# Study plan

# Name of study plan: Open Informatics - Software 2016

Faculty/Institute/Others: Faculty of Electrical Engineering Department: Branch of study guaranteed by the department: Welcome page Garantor of the study branch: Program of study: Open Informatics Type of study: Bachelor full-time Required credits: 152 Elective courses credits: 28 Sum of credits in the plan: 180 Note on the plan:

Name of the block: Compulsory courses in the program Minimal number of credits of the block: 122 The role of the block: P

Code of the group: 2015\_BOIAPP Name of the group: Subjects in english Requirement credits in the group: Requirement courses in the group: In this group you have to complete at least 1 course Credits in the group: 0 Note on the group:

Note on the gro	Jup.					
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
BE4B33SEA	Subject in english - abroad	Z,ZK	0		Z,L	Р
BE5B32PKS	Computer and Communication Networks Leoš Bohá , Tomáš Van k, Pavel Bezpalec Zbyn k Kocur Leoš Bohá (Gar.)	Z,ZK	6	2P + 2C	Z	Ρ
BE5B35APO	Computer Architectures Pavel Píša, Richard Šusta Pavel Píša Pavel Píša (Gar.)	Z,ZK	6	2P+2L	L	Ρ
BE4B38PSIA	Computer Networks Ji í Novák, Jan Holub <b>Ji í Novák</b> Ji í Novák (Gar.)	Z,ZK	5	2P+2L	L	Ρ
BE4B36FUP	Functional Programming Niklas Maximilian Heim, Rostislav Hor ík Rostislav Hor ík Michal P chou ek (Gar.)	Z,ZK	6	2P+2C	L	Ρ
BE4B36ZUI	Introduction to Artificial Intelligence Branislav Bošanský, Viliam Lisý <b>Branislav Bošanský</b> Branislav Bošanský (Gar.)	Z,ZK	6	2P+2C	L	Ρ
BE5B35LSP	Logic Systems and Processors Richard Šusta, Martin Hlinovský Martin Hlinovský Richard Šusta (Gar.)	Z,ZK	6	3P+2L	Z	Ρ
BE5B33RPZ	Pattern Recognition and Machine Learning Ond ej Drbohlav, Ji í Matas, Jan Šochman <b>Ji í Matas</b> Ji í Matas (Gar.)	Z,ZK	6	2P+2C	Z	Ρ
BE4B35PSR	Real-time Systems Programming Michal Sojka Michal Sojka Michal Sojka (Gar.)	Z,ZK	6	2P+2C	Z	Ρ
BE4B39VGO	Creating graphic content Ladislav molík Ladislav molík (Gar.)	Z,ZK	6	2P+2C+8C	Z	Ρ

#### Characteristics of the courses of this group of Study Plan: Code=2015\_BOIAPP Name=Subjects in english

BE4B33SEA	Subject in english - abroad	Z,ZK	0					
The subject serves for validation of the duty to complete at least one compulsory course of the program in English.								
BE5B32PKS	Computer and Communication Networks	Z,ZK	6					
The aim of the course is to familiarize students with current trends in the switched local networks and the key functions of routing protocols in IP networks. The course is aimed rather								
primarily practically the	n theoretically.							
BE5B35APO	Computer Architectures	Z,ZK	6					
Subject provides overvi	ew of basic building blocks of computer systems. Explanation starts from hardware side where it extends knowledge present	ed in the previous	lectures of					
Structures of computer	systems. Topics cover building blocks description, CPU structure, multiple processors interconnections, input/output subsyste	em and basic ove	rview of network					
and buses topologies. Emphasis is placed on clarification of interconnection of hardware components with software support, mainly lower levels of operating systems, device drivers								
and virtualization techniques. General principles are more elaborated during presentation of examples of multiple standard CPU architectures. Exercises are more focused on the								
software view to the contrary. Students are lead from basic programming on CPU level to the interaction with raw hardware.								

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BE4B38PSIA	Computer Networks	Z,ZK	5
	ciples and technologies of Computer Networks. Physical layer media, analog and digital modulations, network topologies, N		
	els, coding and cryptography basics are introduced. Widely used LAN technologies are then presented together with their fe	eatures. Internet	protocols are
	rking approaches are presented.		_
	Functional Programming	Z,ZK	6
	idents into the techniques of functional programming, the advantages and disadvantages of this programming paradigm, and		
	that the programmer symbolically describes the problem to be solved, rather than specifying the exact sequence of operal	•	
e e	of the solved problem and implementing even more complex algorithms compactly. Functional programming has notable ad	e 1	
	algorithms, and the most useful functional programming concepts are increasingly often introduced to standard programming I on symbols, rather than numbers, functional programming has been heavily used in in artificial intelligence fields, such as ac		
	so part of the inter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a		
	ence. More information is available at https://prg.ai/minor.		
	ntroduction to Artificial Intelligence	Z.ZK	6
	o cover the basics of symbolic artificial intelligence. We will focus on algorithms of informed and uninformed state space se	,	-
	knowledge using formal logic, methods of automated reasoning, and an introduction to Markov decision making, and to two		
	ersity programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a deeper and broader ins	. , .	
· ·	tion is available at https://prg.ai/minor.		
BE5B35LSP	Logic Systems and Processors	Z.ZK	6
	basic hardware structures of computing resources, their design, and architecture. It provides an overview of the possibiliti	,	-
	the design of embedded processor systems with peripherals on modern FPGA programmable logic circuits, which are increased		•
	in VHDL, from logic to more complex sequential circuits to practical finite state machine (FSM) designs. They will also mas		
using circuit simulation. P	ractical problems are solved using development boards used at hundreds of leading universities around the world. The cou	rse ends with RIS	SC-V processor
structure, cache, and pipe	eline processing.		
BE5B33RPZ F	Pattern Recognition and Machine Learning	Z,ZK	6
The basic formulations of	the statistical decision problem are presented. The necessary knowledge about the (statistical) relationship between obser	vations and class	es of objects is
	he raining set. The course covers both well-established and advanced classifier learning methods, as Perceptron, AdaBoost		
	s also part of the inter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with	ith a deeper and	broader insight
into the field of artificial in	telligence. More information is available at https://prg.ai/minor.		
	Real-time Systems Programming	Z,ZK	6
5	to provide students with basic knowledge about software development for real-time systems, for example in control and em		
-	tems equipped with a real-time operating system (RTOS). Lectures will cover real-time systems theory, which can be used to		-
	t of lectures will introduce methods and techniques used for development of safety-critical systems, whose failure may have		•
<b>e</b>	first solve a few simple tasks to familiarize them with basic components of VxWorks RTOS and to benchmark the used OS In the typical criteria for assessing the suitability of a given platform for the given application. After the simple tasks, student	•	
	I application which will require full utilization of RTOS features. All the tasks at the labs will be implemented in C (or C++) la		IEX LOSK OF
		Z,ZK	6
	Creating graphic content for provide theory behind geometric modeling and modeling of materials, give students an overview of methods used in the		
	those methods in praxis. At the seminars, students will learn how to design and create three-dimensional scene, create and	-	-
	sky) and geometrical details, and position and set-up lights in the scene.		inating materials
(13)			
•	up: 2015_BOIBAP		
Name of the gro	oup: Bachelor Project		
Requirement cr	edits in the group: In this group you have to gain 20 credits		
Requirement co	ourses in the group: In this group you have to complete 1 course		
Credits in the gi	roup: 20		
Note on the gro	up:		
	Name of the course / Name of the group of courses		

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
BBAP20	Bachelor thesis Roman mejla Roman mejla (Gar.)	Z	20	12S	L,Z	Р

# Characteristics of the courses of this group of Study Plan: Code=2015\_BOIBAP Name=Bachelor Project

BBAP20	Bachelor thesis	Z	20

Code of the group: 2015\_BOIBBE Name of the group: Safety of the bachelor's studies Requirement credits in the group: Requirement courses in the group: In this group you have to complete at least 2 courses Credits in the group: 0 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
BEZB	Safety in Electrical Engineering for a bachelor's degree Ivana Nová, Radek Havlí ek, Vladimír K la <b>Radek Havlí ek</b> Vladimír K la (Gar.)	Z	0	2BP+2BC	Z,L	Р
BEZZ	Basic health and occupational safety regulations Ivana Nová, Radek Havlí ek, Vladimír K la <b>Radek Havlí ek</b> Vladimír K la (Gar.)	Z	0	2BP+2BC	Z	Р

### Characteristics of the courses of this group of Study Plan: Code=2015\_BOIBBE Name=Safety of the bachelor's studies

 BEZB
 Safety in Electrical Engineering for a bachelor's degree
 Z
 0

 The purpose of the safety course is to give the students basic knowledge of electrical equipment and installation as to avoid danger arising from operation of it. This introductory course contains fundamentals of Safety Electrical Engineering. In this way the students receive qualification of instructed person that enables them to work on electrical equipment.
 0

 BEZZ
 Basic health and occupational safety regulations
 Z
 0

 The guidelines were worked out based on The Training Scheme for Health and Occupational Safety designed for employees and students of the Czech Technical University in Prague, which was provided by the Rector's Office of the CTU. Safety is considered one of the basic duties of all employees and students. The knowledge of Health and Occupational Safety regulations forms an integral and permanent part of qualification requirements. This program is obligatory.

## Code of the group: 2015\_BOIH

Name of the group: Humanities subjects

### Requirement credits in the group:

Requirement courses in the group:

### Credits in the group: 0

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
B0B16ET1	Ethic 1 Vladimír Sláme ka Vladimír Sláme ka Vladimír Sláme ka (Gar.)	KZ	4	2P+2C	Z	Ρ
B0B16FIL	Philosophy Peter Zamarovský Peter Zamarovský Peter Zamarovský (Gar.)	ZK	2	2P+0S	Z,L	Ρ
B0B16FI1	Philosophy 1 Peter Zamarovský Peter Zamarovský (Gar.)	KZ	4	2P+2S	Z	Р
B0B16HTE	History of technology and economic Marcela Efmertová, Jan Mikeš Marcela Efmertová Marcela Efmertová (Gar.)	ZK	2	2P+0S	Z,L	Р
B0B16HT1	History of science and technology 1 Marcela Efmertová, Jan Mikeš Marcela Efmertová Marcela Efmertová (Gar.)	KZ	4	2P+2S	Z	Ρ
B0B16HI1	History 1 Milena Josefovi ová Milena Josefovi ová Milena Josefovi ová (Gar.)	KZ	4	2P+2S	Z	Р
B0B16MPS	<b>Psychology</b> Jan Fiala <b>Jan Fiala</b> Jan Fiala (Gar.)	Z,ZK	4	2P+2S	Z,L	Р
B0B16MPL	Psychology for managers Jan Fiala Jan Fiala Jan Fiala (Gar.)	ZK	2	2P+0S	Z,L	Р
A003TV	Physical Education	Z	2	0+2	L,Z	Р

### Characteristics of the courses of this group of Study Plan: Code=2015\_BOIH Name=Humanities subjects

B0B16ET1	Ethic 1	KZ	4			
Aim of this subject is to provide the students an orientation not only in general problems of ethics but above all to offer instructions for solving various situations of human life.						
parts of the subject are	discussions in which students can react to lectures but also to actual questions coming with news and look for the communa	l answers.				
B0B16FIL	Philosophy	ZK	2			
We deal with the most important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nature of philosophy and connection of old						
philosophical thoughts v	with recent problems of science, technology, economics and politics.					
B0B16FI1	Philosophy 1	KZ	4			
We deal with the most i	mportant persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nature of philos	sophy and conned	ction of old			
philosophical thoughts v	with recent problems of science, technology, economics and politics.					
B0B16HTE	History of technology and economic	ZK	2			
B0B16HT1	History of science and technology 1	KZ	4			
B0B16HI1	History 1	KZ	4			
B0B16MPS	Psychology	Z,ZK	4			
B0B16MPL	Psychology for managers	ZK	2			
A003TV	Physical Education	Z	2			

Code of the group: 2015\_BOIP

Name of the group: Compulsory subjects of the programme

Requirement credits in the group: In this group you have to gain 102 credits

Requirement courses in the group: In this group you have to complete 17 courses

# Credits in the group: 102

	Name of the course / Name of the group of courses					
Code	(in case of groups of courses the list of codes of their members)	Completion	Credits	Scope	Semester	Role
	Tutors, authors and guarantors (gar.)					
B4B33ALG	Algorithms Marko Genyk-Berezovskyj, Daniel Pr ša Marko Genyk-Berezovskyj Marko Genyk-Berezovskyj (Gar.)	Z,ZK	6	2P+2C	z	Р
B0B35APO	Computer Architectures Pavel Píša, Richard Šusta, Petr Št pán Pavel Píša Pavel Píša (Gar.)	Z,ZK	5	2P+2L	L	Ρ
B0B36DBS	Database Systems Martin imná Martin imná Martin imná (Gar.)	Z,ZK	6	2P+2C+4E	L	Ρ
B4B01DMA	Discrete Mathematics Petr Habala Petr Habala (Gar.)	Z,ZK	5	2P+2S	Z	Ρ
B0B01LAG	Linear Algebra Ji í Velebil, Natalie Žukovec, Daniel Gromada, Josef Dvo ák, Mat j Dostál <b>Ji í</b> Velebil Ji í Velebil (Gar.)	Z,ZK	8	4P+2S	Z	Р
B0B01LGR	Logic anad Graphs Natalie Žukovec, Mat j Dostál, Alena Gollová Alena Gollová Marie Demlová (Gar.)	Z,ZK	5	3P+2S	Z,L	Ρ
B0B01MA1	Mathematical Analysis 1 Josef Dvo ák, Martin K epela, Josef Tkadlec, Veronika Sobotíková Josef Tkadlec Josef Tkadlec (Gar.)	Z,ZK	7	4P+2S	Z,L	Ρ
B0B01MA2	Mathematical Analysis 2 Karel Pospíšil, Miroslav Korbelá, Petr Hájek, Martin Bohata, Jaroslav Tišer, Paola Vivi, Hana Tur inová <b>Petr Hájek</b> Jaroslav Tišer (Gar.)	Z,ZK	7	4P+2S	L,Z	Р
B4B35OSY	<b>Operating Systems</b> Michal Sojka, Petr Št pán <b>Michal Sojka</b> Michal Sojka (Gar.)	Z,ZK	4	2P+2C	Z	Ρ
B0B33OPT	<b>Optimization</b> Tomáš Werner, Petr Olšák, Mirko Navara, Tomáš Kroupa <b>Tomáš Werner</b> Tomáš Werner (Gar.)	Z,ZK	7	4P+2C	Z,L	Ρ
B4B36PDV	Parallel and Distributed Computing Jakub Mare ek, Michal Jakob, Daria Mikhaylovskaya Michal Jakob Michal Jakob (Gar.)	Z,ZK	6	2P+2C	L	Ρ
B4B38PSIA	Computer Networks Ji í Novák, Jan Holub <b>Ji í Novák</b> Ji í Novák (Gar.)	Z,ZK	5	2P+2L	L	Ρ
B0B01PST	Probability and Statistics Miroslav Korbelá, Veronika Sobotíková, Kate ina Helisová, Matvei Slavenko Kate ina Helisová Petr Hájek (Gar.)	Z,ZK	7	4P+2S	Z	Ρ
B0B36PRP	Procedural Programming Jan Faigl Jan Faigl (Gar.)	Z,ZK	6	2P+2C	Z	Р
B0B36PJV	Programming in Java Ji í Vok ínek, Martin Mudroch, Ladislav Serédi <b>Ji í Vok ínek</b> Ji í Vok ínek (Gar.)	Z,ZK	6	2P+3C+7C		Ρ
B4B33RPH	Solving Problems and other Games Tomáš Svoboda, Petr Pošík Petr Pošík Tomáš Svoboda (Gar.)	КZ	6	2P+3C	Z	Ρ
B4BPROJ6	<b>Unassisted project</b> Tomáš Svoboda, Petr Pošík, Ji í Šebek, Jaroslav Sloup, Ivan Jelínek, Katarína Žmolíková <b>Petr Pošík</b>	z	6	0+2	Z,L	Ρ
haracteristics of th	e courses of this group of Study Plan: Code=2015_BOIP Name=	=Compulsory	v subject	s of the	programme	9
1	gorithms			1	Z,ZK	6
	is development is constructed with minimum dependency to programming language; ne sic algorithms, recursive functions, abstract data types, stack, queues, trees, searching,					
	and construct non-trivial algorithms and to evaluate their effectivity.	, sorting, special a	application a	iigonunns, L	bynamic progra	unning.
	omputer Architectures				Z,ZK	5
	atabase Systems			2	Z,ZK	6
	a basic database course mainly aimed at the student ability to design a relational data i	model and to use	the SQL lar	1		s well as
	e the appropriate degree of transaction isolation. Students will also get acquainted with		-	dexing techr	niques, databas	se system
	agement. They will verify their knowledge during the elaboration of a continuously subm	itted seminar task				
	iscrete Mathematics				Z,ZK	5
	et some important topics from the field of discrete mathematics. Namely, they will explore					
	ality of sets, induction, and recurrence equations. The second aim of this course is to te	each students the	language of	mathemati	cs, both passiv	ely and
	n to mathematics as science.				7.71/	0
	near Algebra	o covorad (linear -	lonondona-		Z,ZK	8 coordinat
	I parts of linear algebra. Firstly, the basic notions of a linear space and linear mappings are es (determinants, inverse matrices, matrices of a linear map, eigenvalues and eigenvec	-	-			
	quations, the geometry of a 3D space (including the scalar product and the vector produ	-	1011, 010/ 15 (			
	qualities, the geometry of a 3D space (including the scalar product and the vector product				Z,ZK	5
This course covers basics o	f mathematical logic and graph theory. Syntax and semantics of propositional and predica	•	uced. The in	1	· ·	-
and of the relationship betw	veen a formula and its model is stressed. Further, basic notions from graph theory are in	ntroduced.				
B0B01MA1 M	athematical Analysis 1				Z,ZK	7
The aim of the course is to	introduce students to basics of differential and integral calculus of functions of one varia	able.				

B0B01MA2	Mathematical Analysis 2	Z,ZK		7
The subject covers a	an introduction to the differential and integral calculus in several variables and basic relations between curve and surface integr	rals. Other part	t contains	function
-	ries with application to Taylor and Fourier series.			
B4B35OSY	Operating Systems	Z.ZK		4
	peration system's basic concepts and principles as processes, threads, communication and synchronization, virtual memory, of	1 '		-
	s are theoretically described and demonstrated on Linux and Windows OS with multi-core systems. Practical exercises from O			
be solved on labs. St	tudents will work with Linux OS and micro-kernel NOVA.			
B0B33OPT	Optimization	Z,ZK		7
	an introduction to mathematical optimization, specifically to optimization in real vector spaces of finite dimension. The theory is ill		number	-
/ou will refresh and /	extend many topics that you know from linear algebra and calculus courses.			
B4B36PDV	Parallel and Distributed Computing	Z,ZK		6
B4B38PSIA	Computer Networks	Z,ZK		5
B0B01PST	Probability and Statistics	Z,ZK		7
BOB36PRP	Procedural Programming	Z,ZK		6
	anies basic programming emphasizing the data representation in computer memory. Furthermore, the concepts of linked data st	1 '		•
	ents master the practical implementation of simple individual tasks. The course emphasizes acquiring programming habits for other sectors of the course of t			
	the effort is to build students an overview of the program operation, data model, memory access, and management. The	0		
•	a direct link between the program data structures and their representation in the computer memory. Students will get acquainte		•	• •
	vith debugging and profiling. Labs aim to acquire practical skills of implementing simple individual tasks, emphasizing functional			-
•	ce is developed by a set of homework with the possibility of optional and bonus assignments. The final task is an integration of			
mplementations. Eva	aluation of coding style motivated by writing legible, understandable, and maintainable codes is also a part of the selected task	ks.	Ū	Ū
30B36PJV	Programming in Java	Z.ZK		6
				0
ne course builds on	n the basics of algorithms and programming from the first semester and introduces students to the Java environment. The cour	1 '	 on the ob	-
		rse also focus o		ject conce
of the Java language	the basics of algorithms and programming from the first semester and introduces students to the Java environment. The cour	rse also focus on the second sec	d using g	ject conce eneric typ
of the Java language will be introduced. Ar	n the basics of algorithms and programming from the first semester and introduces students to the Java environment. The cour e. The topics of the course includes exceptions, event handling, and building a graphical interface. Basic library methods, workin	rse also focus on ng with files and pwledge of Java	d using g a is tested	ject conce eneric typ d in the for
of the Java language vill be introduced. Ar of solving partial task	n the basics of algorithms and programming from the first semester and introduces students to the Java environment. The court a. The topics of the course includes exceptions, event handling, and building a graphical interface. Basic library methods, workin m important topic is models of multithreaded applications and their implementation. Practical exercises of practical skills and known	rse also focus on ng with files and pwledge of Java	d using g a is tested	ject conce eneric typ d in the for
of the Java language vill be introduced. Ar of solving partial task correctness and effic	In the basics of algorithms and programming from the first semester and introduces students to the Java environment. The court The topics of the course includes exceptions, event handling, and building a graphical interface. Basic library methods, working important topic is models of multithreaded applications and their implementation. Practical exercises of practical skills and known is and semester work, which will be submitted continuously through the source code version control system. The semester work ciency of the code, as well as points that take into account the quality of the source codes, their readability and reusability.	rse also focus on ng with files and pwledge of Java	d using g a is tested	ject conce eneric typ d in the for
of the Java language vill be introduced. Ar of solving partial task correctness and effic 34B33RPH	In the basics of algorithms and programming from the first semester and introduces students to the Java environment. The court The topics of the course includes exceptions, event handling, and building a graphical interface. Basic library methods, working in important topic is models of multithreaded applications and their implementation. Practical exercises of practical skills and known ks and semester work, which will be submitted continuously through the source code version control system. The semester work	rse also focus on ng with files an owledge of Java ork scoring con	d using g a is tested sists of p	ject conce eneric typ d in the for oints for the
of the Java language vill be introduced. Ar of solving partial task correctness and effic 34B33RPH The main motivation	In the basics of algorithms and programming from the first semester and introduces students to the Java environment. The court The topics of the course includes exceptions, event handling, and building a graphical interface. Basic library methods, working in important topic is models of multithreaded applications and their implementation. Practical exercises of practical skills and known ks and semester work, which will be submitted continuously through the source code version control system. The semester work ciency of the code, as well as points that take into account the quality of the source codes, their readability and reusability. Solving Problems and other Games	rse also focus ( ng with files an owledge of Jav ork scoring con KZ compose the big	d using gi a is tested sists of p	ject conce eneric typ d in the foi oints for the 6 n, how to
of the Java language vill be introduced. Ar of solving partial task correctness and effic 34B33RPH The main motivation define interfaces, how	The basics of algorithms and programming from the first semester and introduces students to the Java environment. The court a. The topics of the course includes exceptions, event handling, and building a graphical interface. Basic library methods, working important topic is models of multithreaded applications and their implementation. Practical exercises of practical skills and known ks and semester work, which will be submitted continuously through the source code version control system. The semester work ciency of the code, as well as points that take into account the quality of the source codes, their readability and reusability. Solving Problems and other Games is to let students to deal with real-world problems properly. When working on real problems the student shall learn how to dece	rse also focus ( ng with files an owledge of Jav ork scoring con KZ compose the big y problem will n	d using g a is tested sists of p g problem ot be solv	ject conce eneric typ d in the fo oints for t <u>6</u> n, how to ved in the
of the Java language will be introduced. Ar of solving partial task correctness and effic B4B33RPH The main motivation define interfaces, how optimal way. The uns	The basics of algorithms and programming from the first semester and introduces students to the Java environment. The court a. The topics of the course includes exceptions, event handling, and building a graphical interface. Basic library methods, working important topic is models of multithreaded applications and their implementation. Practical exercises of practical skills and known ks and semester work, which will be submitted continuously through the source code version control system. The semester work ciency of the code, as well as points that take into account the quality of the source codes, their readability and reusability. Solving Problems and other Games is to let students to deal with real-world problems properly. When working on real problems the student shall learn how to decrew w to test and validate individual steps and so on. Many problems will actually be beyond the first-year-student skills. And many	rse also focus ( ng with files an owledge of Jav ork scoring con KZ ompose the bin y problem will n Ideally, at the e	d using g a is tested sists of p g problem ot be solvend of the	eneric typ d in the for oints for the 6 n, how to ved in the subject,
of the Java language will be introduced. Ar of solving partial task correctness and effic B4B33RPH The main motivation define interfaces, hor optimal way. The uns he student should be	The basics of algorithms and programming from the first semester and introduces students to the Java environment. The court The topics of the course includes exceptions, event handling, and building a graphical interface. Basic library methods, working in important topic is models of multithreaded applications and their implementation. Practical exercises of practical skills and known is and semester work, which will be submitted continuously through the source code version control system. The semester work is concy of the code, as well as points that take into account the quality of the source codes, their readability and reusability. Solving Problems and other Games is to let students to deal with real-world problems properly. When working on real problems the student shall learn how to decrew w to test and validate individual steps and so on. Many problems will actually be beyond the first-year-student skills. And many solved parts should motivate the students to study difficult theoretical subjects. They should generate the important questions.	rse also focus ( ng with files an owledge of Jav ork scoring con KZ ompose the bin y problem will n Ideally, at the e	d using g a is tested sists of p g problem ot be solvend of the	eneric typ d in the for oints for the 6 n, how to ved in the subject,
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f the Java language fill be introduced. An f solving partial task orrectness and effic 34B33RPH he main motivation efine interfaces, how ptimal way. The uns he student should be odes. 34BPROJ6 Code of the g lame of the cequirement credits in the lote on the g	In the basics of algorithms and programming from the first semester and introduces students to the Java environment. The course includes exceptions, event handling, and building a graphical interface. Basic library methods, workin important topic is models of multithreaded applications and their implementation. Practical exercises of practical skills and knows and semester work, which will be submitted continuously through the source code version control system. The semester we beine of the code, as well as points that take into account the quality of the source code, their readability and reusability. Solving Problems and other Games is to let students to deal with real-world problems properly. When working on real problems the student shall learn how to dece we to test and validate individual steps and so on. Many problems will actually be beyond the first-year-student skills. And many solved parts should motivate the students to study difficult theoretical subjects. They should generate the important questions. I e eager to study deeper about informatics. The course also explains the basis of the object oriented design, software testing, v unassisted project           group:         2015_BZAJ           group:         2015_BZAJ           group:         0           unassisted project         0	x se also focus on the second	d using g a is tester sists of p g problem ot be solvend of the g readable	eneric typ d in the for oints for the 6 n, how to ved in the subject, e and robu

	members)	•		•		
	Tutors, authors and guarantors (gar.)					
B0B04B1K	English language B1 - classified assessment Markéta Havlí ková, Pavla Péterová, Erik Peter Stadnik, Michael Ynsua, Dana Saláková, Petra Jennings <b>Petra Jennings</b> Petra Jennings (Gar.)	KZ	0	0C	Z,L	Р
B0B04B2Z	English language B2 - exam Michael Ynsua, Dana Saláková, Petra Jennings Petra Jennings Petra Jennings (Gar.)	Z,ZK	0	0C	Z,L	Р

# Characteristics of the courses of this group of Study Plan: Code=2015\_BZAJ Name=Exam from the english language

B0B04B1K	English language B1 - classified assessment	KZ	0				
verifying of the student	s skills of B1 level						
B0B04B2Z	English language B2 - exam	Z,ZK	0				
I) The B2 English Exam is a compulsory subject for all Faculty of Electrical Engineering students at the Czech Technical University. According to the Study and Examination Rules and							
Regulations for Student	s at CTU (Part III, Article 4), a compulsory subject is one "whose completion is a necessary condition in order to successfully	y complete the stu	udy programme."				
In addition, this requires	the "passing of an examination evaluated on the scale A, B, C, D, or E" (SERR Part III, Article 6). II) According to the Con	nmon European F	ramework of				
Reference for Language	es (CEFR), an international standard for describing language ability, the definition of an English language learner who has ach	ieved the B2 (Upp	er-Intermediate)				
level is one who "can	understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her fil	eld of specialisation	on. Can interact				
with a degree of fluency	r and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can product	ce clear, detailed	text on a wide				
range of subjects and e	xplain a viewpoint on a topical issue giving the advantages and disadvantages of various options." III) Students who have su	ccessfully passed	an approved				
international exam within	n the past five years may present their certificate to the Department of Languages, Faculty of Electrical Engineering.Upon a	oproval, students	are then exempt				
from both the Written Te	est and the Oral Part. For a list of approved international exams go the department website: http://jazyky.fel.cvut.cz/						

Name of the block: Compulsory courses of the specialization Minimal number of credits of the block: 30 The role of the block: PO

# Code of the group: 2015\_BOIPO3

Name of the group: Compulsory subjects of the branch

Requirement credits in the group: In this group you have to gain 30 credits

Requirement courses in the group: In this group you have to complete 5 courses

Credits in the group: 30

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
B4B36FUP	Functional Programming Niklas Maximilian Heim, Rostislav Hor ík Michal P chou ek Michal P chou ek (Gar.)	Z,ZK	6	2P+2C	L	PO
B4B39IUR	User interfaces implementation Zden k Mikovec, Miroslav Macík Miroslav Macík Zden k Míkovec (Gar.)	Z,ZK	6	2P+2S	Z	PO
B4B01JAG	Languages, Automats and Gramatics Marie Demlová, Ji í Demel Marie Demlová Marie Demlová (Gar.)	Z,ZK	6	2P+2S	Z	PO
B4B36ONM	Object-oriented design and Modeling	Z,ZK	6	2P+2C	Z	PO
B4B36SIN	Software Engineering Ji í Šebek, Martin Komárek Martin Komárek (Gar.)	Z,ZK	6	3P+2S	Z	PO

# Characteristics of the courses of this group of Study Plan: Code=2015\_BOIPO3 Name=Compulsory subjects of the branch

B4B36FUP Functional Programming Z.ZK This course introduces students into the techniques of functional programming, the advantages and disadvantages of this programming paradigm, and its use in practice. This approach is declarative in the sense that the programmer symbolically describes the problem to be solved, rather than specifying the exact sequence of operations required to solve it. It allows focusing on the essence of the solved problem and implementing even more complex algorithms compactly. Functional programming has notable advantages for parallelization and automated verification of algorithms, and the most useful functional programming concepts are increasingly often introduced to standard programming languages. Because of the focus of functional programming on symbols, rather than numbers, functional programming has been heavily used in in artificial intelligence fields, such as agent systems or symbolic machine learning. This course is also part of the inter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a deeper and broader insight into the field of artificial intelligence. More information is available at https://prg.ai/minor. B4B39IUR 6 Z,ZK User interfaces implementation Based on the user interface specification (created by design team), the student will be able to implement user interface and communicate efficiently with other stakeholders taking part in the whole process of design, testing, and implementation of the user interface. B4B01JAG Languages, Automats and Gramatics Z,ZK 6 Basic notions of the theory of finite automata and grammars: deterministic and non deterministic finite automata, languages accepted by finite automata, regular expressions. Grammars and languages generated by grammars with emphasis to context free grammars. A very brief introduction of Turing machines. B4B36ONM Object-oriented design and Modeling Z.ZK 6 B4B36SIN Software Engineering Z,ZK 6

Name of the block: Elective courses Minimal number of credits of the block: 0 The role of the block: V

# Code of the group: 2015\_BJKA Name of the group: English language courses Requirement credits in the group: Requirement courses in the group: Credits in the group: 0

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
B0B04A21	English Language A2-1 Dana Saláková	Z		2s	Z	V
B0B04A22	English Language A2-2 Dana Saláková	Z	0	2s	L	V
B0B04B11	English Language B1-1 Petra Jennings Petra Jennings (Gar.)	Z	0	2C	Z	V
B0B04B12	English Language B1-2 Petra Jennings Petra Jennings (Gar.)	Z	0	2C	L	V
B0B04B21	English Language B2-1 Petra Jennings Petra Jennings (Gar.)	Z	3	2C	Z	V
B0B04B22	English Language B2-2 Petra Jennings Petra Jennings (Gar.)	Z	3	2C	Z,L	V

Characteristics of the courses of this group of Study Plan: Code=2015\_BJKA Name=English language courses

B0B04A21	English Language A2-1	Z	
The course is oper	to students who are beginners in their second language. Course objective: Achieving competence in basic English.	1	1
B0B04A22	English Language A2-2	Z	0
The course is oper	to students who are beginners in their second foreign language. The course objective is to develop and sustain their basic know	ledge of the Engl	ish language.
B0B04B11	English Language B1-1	Z	0
Course objective: E	roadening the basic knowledge of general English; mastering basic specialised language; focusing on text analysis and vocabulary	, expansion; unde	rstanding spoker
English.			
B0B04B12	English Language B1-2	Z	0
Course objective: E	roadening the basic knowledge of general English; mastering basic specialised language; focusing on text analysis and vocabulary	, expansion; unde	rstanding spoker
English.			
B0B04B21	English Language B2-1	Z	3
This course is desi	gned as a full-year, two semester preparation course for the university's compulsory B2-level English Examination (Anglický jazyk	B2 - zkouška - B0	B04B2Z*). While
the course is focus	ed on helping students reach a level required to pass the B2-level English Examination (or improve their English for a higher mar	rk), it also focuses	more on the
academic and tech	nical vocabulary and grammar expected of students at the university level. *NOTE: This exam is also used for determining an appro	opriate level of En	glish for Erasmus
/ International Stud	у.		
B0B04B22	English Language B2-2	Z	3
This course is desi	gned as a full-year, two semester preparation course for the university's compulsory B2-level English Examination (Anglický jazyk	B2 - zkouška - B0	B04B2Z *). While
the course is focus	ed on helping students reach a level required to pass the B2-level English Examination (or improve their English for a higher mar	k), it also focuses	s more on the
academic and tech	nical vocabulary and grammar expected of students at the university level. *NOTE: This exam is also used for determining an appro	opriate level of En	glish for Erasmu
/ International Stud	у.		

Code of the group: BTV Name of the group: Physical education Requirement credits in the group: Requirement courses in the group:

Credits in the group: 0

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
TVV	Physical education	Z	0	0+2	Z,L	V
A003TV	Physical Education	Z	2	0+2	L,Z	V
TV-V1	Physical education	Z	1	0+2	Z,L	V
TVV0	Physical education	Z	0	0+2	Z,L	V

### Characteristics of the courses of this group of Study Plan: Code=BTV Name=Physical education

A003TV	Physical Education	Z	2
TVV	Physical education	Z	0
TV-V1	Physical education	Z	1
TVV0	Physical education	Z	0

Code of the group: BTVK

Name of the group: Physical education courses

Requirement credits in the group:

Requirement courses in the group:

Credits in the group: 0

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
TVKLV	Physical Education Course	Z	0	7dní	L	V
TVKZV	Physical Education Course	Z	0	7dní	Z	V

### Characteristics of the courses of this group of Study Plan: Code=BTVK Name=Physical education courses

TVKLV	Physical Education Course	Z	0
TVKZV	Physical Education Course	Z	0

Code of the group: 2015\_BOIVOL Name of the group: Elective subjects Requirement credits in the group: Requirement courses in the group: ~Nabídku volitelných předmětů uspořádaných podle kateder najdete na webových stránkách http://www.fel.cvut.cz/cz/education/volitelne-predmety.html\\

# List of courses of this pass:

Code	Name of the course	Completion	Credits
A003TV	Physical Education	Z	2
B0B01LAG	Linear Algebra	Z,ZK	8
	e initial parts of linear algebra. Firstly, the basic notions of a linear space and linear mappings are covered (linear dependence and inde matrices (determinants, inverse matrices, matrices of a linear map, eigenvalues and eigenvectors, diagonalisation, etc) is covered r solving systems of linear equations, the geometry of a 3D space (including the scalar product and the vector product) and SV	next. The applicati	
B0B01LGR	Logic anad Graphs	Z,ZK	5
This course covers ba	sics of mathematical logic and graph theory. Syntax and semantics of propositional and predicate logic are introduced. The importance and of the relationship between a formula and its model is stressed. Further, basic notions from graph theory are introduced		onsequence
B0B01MA1	Mathematical Analysis 1 The aim of the course is to introduce students to basics of differential and integral calculus of functions of one variable.	Z,ZK	7
B0B01MA2	Mathematical Analysis 2 an introduction to the differential and integral calculus in several variables and basic relations between curve and surface integrals. series and power series with application to Taylor and Fourier series.	Z,ZK Other part contair	7 ns function
B0B01PST	Probability and Statistics	Z,ZK	7
B0B04A21	English Language A2-1	Z	
	The course is open to students who are beginners in their second language. Course objective: Achieving competence in basic Er	nglish.	I
B0B04A22	English Language A2-2	Z	0
	to students who are beginners in their second foreign language. The course objective is to develop and sustain their basic knowled	lge of the English	language.
B0B04B11 Course objective: Bro	English Language B1-1 adening the basic knowledge of general English; mastering basic specialised language; focusing on text analysis and vocabulary exp English.	Z ansion; understan	0 ding spoken
B0B04B12	English Language B1-2	Z	0
	adening the basic knowledge of general English; mastering basic specialised language; focusing on text analysis and vocabulary exp English.		-
B0B04B1K	English language B1 - classified assessment verifying of the student's skills of B1 level	KZ	0
B0B04B21	English Language B2-1	Z	3
	ed on helping students reach a level required to pass the B2-level English Examination (or improve their English for a higher mark), cal vocabulary and grammar expected of students at the university level. *NOTE: This exam is also used for determining an appropria / International Study.		
B0B04B22	English Language B2-2	Z	3
the course is focuse	ed as a full-year, two semester preparation course for the university's compulsory B2-level English Examination (Anglický jazyk B2 - ed on helping students reach a level required to pass the B2-level English Examination (or improve their English for a higher mark), cal vocabulary and grammar expected of students at the university level. *NOTE: This exam is also used for determining an appropriate	it also focuses me	ore on the
	/ International Study.		-
B0B04B2Z	English language B2 - exam	Z,ZK	0
	am is a compulsory subject for all Faculty of Electrical Engineering students at the Czech Technical University. According to the Stud ents at CTU (Part III, Article 4), a compulsory subject is one "whose completion is a necessary condition in order to successfully con	-	
In addition, this req	uires the "passing of an examination evaluated on the scale A, B, C, D, or E…" (SERR Part III, Article 6). II) According to the Comm iges (CEFR), an international standard for describing language ability, the definition of an English language learner who has achieve	ion European Fran	mework of itermediate)
level is one who "c	an understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of ency and spontaneity that makes regular interaction with native speakers guite possible without strain for either party. Can produce of		
level is one who "c with a degree of flue range of subjects ar	an understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of ency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce on and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options." III) Students who have succes thin the past five years may present their certificate to the Department of Languages, Faculty of Electrical Engineering.Upon appro- from both the Written Test and the Oral Part. For a list of approved international exams go the department website: http://jazyky.fel.	clear, detailed text essfully passed an val, students are t	on a wide approved
level is one who "c with a degree of flue range of subjects ar	ency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options." III) Students who have succe thin the past five years may present their certificate to the Department of Languages, Faculty of Electrical Engineering Upon appro	clear, detailed text essfully passed an val, students are t	on a wide approved
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level is one who "…c with a degree of flue range of subjects ar international exam wi B0B16ET1   Aim of this subject is parts of th B0B16FI1   We deal with the n	ency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce on dexplain a viewpoint on a topical issue giving the advantages and disadvantages of various options." III) Students who have succes this the past five years may present their certificate to the Department of Languages, Faculty of Electrical Engineering. Upon approximation both the Written Test and the Oral Part. For a list of approved international exams go the department website: http://jazyky.fel. Ethic 1 to provide the students an orientation not only in general problems of ethics but above all to offer instructions for solving various situ ne subject are discussions in which students can react to lectures but also to actual questions coming with news and look for the compared to the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and look for the compared but also to actual questions coming with news and loo	clear, detailed text assfully passed an val, students are t cvut.cz/ KZ ations of human li immunal answers. KZ ophy and connection	: on a wide approved hen exempt 4 fe. Essential 4 on of old
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level is one who "…c with a degree of flue range of subjects ar international exam wi B0B16ET1 Aim of this subject is parts of the B0B16FI1 We deal with the m B0B16FIL	ency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce of a explain a viewpoint on a topical issue giving the advantages and disadvantages of various options." III) Students who have succes this in the past five years may present their certificate to the Department of Languages, Faculty of Electrical Engineering. Upon approximate the Written Test and the Oral Part. For a list of approved international exams go the department website: http://jazyky.fel. Ethic 1 to provide the students an orientation not only in general problems of ethics but above all to offer instructions for solving various situe a subject are discussions in which students can react to lectures but also to actual questions coming with news and look for the complexity of the problems of science, technology, economics and politics. Philosophy 1 nost important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nature of philosophy nost important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nature of philosophy is the problems of science, technology, economics and politics.	clear, detailed text essfully passed an val, students are t cvut.cz/ KZ ations of human li mmunal answers. KZ ophy and connection ZK	c on a wide approved hen exempt 4 fe. Essential 4 ion of old 2
level is one who "c with a degree of flue range of subjects ar international exam wi BOB16ET1 Aim of this subject is to parts of the BOB16FI1 We deal with the me BOB16FIL We deal with the me	ency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce of a explain a viewpoint on a topical issue giving the advantages and disadvantages of various options." III) Students who have succes this in the past five years may present their certificate to the Department of Languages, Faculty of Electrical Engineering. Upon approximately from both the Written Test and the Oral Part. For a list of approved international exams go the department website: http://jazyky.fel. Ethic 1 to provide the students an orientation not only in general problems of ethics but above all to offer instructions for solving various situe a subject are discussions in which students can react to lectures but also to actual questions coming with news and look for the complexity of the problems of science, technology, economics and politics.  Philosophy nost important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nature of philosophical thoughts with recent problems of science, technology, economics and politics.	clear, detailed text assfully passed an val, students are t cvut.cz/ KZ ations of human li mmunal answers. KZ ophy and connection ZK ophy and connection	: on a wide approved hen exempt 4 fe. Essential 4 ion of old 2 ion of old

B0B16MPL	Psychology for managers	ZK	2
B0B16MPS	Psychology	Z,ZK	4
B0B33OPT	Optimization	Z,ZK	7
The course provide	s an introduction to mathematical optimization, specifically to optimization in real vector spaces of finite dimension. The theory is illustrat	ed with a number o	of examples.
	You will refresh and extend many topics that you know from linear algebra and calculus courses.		
B0B35APO	Computer Architectures	Z,ZK	5
B0B36DBS	Database Systems	Z,ZK	6
	ned as a basic database course mainly aimed at the student ability to design a relational data model and to use the SQL language for		
data querying and	to choose the appropriate degree of transaction isolation. Students will also get acquainted with the most commonly used indexing t architecture and their management. They will verify their knowledge during the elaboration of a continuously submitted seminar	-	ise system
B0B36PJV	Programming in Java	Z,ZK	6
	on the basics of algorithms and programming from the first semester and introduces students to the Java environment. The course als	. '	1
	e. The topics of the course includes exceptions, event handling, and building a graphical interface. Basic library methods, working with	-	-
will be introduced. A	An important topic is models of multithreaded applications and their implementation. Practical exercises of practical skills and knowled	ge of Java is tested	d in the form
of solving partial ta	sks and semester work, which will be submitted continuously through the source code version control system. The semester work sc		oints for the
	correctness and efficiency of the code, as well as points that take into account the quality of the source codes, their readability and i	-	
B0B36PRP	Procedural Programming		6
	vanies basic programming emphasizing the data representation in computer memory. Furthermore, the concepts of linked data structur tudents master the practical implementation of simple individual tasks. The course emphasizes acquiring programming habits for crea		
	me time, the effort is to build students an overview of the program operation, data model, memory access, and management. Therefore	•	
	s a direct link between the program data structures and their representation in the computer memory. Students will get acquainted not		
and linking but also	with debugging and profiling. Labs aim to acquire practical skills of implementing simple individual tasks, emphasizing functionality an	d accuracy of impl	ementation.
	lence is developed by a set of homework with the possibility of optional and bonus assignments. The final task is an integration of a la		ng existing
	plementations. Evaluation of coding style motivated by writing legible, understandable, and maintainable codes is also a part of the su		
B4B01DMA	Discrete Mathematics	Z,ZK	5
	nts meet some important topics from the field of discrete mathematics. Namely, they will explore divisibility and calculations modulo n, igs, cardinality of sets, induction, and recurrence equations. The second aim of this course is to teach students the language of math		-
	actively, and introduce them to mathematics as science.	ematics, both pase	sivery and
B4B01JAG	Languages, Automats and Gramatics	Z,ZK	6
	theory of finite automata and grammars: deterministic and non deterministic finite automata, languages accepted by finite automata, re		1
	and languages generated by grammars with emphasis to context free grammars. A very brief introduction of Turing machine	:S.	
B4B33ALG	Algorithms	Z,ZK	6
	Igorithms development is constructed with minimum dependency to programming language; nevertheless the lectures and seminars		
types a data strue	ctures, basic algorithms, recursive functions, abstract data types, stack, queues, trees, searching, sorting, special application algorith	ms, Dynamic prog	ramming.
	Students are able to design and construct non-trivial algorithms and to evaluate their effectivity.	KZ	6
B4B33RPH	Solving Problems and other Games ion is to let students to deal with real-world problems properly. When working on real problems the student shall learn how to decomp		-
	how to test and validate individual steps and so on. Many problems will actually be beyond the first-year-student skills. And many pro		
	insolved parts should motivate the students to study difficult theoretical subjects. They should generate the important questions. Idea		
the student should	be eager to study deeper about informatics. The course also explains the basis of the object oriented design, software testing, ways f	or writing readable	and robust
	codes.		1
B4B35OSY	Operating Systems	Z,ZK	4
	operation system's basic concepts and principles as processes, threads, communication and synchronization, virtual memory, driver		
aspects. These top	ics are theoretically described and demonstrated on Linux and Windows OS with multi-core systems. Practical exercises from OS in be solved on labs. Students will work with Linux OS and micro-kernel NOVA.	C programming la	nguage will
B4B36FUP	Functional Programming	Z,ZK	6
	ces students into the techniques of functional programming, the advantages and disadvantages of this programming paradigm, and its		1
	sense that the programmer symbolically describes the problem to be solved, rather than specifying the exact sequence of operation		
focusing on the es	sence of the solved problem and implementing even more complex algorithms compactly. Functional programming has notable adva	ntages for paralleli	zation and
	ion of algorithms, and the most useful functional programming concepts are increasingly often introduced to standard programming lar		
	mming on symbols, rather than numbers, functional programming has been heavily used in in artificial intelligence fields, such as agent se is also part of the inter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a de		
	the field of artificial intelligence. More information is available at https://prg.ai/minor.		
B4B36ONM	Object-oriented design and Modeling	Z,ZK	6
B4B36PDV	Parallel and Distributed Computing	Z,ZK	6
B4B36SIN	Software Engineering	Z,ZK	6
B4B38PSIA	Computer Networks	Z,ZK	5
B4B39IUR	User interfaces implementation	Z,ZK	6
	nterface specification (created by design team), the student will be able to implement user interface and communicate efficiently with		1
	in the whole process of design, testing, and implementation of the user interface.		
B4BPROJ6	Unassisted project	Z	6
BBAP20	Bachelor thesis	Z	20
BE4B33SEA	Subject in english - abroad	Z,ZK	0
·	The subject serves for validation of the duty to complete at least one compulsory course of the program in English.	-	<u> </u>
BE4B35PSR	Real-time Systems Programming	Z,ZK	6
-	purse is to provide students with basic knowledge about software development for real-time systems, for example in control and embed		
	ed systems equipped with a real-time operating system (RTOS). Lectures will cover real-time systems theory, which can be used to for		
	other set of lectures will introduce methods and techniques used for development of safety-critical systems, whose failure may have nts will first solve a few simple tasks to familiarize them with basic components of VxWorks RTOS and to benchmark the used OS an	•	
<b>e</b> .	s represent the typical criteria for assessing the suitability of a given platform for the given application. After the simple tasks, students		
	itical motion control application which will require full utilization of RTOS features. All the tasks at the labs will be implemented in C (or		

BE4B36FUP This course introduc	Even etien et Des sus sussiin a	7 71	•
This course introduc	Functional Programming	Z,ZK	6
	ces students into the techniques of functional programming, the advantages and disadvantages of this programming paradigm, and its	use in practice. Th	is approach
is declarative in the	e sense that the programmer symbolically describes the problem to be solved, rather than specifying the exact sequence of operations	s required to solve	e it. It allows
focusing on the ess	sence of the solved problem and implementing even more complex algorithms compactly. Functional programming has notable advar	ntages for parallel	ization and
automated verification	ion of algorithms, and the most useful functional programming concepts are increasingly often introduced to standard programming lan	guages. Because	of the focus
1 0	mming on symbols, rather than numbers, functional programming has been heavily used in in artificial intelligence fields, such as agent		
learning. This cours	se is also part of the inter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a de	eper and broader	insight into
	the field of artificial intelligence. More information is available at https://prg.ai/minor.		
BE4B36ZUI	Introduction to Artificial Intelligence	Z,ZK	6
The aim of the cour	rse is to cover the basics of symbolic artificial intelligence. We will focus on algorithms of informed and uninformed state space search	, problem represe	entation and
	ation of knowledge using formal logic, methods of automated reasoning, and an introduction to Markov decision making, and to two-r		
also part of the in	nter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a deeper and broader insig	ght into the field o	f artificial
	intelligence. More information is available at https://prg.ai/minor.		
BE4B38PSIA	Computer Networks	Z,ZK	5
-	to principles and technologies of Computer Networks. Physical layer media, analog and digital modulations, network topologies, MAC		-
data communicati	ion models, coding and cryptography basics are introduced. Widely used LAN technologies are then presented together with their fea	tures. Internet pro	tocols are
r	explained and internetworking approaches are presented.		
BE4B39VGO	Creating graphic content	Z,ZK	6
	urse is to provide theory behind geometric modeling and modeling of materials, give students an overview of methods used in the pro-	-	
graphics and how to	p apply those methods in praxis. At the seminars, students will learn how to design and create three-dimensional scene, create and app	oly textures imitation	ng materials
r	(e.g., wall finishes, wood, sky) and geometrical details, and position and set-up lights in the scene.		
BE5B32PKS	Computer and Communication Networks	Z,ZK	6
The aim of the cour	rse is to familiarize students with current trends in the switched local networks and the key functions of routing protocols in IP network	s. The course is a	imed rather
<del>.</del>	primarily practically then theoretically.		
	Pottern Recognition and Machine Learning	Z.ZK	6
BE5B33RPZ	Pattern Recognition and Machine Learning	,	-
	ions of the statistical decision problem are presented. The necessary knowledge about the (statistical) relationship between observati	,	-
The basic formulati		ons and classes o	of objects is
The basic formulation acquired by learning	ions of the statistical decision problem are presented. The necessary knowledge about the (statistical) relationship between observations on the raining set. The course covers both well-established and advanced classifier learning methods, as Perceptron, AdaBoost, Sicourse is also part of the inter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a	ons and classes outport Vector Ma	of objects is chines, and
The basic formulati acquired by learnin Neural Nets. This c	ions of the statistical decision problem are presented. The necessary knowledge about the (statistical) relationship between observations on the raining set. The course covers both well-established and advanced classifier learning methods, as Perceptron, AdaBoost, Sicourse is also part of the inter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a into the field of artificial intelligence. More information is available at https://prg.ai/minor.	ons and classes oupport Vector Mag a deeper and broa	of objects is chines, and ader insight
The basic formulation acquired by learnin Neural Nets. This c BE5B35APO	ions of the statistical decision problem are presented. The necessary knowledge about the (statistical) relationship between observating on the raining set. The course covers both well-established and advanced classifier learning methods, as Perceptron, AdaBoost, Secourse is also part of the inter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a into the field of artificial intelligence. More information is available at https://prg.ai/minor.	ons and classes of upport Vector Mad a deeper and broa Z,ZK	of objects is chines, and ader insight
The basic formulation acquired by learnin Neural Nets. This c BE5B35APO Subject provides	ions of the statistical decision problem are presented. The necessary knowledge about the (statistical) relationship between observations of the raining set. The course covers both well-established and advanced classifier learning methods, as Perceptron, AdaBoost, Stourse is also part of the inter-university programme prg.ai Minor. It pools the best of AI education in Prague to provide students with a into the field of artificial intelligence. More information is available at https://prg.ai/minor.	ons and classes of upport Vector Mad a deeper and broa Z,ZK d in the previous le	of objects is chines, and ader insight 6 ectures of
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The basic formulation acquired by learnin Neural Nets. This constraints BE5B35APO Subject provides Structures of compu- and buses topologi	ions of the statistical decision problem are presented. The necessary knowledge about the (statistical) relationship between observations of the statistical decision problem are presented. The necessary knowledge about the (statistical) relationship between observations of the raining set. The course covers both well-established and advanced classifier learning methods, as Perceptron, AdaBoost, Si course is also part of the inter-university programme prg.ai Minor. It pools the best of Al education in Prague to provide students with a into the field of artificial intelligence. More information is available at https://prg.ai/minor. Computer Architectures overview of basic building blocks of computer systems. Explanation starts from hardware side where it extends knowledge presented uter systems. Topics cover building blocks description, CPU structure, multiple processors interconnections, input/output subsystem a ies. Emphasis is placed on clarification of interconnection of hardware components with software support, mainly lower levels of operate techniques. General principles are more elaborated during presentation of examples of multiple standard CPU architectures. Exercise	ons and classes of upport Vector Mar a deeper and broa Z,ZK d in the previous le and basic overview ating systems, de es are more focus	of objects is chines, and ader insight 6 ectures of v of network vice drivers
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