	the statistical dependence of two or more random variables. Python Programming	KZ	5
	urse is to get acquainted with basic efficient control and data structures of the Python programming language for text and binary data	1	-
	ny of programming in Python and in other programming languages will be explained. Each topic is prepared for students in the format		
enables greater a	ccent to individual student work. Before each lab, students pass a short test on the last week topic. Four homeworks plus a semester the semester.	work will be assig	ned during
BI-QAP	Quantum algorithms and programming	KZ	5
	ng students hands-on experience with quantum computers and their programming. We focus on fundaments of quantum mechanics, o		-
-	porithms showing advantages and limitations of quantum computing. During tutorials students work in open-source software developr		
on Python langua	ge. Knowledge of linear algebra at the level of BI-LA1 and BI-LA2 (or BI-LIN) is necessary. Previous completion of BI-MA2 or BI-VMN might be an advantage. No previous knowledge of physics is assumed.	A and experience v	vith Python
BI-QUA	Quality Assurance	KZ	4
	duces students to the fundamentals of testing and quality management. Students will learn what the role of a tester is in the context	1	
	vill experience hands-on application testing using both manual and automated testing. At the end of the semester, the student should		
	n a set of test scenarios, prepare test data, automate an appropriate portion of the scenarios, and prepare a report on the bugs found		
BI-SAP.21 Students will get	Computer Structure and Architecture acquainted with the basic architecture and units of a digital computer, understand the structure, function, and implementation of arith	Z,ZK	5 ontrollers
	unication, methods of data transfers between the units. The logic design and the implementation of a program-controlled simple proce-		
	in the labs using programmable circuits (FPGA), a single-chip microcomputer, and modern design (EDA) tools.	1	
BI-SCE1	Computer Engineering Seminar I	Z	4
	mputer Engineering is a (s)elective course for students who want to deal with deeper topics of digital design, reliability and resistance to dividually within the subject. Each student or group of students solves some interesting topic with the selected supervisor. Part of the		
	professional literature and/or work in K N laboratories. The capacity of the subject is limited by the possibilities of the seminar teacher		
	semester.		
BI-SCE2	Computer Engineering Seminar II mputer Engineering is a (s)elective course for students who want to deal with deeper topics of digital design, reliability and resistance to	Z	4
	dividually within the subject. Each student or group of students solves some interesting topic with the selected supervisor. Part of the		
	professional literature and/or work in K N laboratories. The capacity of the subject is limited by the possibilities of the seminar teacher		
51.055	semester.	7 714	
BI-SEP	World Economy and Business sented in Czech. The course introduces students of technical university to the international business. It does that predominantly by c	Z,ZK	4
	world economy. Students get to know about different religions and cultures, necessary for doing business in diverse societies as well as		
corruption and eco	nomic development, which are needed for the right investment decision. Seminars help to improve on the knowledge in the form of d	iscussions based o	on individual
	readings. It is advised to take bachelor level of this course BIE-SEP as a prerequisite.	7 71/	4
BI-SKJ.21 Students gain a ge	Scripting Languages eneral overview of available scripting languages, their syntax, semantics, programming style, data structures, pros and cons. In additi	Z,ZK	eper insight
	into shell and some other particular scripting languages and will get practical experience with shell script programming.	,, g	- p - n - n - n - g - n
BI-SP2.21	Team Software Project 2	KZ	5
u u	Is-on experience with the iterative development process while working on a large-scale software project. The first iteration is the result ollow-up, the functionality, testing, and documentation of the software system being developed will be emphasized. Students will work		
	er, in the role of the team and project leader, regularly consults with the team (at the seminars) the formal as well as material aspects		eopie. The
BI-SQL.1	Language SQL, advanced	KZ	4
	knowledge obtained in BI-DBS. Students become familiar with advanced relational and non-relational features of SQL language. In pa		-
	queries, OLAP support, object-relational constructions. Part of the course is dedicated to practical database optimization from the point of exes, clusters, index-organized tables, and materialized views. as well as from the point of view query optimization. Execution plan ar		
	exes, clusters, index-organized tables, and materialized views, as well as norm the point of view query optimization. Execution plan and ed. Lectures will usually discuss SQL standard, but many features will be demonstrated on Oracle DBMS. Seminars are based on Orac	•	0
	PostgreSQL.	1	
BI-ST1	Network Technology 1	Z	3
I NE SUDJECT IS OF	iented to providing the students basic information and practical skills from the area of digital and IP networks. The subject is acredite CCNA1 - R&S Introduction to Networks.	a under the Cisco	ivetacad -
BI-ST2	Network Technology 2	Z	3
	This course is presented in Czech.	1	
BI-ST3	Network Technology 3	Z	3
	r enhance their knowledge acquired from previous BI-ST1 and BI-ST2 courses. Principles of routing and switching presented during E ded in the course. Students will be able to start fine-tune protocols' settings to gain certain advantages like increased efficiency, pred		
ger untiler extern	simple topology, security, etc.	iotability, extension	beyond a

Bademis and informer principants introduced particular dama general and any ge	BI-ST2 courses got further extended in BI-ST3. Students were able to start fine-tune protocols' settings to gain certain advantages like increased effici	Z	3
beyond a simple topology, startly, set. The maxies instances startlers to the terms the startly of experiments all stormages over and south firmware, represent and firmware, represent and firmware, represent and firm			
Exodes tables for each state of the induced of the factor we have because and exodes and the induced in endinget induced in the induced in th			
excernse, and emergency procedures. Also the socurty seed is treated, standard, wrang.  BI-SW121 BI-SW122 BI-SW121 BI-SW122 BI-SW12 BI-SW1 BI-SW12 BI-SW1 BI-SW12 BI-SW1 BI-			
Determine         Termine instruction         ZZK         5           Buddens get acquarities with methods of analysis and degrad of larger software projects with an ethypical of degrad of larger software projects. With a consells: CSF. Structure software in the CSE to obtain the consells: CSF. Structure is software in the consells in the consells. CSF. Structure is software in the consells in the consells in the consells in the consells. CSF. Structure is software in the consells in the consells. CSF. Structure is software in the consells. CSF. Structure is interacting in the consells. Consells. Links. CSF. Structure is interacting in the consells. Consells. Links. CSF. Structure is interacting in the consells. Consells. Links. CSF. Structure is interacting in the consells. Consells. Links. CSF. Structure is interacting in the consells. Consells. CSF. Structure is interacting in the consells. Consells. Consells. Links. CSF. Structure is interacting in the consells. Conseconsen. Consells. Consells. C		-	-
Students get acquiring with networks of analysis and selegin of tinger extremes project, the tare hypolany designed and implemented in teams. The interview of the interview or constructive and processel with the interview design of the construction with CASE tools used to the value linguage UAL to matching and toolses a selective selection. The control to advect projects and the control to advect project and the control to advect pro			italining the
Students get acquiring the unity and design of anyys a more systems that ull be developed and implemented in teams. The source of the construction of the CSE below system start ull be developed in the construction of the CSE below system. The construction of the CSE below system start ull be developed in the construction of the CSE below system. The construction of the CSE below system start ull be developed in the construction of the CSE below system. The construction of the CSE below system start ull be developed in the construction of the CSE below system. The construction of the CSE below system start ull be developed in the construction of the CSE below system start ull be developed in the construction of the CSE below system start ull be developed in the CSE below system start ull be developed in the CSE below system start ull be developed in the CSE below system start ull be developed in the CSE below system start ull be developed in the CSE below system start ull be developed in the CSE below system start ull be developed in the CSE below system start ull be developed in the CSE below system start ull be developed in the CSE below system start ull be developed in the CSE below system start ull be developed in the construction of the CSE below start start of the CSE below system start ull be developed in the construction of the CSE below system start ull be developed in the construction of the CSE below system start ull be developed in the construction of the CSE below start start and the construction of the CSE below start start and the construction of the CSE below start start and the construction of the CSE below start start and the construction of the CSE below start start and the construction of the CSE below start start and the construction of the CSE below start start and the construction of the CSE below start start and the construction of the CSE below start start and the construction of the CSE below start start and the construction of the CSE below start start and the construction of the CSE b	BI-SWI.21 Software Engineering	Z,ZK	5
uing the visual language ULIK, to modeling and solving spokares pockerns. Students arem the tasket of objeco-crientical analysis, actinecture aeguing and testing. Within the course, analysis and testing and testing the students along in a theorem tasket and a to another projects, and methods of the discolutions. The course is to could on the basics of creating electronic councements on the oration of technical aports of a larger scooe, hypically final university theses Students team to beaket and a technical report in the LaTCX system, process an electronic presentation on the oration of technical aports of a larger scooe, hypically final university theses Students team to beaket and the local of the chaddened students of the creating electronic counces is a work with the first of the generation of team of the students and the score hypical students. The score and the creates first devices of the creates of team of the score hypical students in the students and the score hypical students. The score and the creates are also and the also are also and the score are also and the creates aread and also are also are also are also are		nsolidate and prac	tically verify
statemin at the grant at hereinized progenization of projects, and relation of the development.         Image: Control of the control of th			
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other scholarly listrature. The capacity is limited by the the potentials of the suches of the surface.           BI-T52         Theoretical Seminar II         Z         4           Theoretical Seminar is intended for students which want to come in deeper carcias with contemporary theoretical computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Theoretical Computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Theoretical Computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Theoretical Computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Theoretical Computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Theoretical Computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Theoretical Computer science. It is mostly a classical reading group. The students with the user optimally, since the needs and characteristics of users are not taken into account during product development. Students area were were or interval. State Theoretical Seminar IV           BI-T0R.21         User Interface Design         Z,Z K         5           Students gain a basic overview of methods for designing and tostinc			
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are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is a work with scientific papers and other scholarly literature. The capacity is limited by the the potentials of the teachers of the seminar.           BI-TS3         Immediate         Z         4           Theoretical Seminar is intended for students which want to come in deeper contact with contemporary theoretical computer science. It is mostly a classical reading group. The students are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is a work with scientific papers and other scholarly literature. The capacity is limited by the the potentials of the teachers of the seminar.         Z         4           BI-TS4         Theoretical Seminar III         Z         4	BI-TS2 Theoretical Seminar II	Z	4
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are treated individually and concern themselves with interesting topics from the latest research in the area. Therefore, an integral part of the course is a work with scientific papers and other scholarly literature. The capacity is limited by the the potentials of the seahners.           BI-TUR.21         User Interface Design         Z,ZK         5           Students gain a basic overview of methods for designing and testing common user interfaces. They get experience to solve the problems where software and other products do not communicate with the user optimality, since the needs and characteristics of users are not taken into accound during product development. Students gain an overview of methods the bring users into the development process to ansure optimal inerface for them.         Z,ZK         5           BI-TZP.21         Technological Fundamentals of Computers         Z,ZK         5           Students get acquainted with the fundamentals of digital and analog circuits, as well as basic methods of analyzing them. Students learn how computer structures look like at the lowest level. Interpret set instructures of the how to raise them, why a computer bus needs to be terminated, what happens if it is not how a computer power supply looks like (in principle). In the labs, students model the behavior of basic electrical circuits in SW Mathematica.         Z         2         2           BI-UUI         Introduction to Linux         Z         2         5           Dunklike operating systems represent a large family mostly open-source codes that kept bringing during the history of computers efficient innovative functions of multiuser operating systems represent a large family mostly open-source codes that kept bringing during the hist	BI-TS4 Theoretical Seminar IV	Z	4
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BI-TUR.21         User Interface Design         Z,ZK         5           Students gain a basic overview of methods for designing and testing common user interfaces. They get experience to solve the problems where software and other products do not communicate with the user optimally, since the needs and characteristics of users are not taken into account during product development. Students gain an overview of methods that bring users into the development process to ensure optimal interface for them.         Students get acquainted with the fundamentals of digital and analog circuits, as well as basic methods of analyzing them. Students get acquainted with the fundamentals of digital and analog circuits, as well as basic methods of analyzing them. Students learn how computer power supply looks like the lowest level. They are introduced to the function of a transistor. They will understand why processors generate heat, why cooling is necessary, and how to reduce the consumption, what the limits to the maximum operating frequency are and how to raise them; why a computer bus needs to be terminated, what happens it its not how a computer power supply looks like (in principle). In the labs, students model the behavior of basic electrical circuits in SW Mathematica.         Z         2           BI-UUL         Introduction to Linux         Z         2         2           Bi-UUL         Introduction to Systems         KZ         5           Unix-like operating Systems represent a large family mostly open-source codes that kept bringing during the history of computers efficient innovative functions of multiuser operating systems for computers and there accurates and there elevations. The most opoular OS takes, Android, has a unix kenrel. Students get overivew of basic courses, w		vork with scientific	papers and
Students gain a basic overview of methods for designing and testing common user interfaces. They get experience to solve the problems where software and other products do not communicate with the user optimally, since the needs and characteristics of users are not taken into account fulling product development. Students gain an overview of methods that bing users into the development process to ensure optimal interface for them.           BI-TZP.21         Technological Fundamentals of Computers         Z,ZK         5           Students get acquainted with the fundamentals of digital and analog circuits, as well as basic methods of analyzing them. Students learn how to reduce the consumption, what the limits to the maximum operating frequency are and how to raise them; why a computer bus needs to be terminated, what happens if it is not, how a computer power supply looks like at the lowest level. They are introduced to the function of a transistor. They will understand why processors generate heat, why coiling is necessary, and how to reduce the consumption; what the limits to the maximum operating frequency are and how to raise them; why a computer bus needs to be terminated, what happens if it is not, how a computer power supply looks like at the lowest level.           BI-ULI         Introduction to Linux         Z         2           Students become familiar with be basics of the linux operating system stepsent a large family mostly open-source codes that kep thringing during the history of computers and therine works and dusers. The mostly, Android, has a unk kernel. Students get overview of basic properties of this OS family, such as processes and threads, access fights and user identity, filters, or handling files in a file system. They learn to user practically these systems to the over such as a course and to theorade students.         KZ		7 71/	
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BI-TZP.21         Technological Fundamentals of Computers         Z,ZK         5           Students get acquainted with the fundamentals of digital and analog circuits, as well as basic methods of analyzing them. Students learn how computer structures look like at the lowest level. They are introduced to the function of a transistor. They will understand why processors generate heat, why cooling is necessary, and how to reduce the consumption; what the limits to the maximum operating frequency are and how to raise them; why a computer bus needs to be terminated, what happens if it is not; how a computer power supply looks like (in principle). In the labe, students model the behavior of basic electrical circuits in SVM Mathematica.         Z         2         2           BI-ULI         Introduction to Linux         Z         2         2         2         Students become familiar with the basics of the Linux operating system using e-learning form. They learn to work with the command line and become familiar with basics commands and techniques of a Unix-like system. Topics can be studied first theoretically and then practically verified in a virtual machine (terminal).         BI-UOS.21         Unix-like Operating Systems         KZ         5           BI-UOS.21         Unix-like Operating System starts for the system to the at a waitable to users, but are also able to use practically verified in a virtual machine (terminal).         Selected Applications of theory. Together, we will first, or handling files in a file system. They learn to user particularly thereface, called shell.           BI-VAK.21         Selected Applications of Combinatorics         Z         3           T			
Students get acquainted with the fundamentals of digital and analog circuits, as well as basic methods of analyzing them. Students learn how computer structures look like at the lowest level. They are introduced to the function of a transistor. They will understand why processors generate heat, why cooling is necessary, and how to reduce the consumption, what the limits to the maximum operating frequency are and how to reise them; why a computer bus needs to be terminated, what happens if it is not, how a computer power supply looks like (in principle). In the labs, students model the behavior of basic electrical circuits in SW Mathematica.         BI-ULI       Introduction to Linux       Z       2         Students become familiar with the basics of the Linux operating system using e-learning form. They learn to work with the command line and become familiar with basic commands and techniques of a Unix-like system. Topics can be studied first theoretically and then practically verified in a virtual machine (terminal).       Imax/Like Operating Systems         BI-UOS.21       Unix-like Operating Systems represent a large family mostly open-source codes that kept huming during the history of computers efficient innovative functions of multiuser operating systems for computers and their networks and clusters. The most popular OS today, Android, has a unix kernel. Students get overview of basic properties of this OS family, such as processes and threads, accessible form to various branches of theoretical computer science and combinatorics. In contras to the basic courses, we approach the issue from applications to theory. Together, we will first refresh the basic knowledge needed to design and analyze algorithms and introduce some basic data structures. Furthermore, with the active participation of students, we will focus on solving popular and easily formulated p			
level. They are introduced to the function of a transistor. They will understand why processors generate heat, why cooling is necessary, and how to reduce the consumption; what the limits to the maximum operating frequency are and how to raise them; why a computer bus needs to be terminated, what happens if it is not, how a computer power supply looks like (in principle). In the labs, students model the behavior of basic electrical circuits in SW Mathematica.       Z       2         BI-ULI       Introduction to Linux       Z       2         Students become familiar with basic commands and techniques of a Unix-like system. Topics can be studied first theoretically and then practically verified in a virtual machine (terminal).       KZ       5         Unix-like Operating Systems represent a large family mostly open-source codes that kept bringing during the history of computers and their networks and clusters. The most popular OS tody, Android, has a unix kernel. Students get overview of basic properites of this OS family, such as processes and threads, access rights and user identity, filters, or handling files in a file system. They learn to use practically these systems at the level of advanced users who are not only able to utilize powerful system tools that are available to users, but are also able to aduratize routine agenda using the unix scripting interface, called shell.         BI-VLX.2       Z       3         The course aims to introduce students in an accessible form to various branches of theoretical computer south avairous areas of (not on theoretical) informatics. Areas from which we will select problems to the top, cogether, we will first refresh the basic knowledge needed to design and analyze algorithms and introduce some basic data structures. Furthermore,	BI-TZP.21 Technological Fundamentals of Computers	Z,ZK	5
limits to the maximum operating frequency are and how to raise them; why a computer bus needs to be terminated, what happens if it is not; how a computer power supply looks like (in principle). In the labs, students model the behavior of basic electrical circuits in SVV Mathematica.         BI-ULI       Introduction to Linux       Z       2         Students become familiar with the basics of the Linux operating system using e-learning form. They learn to work with the command line and become familiar with basic commands and techniques of a Unix-like system. Topics can be studied first theoretically and then practically verified in a virtual machine (terminal).       BI-UOS.21       Unix-like Operating Systems represent a large family mostly open-source codes that kept bringing during the history of computers efficient innovative functions of multiuser operating systems for computers and their networks and clusters. The most popular OS today, Android, has a unix kernel. Students get overview of basic properties of this OS family, such as processes and threads, access rights and user identity, filters, or handling files in a file system. They learn to use practically these systems at the level of advanced users who are not only able to utilize powerful system tools that are available to users, but are also able to automatize routine agenda using the unix scripting interface, called shell.         BI-VAK.21       Selected Applications of Combinatorics       Z       3         The course aims to introduce students in an accessible form to various branches of theoretical computer science and combinatorics. In contrast to the basic courses, we aptroach the issue form applications to theory. Together, we will first afrechs the basic, knowledge needed to design and analyze alogrithms and introduce some basic data str	Students get acquainted with the fundamentals of digital and analog circuits, as well as basic methods of analyzing them. Students learn how computer st	ructures look like a	t the lowest
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BI-VR2	Virtual reality II	KZ	3
Continuation of the	e course Virtual Reality I. The new course focuses on collaborative telepresence, spatial computing and social life of avatars. The obje	ective is to develop	applications
DI 711/0	for computer science and gamification in various social metaverse and desktop engines.		
BI-ZIVS	Intelligent Embedded System Fundamentals ded system fundamentals course is focused on high-level technology embedded systems integrating artificial intelligence. The aim of t	KZ	4 ach students
-	robot control and development of applications in a graphical development environment. Lectures provide fundamentals of motion control		
	avigation and development tools. In labs, students program a set of basic task by using the robot simulator and real hardware to get p technologies.		
BI-ZPI	Process engineering	KZ	4
	fundamentals of process engineering in this subject. Students will get necessary foundations for understanding formal principles of p	-	-
	e used notations (UML, BPMN, BORM). The focus in this subject lies in training of practical skills of formalisation and modelling of busi ole of process engineering for information systems development is discussed as well as its importance in the overall context of inform an enterprise.		
BI-ZS10	Bachelor internship abroad for 10 credits	Z	10
Each student ca internship the De internship. Auxiliar	n once within his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or re can of the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profession y courses BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits cor a foreign institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided int exceeds the academic year's dead-line.	onal content and e respond to 4 week	Before the xtent of the cs of full-time
BI-ZS20	Bachelor internship abroad for 20 credits	Z	20
	n once within his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or re		
internship. Auxiliar	ean of the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profession y courses BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits corr a foreign institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided int exceeds the academic year's dead-line.	respond to 4 week	s of full-time
BI-ZS30	Bachelor internship abroad for 30 credits	Z	30
	n once within his / her bachelor's study programme have a foreign internship at a foreign university or other foreign scientific and/or re	1	
	ean of the FIT, or the vice-dean for study affairs assesses the professional content. The student must provide evidence of the profession		
-	y courses BI-ZS10, BI-ZS20, BI-ZS30 are used used for the evidence and evaluation of the internship in IS KOS. Every 10 credits corr a foreign institution. The maximum number of credits a student can earn for one internship is 30 credits. This amount can be divided int exceeds the academic year's dead-line.		
BI-ZWU	Introduction to Web and User Interfaces	Z,ZK	4
Bi 2110	This course is presented in Czech.	, <b></b> , <b>_</b> _, <b>_</b> _, <b>_</b> _, <b>_</b> _, <b>_</b> _, <b>_</b> _	
	This course is presented in Ozeon.		
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This course is presented in Czech. The course introduces students of technical university to the international business. It does that predominantly by comparing individual countries and key regions of world economy. Students get to know about different religions and cultures, necessary for doing business in diverse societies as well as indexes of economic freedom,

corruption and economic development, which are needed for the right investment decision. Seminars help to improve on the knowledge in the form of discussions based on individual readings. It is advised to take bachelor level of this course BIE-SEP as a prerequisite.

FITE-EHD	readings. It is advised to take bachelor level of this course BIE-SEP as a prerequisite.		
The course introdu	Introduction to European Economic History uces a selection of themes from the European economic history. It gives the student basic knowledge about forming of the global eco	Z,ZK	3
of the key periods	in history. As European countries have been dominant actors in this process it focuses predominantly on their roles in the economic	history. From large	economic
	pire to fragmentation of the Middle Ages, from destruction of WWII to the current affairs, the development of modern financial institution and a trained and release an		
does not cover de	tailed economic history of particular European countries but rather the impact of trade and role of particular events, institutions and c meetings will consist of a mixture of lecture and discussion.	organizations in his	tory. Class
NI-AFP	Applied Functional Programming	KZ	5
	ented in Czech. Functional programming represents one of the traditional programming paradigms. Traditional and novel functional p		-
the rise nowadays	and the functional paradigm becomes an important construct of traditionally imperative languages (C++, C#, Java). As such, master	ing this paradigm b	becomes a
	necessary competence of a software engineer: the theory and especially the practice.	<b>V7</b>	4
NI-DDM Course focuses or	Distributed Data Mining state-of-the-art approaches for distributed data mining and parallelization of machine learning algorithms. Students will gain hands of	KZ	
	amework Apache Spark and with existing distributed DM / ML algorithms. They will learn principles of their parallel implementations a		
	approaches to parallelize other algorithms. The course is prezented in czech language.		
NI-DSP	Database Systems in Practes	Z,ZK	4
	This course is presented in Czech.		
NI-DZO	Digital Image Processing	Z,ZK	4
	nts a comprehensive overview of modern methods for interactive editing of digital images and video. It mainly deals with practical alg e an interesting theoretical basis. Visually attractive applications provide better understanding of basic theoretical background that is als		-
•	processing. This course will introduce algorithms solving the following practical applications: edge-aware editing, tone mapping, HDR		
frequency domain,	abstraction, hybrid images, gradient domain editing, seamless image stitching and cloning, digital photo-montage, color-to-gray conv	version, context enh	nancement,
interactive as-ri	gid-as-possible image deformation, free-form image registration, texture synthesis, interactive segmentation, colorization, painting, ac	dding depth, alpha	matting.
NI-IAM	Internet and Multimedia	Z,ZK	4
	e is focused on principles and modern technologies for network transmissions of audiovisual (AV) signals. The syllabus includes acq signals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical u		
	signals (output), network communication protocols, device interfaces, codecs, data formats and stereoscopy. We will look at practical unissions. Within the labs, students will practically assemble AV transmission chains using HW and SW technologies and verify the effe		
	ncy of AV transmissions. Students will learn how to build Internet infrastructure for end-to-end AV transmissions from the recording the		
	for audience.		
NI-LSM	Statistical Modelling Lab	KZ	5
-	ented on a single and multi-target tracking. The student both learns the existing methods and tries to implement them. The stress is p		
available informati	on and its modeling using numpy and scipy. The second half of the semester is focused on the design of methods and algorithms, and the point, the subject is an the border of our research and may result in the table of final work (diplome or backboler theory).	-	properties.
NI-MOP	At this point, the subject is on the border of own research and may result in the topic of final work (diploma or bachelor thesi Modern Object-Oriented Programming in Pharo	s). KZ	4
-	gramming is currently one of the most widespread paradigms of software creation, especially enterprise information systems, where	I I	-
	plex modern applications. In this course, we build on the knowledge acquired in the course BI-OOP and aim to further deepen the skills	-	
	in modern pure object system Pharo (https://pharo.org). The course focuses on individual approach to students, their development ne	eeds and areas of i	interest In
	ing object programming skills, which are generally applicable in other OO languages, students will also gain the opportunity to work of		
<sup>°</sup>		on interesting proje	cts and OO
NILMDI	ms of semestral work with the possibility of cooperation with practice and related bachelor, diploma, postgraduate our direct involvem	on interesting projection interesting projection of the pharo C	cts and OO consortium.
NI-MPL	ms of semestral work with the possibility of cooperation with practice and related bachelor, diploma, postgraduate our direct involver Managerial Psychology	on interesting project nent in the Pharo C ZK	cts and OO consortium. 2
NI-MSI	ms of semestral work with the possibility of cooperation with practice and related bachelor, diploma, postgraduate our direct involverr Managerial Psychology Mathematical Structures in Computer Science	on interesting project nent in the Pharo C ZK Z,ZK	cts and OO consortium. 2 4
NI-MSI	ms of semestral work with the possibility of cooperation with practice and related bachelor, diploma, postgraduate our direct involver Managerial Psychology	on interesting project nent in the Pharo C ZK Z,ZK	cts and OO consortium. 2 4
NI-MSI	ms of semestral work with the possibility of cooperation with practice and related bachelor, diploma, postgraduate our direct involver Managerial Psychology Mathematical Structures in Computer Science mantics of programming languages. Data types as continuous lattices, Scott topology. Procedures as continuous mappings. The Scott	on interesting project nent in the Pharo C ZK Z,ZK	cts and OO consortium. 2 4
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NI-TSP	Testing and Reliability	Z,ZK	5
Students will gain I	knowledge about circuit testing and about methods for increasing reliability and security. They will get practical skills to be able to pre	pare a test set with	the help of
the intuitive path se	ensitization and to use an ATPG for automatic test generation. They will be able to design easily testable circuits and systems with bu	iilt-in-self-test equip	ment. They
	will be able to compute, analyze, and control the reliability and availability of the designed circuits.		
NI-VCC	Virtualization and Cloud Computing	Z,ZK	5
Students will gai	n knowledge of architectures of large computer systems that are used in data centers and computer infrastructure of companies and	organizations. The	ey will get
acquainted with vi	rtualization principles, tools and technologies that serve to facilitate and automate configuration, testing and monitoring, and to effici	ently operate and o	ptimize the
	rameters of modern computer systems. Theoretically and practically, they will get acquainted with containerization as the most effect		
management of cor	mplex computer systems and with specific technologies of cloud systems. Finally, they will learn the principles and gain practical skills i	n the use of moderr	n integratior
	and development tools (Continuous integration and development).		
NI-VYC	Computability	Z,ZK	4
	Classical theory of recursive functions and effective computability.		
TV1	Physical Education	Z	0
TV2	Physical Education	Z	0
TVK1	Physical Education	Z	1
TVKLV	Physical Education Course	Z	0
TVKZV	Physical Education Course	Z	0
TVV	Physical education	Z	0
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For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 2025-08-23, time 10:55.