Study plan

Name of study plan: Cybernetics and Robotics 2016

Faculty/Institute/Others: Faculty of Electrical Engineering

Department:

Branch of study guaranteed by the department: Common courses

Garantor of the study branch:

Program of study: Cybernetics and Robotics

Type of study: Bachelor full-time

Required credits: 174
Elective courses credits: 6
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: 154

The role of the block: P

Code of the group: 2015_BKYRBAP Name of the group: Bachelor Project

Requirement credits in the group: In this group you have to gain 16 credits Requirement courses in the group: In this group you have to complete 1 course

Credits in the group: 16 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
BBAP16	Bachelor thesis	Z	16	15s	L,Z	Р

Characteristics of the courses of this group of Study Plan: Code=2015_BKYRBAP Name=Bachelor Project

DDAD16 Pacholar thasis 7 16					
BBAF 10 Bactieiot tilesis Z 10	BBAP16	Bachelor thesis		Z	16

Code of the group: 2015_BKYRBBE

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 Radek Havlí ek 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 Radek Havlí ek Vladimír K la (Gar.)	Z	0	2BP+2BC	Z	Р

Characteristics of the courses of this group of Study Plan: Code=2015_BKYRBBE 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.

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_BKYRP

Name of the group: Compulsory subjects of the programme

Requirement credits in the group: In this group you have to gain 138 credits

Requirement courses in the group: In this group you have to complete 25 courses

Credits in the group: 138

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
B3B04PSA	Academic Writing Petra Jennings, Jitka Pinková Jitka Pinková Petra Jennings (Gar.)	KZ	2	2C	Z	Р
B3B33ALP	Algorithms and programming Vojt ch Vonásek Vojt ch Vonásek Jan Kybic (Gar.)	Z,ZK	6	2P+2C	Z	Р
B0B35APO	Computer Architectures Petr Št pán, Pavel Píša, Richard Šusta Pavel Píša Pavel Píša (Gar.)	Z,ZK	5	2P+2L	L	Р
B3B35ARI	Automatic Control Michael Šebek Michael Šebek	Z,ZK	7	4P+2L	L	Р
B0B01DRN	Differencial Equations and Numerical Analysis Petr Habala, Daniel Gromada, Josef Dvo ák, Karel Pospíšil Petr Habala Petr Habala (Gar.)	Z,ZK	4	2P+2C	L	Р
B3B31EPO	Electronic devices and circuits Ji í Hospodka, Jan Havlík Ji í Hospodka Ji í Hospodka (Gar.)	Z,ZK	6	4P+2L	Z	Р
B3B02FY1	Physics 1 Michal Bedna ík, Petr Koní ek Michal Bedna ík Michal Bedna ík (Gar.)	Z,ZK	6	4P+1L+2C	L	Р
B3B02FY2	Physics 2 Michal Bedna ik Michal Bedna ik Michal Bedna ik (Gar.)	Z,ZK	6	3P+1L+2C	Z	Р
B3B01KAT	Complex Analysis and Transformations Martin Bohata Martin Bohata (Gar.)	Z,ZK	7	4P+2S	Z	Р
B3B38KDS	Communication and Distributed Systems Ji í Novák, Jan Holub Ji í Novák Ji í Novák (Gar.)	Z,ZK	6	4P+2L	Z	Р
B3B33KUI	Cybernetics and Artificial Intelligence Tomáš Svoboda, Petr Pošík Tomáš Svoboda Tomáš Svoboda (Gar.)	Z,ZK	6	2P+2C	L	Р
B0B01LAG	Linear Algebra Daniel Gromada, Josef Dvo ák, Ji í Velebil, Natalie Žukovec, Mat j Dostál Ji í Velebil Ji í Velebil (Gar.)	Z,ZK	8	4P+2S	Z	Р
B0B35LSP	Logic systems and processors Richard Susta, Martin Hlinovský Martin Hlinovský Zden k Hurák (Gar.)	Z,ZK	6	2P+2L	L	Р
B0B01LGR	Logic anad Graphs Natalie Žukovec, Mat j Dostál, Alena Gollová Alena Gollová Marie Demlová (Gar.)	Z,ZK	5	3P+2S	Z,L	Р
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	Р
B0B01MA2	Mathematical Analysis 2 Karel Pospíšil, Martin Bohata, Miroslav Korbelá, Petr Hájek, Jaroslav Tišer, Paola Vivi, Hana Tur inová Petr Hájek Jaroslav Tišer (Gar.)	Z,ZK	7	4P+2S	L,Z	Р
B0B33OPT	Optimization Tomáš Werner, Petr Olšák, Mirko Navara, Tomáš Kroupa Tomáš Werner Tomáš Werner (Gar.)	Z,ZK	7	4P+2C	Z,L	Р
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	Р
B3B04PRE	Petra Jennings, Jitka Pinková Jitka Pinková Petra Jennings (Gar.)	KZ	2	2C	L	Р
B3B36PRG	Programming in C Jan Faigl Jan Faigl (Gar.)	Z,ZK	6	2P+2C	L	Р
B3BPROJ4	Bachelor project Petr Pošík, Jana Kostlivá, Martin Hlinovský, Jana Zichová, Drahomíra Hejtmanová, Martin Šipoš, Tomáš Drábek, Kamila Krupková Martin Hlinovský (Gar.)	Z	4	4s	Z	Р
B3B35RO	Robots Michael Šebek	KZ	2	1P+2L	Z	Р
B3B33ROB	Robotics	Z,ZK	5	2P+2L	Z	Р
B3B38SME	Sensors and Measurements Vojt ch Petrucha, Pavel Ripka Vojt ch Petrucha Vojt ch Petrucha (Gar.)	Z,ZK	6	3P+2L	L	Р
B3B31SAS	Signals and systems Radoslav Bortel, Pavel Sovka, Tomáš Bo il Pavel Sovka Pavel Sovka (Gar.)	Z,ZK	5	2P+2C	Z	Р

Characteristics of the courses of this group of Study Plan: Code=2015_BKYRP Name=Compulsory subjects of the programme

B3B04PSA Academic Writing
Practically focused course in which students learn how or improve their ability to correctly and effectively formulate common written documents such as their own notes, research, reports, protocols, articles, etc. Students will be acquainted with the main principles of writing professional texts.

B3B33ALP	Algorithms and programming	Z,ZK	6
	udents a basic understanding of algorithms and programming and teach them to design, implement and test algorithms for s	•	
	of computational complexity. They will learn about basic program building blocks such as loops, conditional statements, varia	•	
	often used data structures (queue, stack, list, array etc) and operations on them. We will show the basic algorithms, for exam rite simple programs in Python.	ipie ioi searching a	na sorung.
B0B35APO	Computer Architectures	Z,ZK	5
B3B35ARI	Automatic Control	Z,ZK	7
	Automatic Control utomatic control. Introduction to basic concepts and properties of dynamic systems of physical, engineering, biological, ecor	1 ' 1	-
	of feedback and its use as a tool for altering the behavior of systems and managing uncertainty. Classical and modern meth		
automatic control syste	ms. Students specialized in systems and control will build on these ideas and knowledge in the advanced courses to follow.	Students of other be	ranches and
programs will find out th	nat control is an inspiring, ubiquitous and entertaining field worth of a future cooperation. Students? creativity is developed in	our laboratories.	
B0B01DRN	Differencial Equations and Numerical Analysis	Z,ZK	4
	students to the classical theory of ordinary differential equations (separable and linear ODEs) and also to bsics of numerical i	•	
	tions of algebraic and differential equations and their systems). The course takes advantage of the synnergy between theore	, 	
B3B31EPO	Electronic devices and circuits students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their ele	Z,ZK mentary application	6
	f electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of an		
to the use of cybernetic		.,	
B3B02FY1	Physics 1	Z,ZK	6
The basic course of phy	rsics at the Faculty of Electrical Engineering - Physics 1, is devoted to the introduction into two important areas of physics. Th	e first one is a class	sical mechanics
	ne electric and magnetic field. Within the framework of the classical mechanics, the students study the particle kinematics; dyr		·
•	gid bodies. The students should be able to solve basic problems dealing with the description of mechanical systems, which	-	-
	nechanics is followed by the relativistic mechanics, electric and magnetic field - both stationary as well as non-stationary. The		•
in this course in the students consecutive course Phy	dy of electrical circuits, theory of electrotechnical materials or radioelectronics. Apart of this, the knowledge gained in this co- rsics 2	urse is required for	ine study of the
B3B02FY2	Physics 2	Z.ZK	6
	ן רווין אונט ב s closely linked with the course Physics 1. Within the framework of this course the students will first of all learn foundations o	1 ' 1	-
	will give to the students basic insight into the properties of waves and will help to the students to understand that the present		
universal character in s	pite of the waves character. Particular types of waves, such as acoustic or optical waves are the subjects of the following sec	ction. Quantum med	hanics and
nuclear physics will con	nplete the student?s general education in physics. The knowledge gained in this course will help to the students in study of s	such modern areas	as robotics,
-	uring technique and will allow them to understand the principles of novel technologies and functioning of new electronic devices.		
B3B01KAT	Complex Analysis and Transformations	Z,ZK	7
B3B38KDS	Communication and Distributed Systems	Z,ZK	6
· ·	on communication principles used within the distributed systems (DS). Initially the physical layer media are described, includi	_	
	nodulation techniques. Information theory is introduced together with coding methods for error detection, correction and/or information to the control of th		-
· -	e explained (addressing, media access control, flow control, ARQ methods). Finally the most widely used distributed syste of TCP/IP protocols and typical distributed systems applications.	ems technologies ar	e presented
B3B33KUI	Cybernetics and Artificial Intelligence	Z,ZK	6
	the students into the field of artificial intelligence and gives the necessary basis for designing machine control algorithms. It	1 1	-
	s by including uncertainty in state transition. Students are introduced into reinforcement learning for solving problems when		-
which also connects the	e artificial intelligence and cybernetics fields. Bayesian decision task introduces supervised learning. Learning from data is d	emonstrated on a li	near classifier.
Students practice the a	Igoritms in computer labs.		
B0B01LAG	Linear Algebra	Z,ZK	8
	nitial parts of linear algebra. Firstly, the basic notions of a linear space and linear mappings are covered (linear dependence and	-	
	atrices (determinants, inverse matrices, matrices of a linear map, eigenvalues and eigenvectors, diagonalisation, etc) is cove	red next. The applic	cations include
	ar equations, the geometry of a 3D space (including the scalar product and the vector product) and SVD.	7.71	
B0B35LSP	Logic systems and processors computing resources, design, and architecture. It provides an overview of the possibilities of perform	Z,ZK	6
	computing resources basic nardware structures, design, and architecture, it provides an overview of the possibilities of perform bedded processor systems with peripherals on modern FPGA programmable logic circuits, which are increasingly widely us	•	
	om logic to more complex sequential circuits to practical finite state machine (FSM) designs. They will also master the correc		
· ·	blems are solved using development boards that hundreds of leading universities worldwide also use. The course ends with F		-
and pipeline processing	g. [last updated January 2024]	•	
B0B01LGR	Logic anad Graphs	Z,ZK	5
	cs of mathematical logic and graph theory. Syntax and semantics of propositional and predicate logic are introduced. The impor	tance of the notion	of consequence
	between a formula and its model is stressed. Further, basic notions from graph theory are introduced.	,	
B0B01MA1	Mathematical Analysis 1	Z,ZK	7
	s to introduce students to basics of differential and integral calculus of functions of one variable.		
B0B01MA2	Mathematical Analysis 2	Z,ZK	7
=	ntroduction to the differential and integral calculus in several variables and basic relations between curve and surface integrals with application to Taylor and Fourier series.	ais. Otner part conta	ains function
	s with application to Taylor and Fourier series.	ファレ	7
B0B33OPT The course provides an	Optimization or introduction to mathematical optimization, specifically to optimization in real vector spaces of finite dimension. The theory is illustrated in the optimization of the control of the co	Z,ZK	
· ·	end many topics that you know from linear algebra and calculus courses.	onatoa witi a Huilik	or or champies.
B0B01PST	Probability and Statistics	Z,ZK	7
B3B04PRE		KZ	2
B3B36PRG	Programming in C	Z,ZK	6
	ן ברוסקומודודוווק וודכ ain a deep, comprehensive knowledge of the C programming language in terms of program operation, access and memory r	1 1	_
	ations. The course emphasizes acquiring programming habits for creating readable and reusable programs. Students get ac	_	=
	eir debugging. Lectures are based on the presentation of basic software constructs and demonstration of motivational program	•	-
to the readability and st	ructure of source code, real computational complexity, and related tools for profiling and debugging. Students get acquainted	d with the principles	of parallel
	readed applications, synchronization mechanisms, and models of multi-threaded applications. At the end of the semester, the based of the semester is the semester of the semester of the semester is the semester of the semes	pasic features of the	object-oriented
C ++ extension are brie		<u>, </u>	
B3BPROJ4	Bachelor project	Z	4

B3B35RO	Robots	KZ	2				
B3B33ROB	Robotics	Z,ZK	5				
The course is an intro	The course is an introduction into industrial robotics with the emphasis on the industrial robots and manipulators. The robot kinematics is thoroughly studied. The student shall be able						
to choose, design, an	d program industrial robot and integrate it into the robotic cell after passing the course.						
B3B38SME	Sensors and Measurements	Z,ZK	6				
B3B31SAS	Signals and systems	Z,ZK	5				
The course focuses on explaining basic terms used for the description and analysis of determined signals and systems (including filters) in continuous- and discrete-time. The graduate							
will acquire a basic overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and discuss the results.							

Code of the group: 2015_BZAJ

Name of the group: Exam from the english language

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete 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
B0B04B1K	English language B1 - classified assessment Petra Jennings, Markéta Havlí ková, Pavla Péterová, Erik Peter Stadnik, Michael Ynsua, Dana Saláková Petra Jennings Petra Jennings (Gar.)	KZ	0	0C	Z,L	Р
B0B04B2Z	English language B2 - exam Petra Jennings, Michael Ynsua, Dana Saláková 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 studen	t'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 Students at CTU (Part III, Article 4), a compulsory subject is one "whose completion is a necessary condition in order to successfully complete the study 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 Common European Framework of Reference for Languages (CEFR), an international standard for describing language ability, the definition of an English language learner who has achieved the B2 (Upper-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 field of specialisation. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options." III) Students who have successfully passed an approved international exam within the past five years may present their certificate to the Department of Languages, Faculty of Electrical Engineering. Upon approval, students are then exempt from both the Written Test 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 elective courses

Minimal number of credits of the block: 20

The role of the block: PV

Code of the group: 2015_BKYRPV

Name of the group: Compulsory subjects of the programme

Requirement credits in the group: In this group you have to gain at least 16 credits (at most 24)

Requirement courses in the group: In this group you have to complete at least 4 courses (at most 6)

Credits in the group: 16

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
B3B14EPR	Electric Drive for Automation and Robotics Jan Bauer, Vít Hlinovský Vít Hlinovský	Z,ZK	4	2P+2L	L	PV
B3B35MSD	Modeling and simulation of dynamic systems Zden k Hurák, Ji í Zemánek Ji í Zemánek Zden k Hurák (Gar.)	Z,ZK	4	2P+2L	Z	PV
B3B38OTE	Circuit Technology Jan Holub Jan Holub (Gar.)	Z,ZK	4	2P+2L	L	PV
B3B35PAR	Programming of logic controllers and robots	Z,ZK	4	2P+2L	L	PV
B3B38VSY	Embedded Systems Vojt ch Petrucha, Jan Fischer Jan Fischer Jan Fischer (Gar.)	Z,ZK	4	2P+2L	Z	PV
B3B33VIR	Robot Learning	Z,ZK	4	2P+2L	Z	PV

Characteristics of the courses of this group of Study Plan: Code=2015_BKYRPV Name=Compulsory subjects of the programme

B3B14EPR	Electric Drive for Automation and Robotics	Z,ZK	4
The course gives a bri	ef overview of basic types of electric drives. It deals with drives with DC, asynchronous, synchronous and special motors including p	ower electronic co	nverters.Another
topics include control	strategies such as scalar, vector, direct, sensorless control of AC drives, pulse width modulation strategies and various load ty	pes. It is focused o	n understanding
the physical nature of	a given type of drive, general derivation of basic differential equations describing transient and steady states, and creating co	rresponding mathe	matical models
of analyzed systems s	uitable for both off-line simulation and online-adapted dynamic and real-time control using the basis of modern microprocessor	technology. Proble	ms of operating
states, sensors and d	agnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of	electromagnetic fie	ld, circuit theory
and control theory are	assumed.		
B3B35MSD	Modeling and simulation of dynamic systems	Z,ZK	4
B3B38OTE	Circuit Technology	Z,ZK	4
Basic types of circuits	and blocks of digital measuring instruments are described and analysed. Range and linearity for analogue circuits and interfa	ces for digital circu	its are analysed
in detail.			
B3B35PAR	Programming of logic controllers and robots	Z,ZK	4
B3B38VSY	Embedded Systems	Z,ZK	4
This subject is focuse	d on the embedded system design, especially using ARM Cortex-M based microcontrollers. The students need to solve two si	mple and two com	plex projects of
embedded system de	sign using microcontroller. These projects include both circuit and program realization.		
B3B33VIR	Robot Learning	Z,ZK	4
The course teaches a	pplication of machine learning methods and optimization on well-known robotic problems, such as semantic segmenation from	n RGB-D data or re	eactive motion
control. The core of th	e course represents teaching of deep learning methods. Stidents will use basic knowledge from optimization and linear algebi	ra such as robut so	lving of
overdetermined syste	ms of (non)linear (non)homogenous equations or gradient minimization methods. The labs are divided into two parts, in the firs	st one, the students	will solve basic

tasks in PyTorch, in the second one, individual semestral work.

Code of the group: 2015 BKYRLAB

Name of the group: Compulsory subjects of the programme

Requirement credits in the group: In this group you have to gain at least 4 credits (at most 12)

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

Credits in the group: 4 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
B3B35LAR	Laboratory of applied electronics and control Martin Hlinovský Martin Hlinovský Martin Hlinovský (Gar.)	KZ	4	0P+4L	L	PV
B3B38LPE	Laboratories of Industrial Electronics and Sensors Tomáš Drábek, Vojt ch Petrucha, Jan Fischer, Michal Janošek Vojt ch Petrucha Vojt ch Petrucha (Gar.)	KZ	4	0P+4L	L	PV
B3B33LAR	Laboratory of robotics Vladimir Petrik, Pavel Krsek, Libor Wagner Pavel Krsek Pavel Krsek (Gar.)	KZ	4	0P+4L	L	PV

Characteristics of the courses of this group of Study Plan: Code=2015_BKYRLAB Name=Compulsory subjects of the programme

B3B35LAR	Laboratory of applied electronics and control	KZ	4					
B3B38LPE	Laboratories of Industrial Electronics and Sensors	KZ	4					
The objective of the "L	The objective of the "Laboratories" is to introduce students in a playful and interactive way with basic blocks of an industrial sensor system - from the sensor itself, through signal							
processing circuits, and	processing circuits, analog to digital signal conversion, software processing by a microcontroller up to the sending of the results to the superior system or database and their presentation							
to the user within the o	to the user within the concept "Internet of Things".							
B3B33LAR	Laboratory of robotics	KZ	4					

During this laboratory courses the students are introduced with the practical robotics through solving of practical tasks. Students are working in laboratories in groups which consist of 3 or 4 members. During the semester, each group of students jointly solve one practical problem in the field of robotics. Tasks are designed to introduce students with robotics (manipulators and mobile robots). The students should utilize the basic knowledge obtained in previous study (eg. mathematics, physics, electronics, software development). Students can select specific task from few tasks with different specialization, which are announced each semester. Tasks differs between semesters. An integral part of the solution of the problem is cooperation and communication in the student team.

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_BKYRH

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	V
B0B16FIL	Philosophy Peter Zamarovský Peter Zamarovský (Gar.)	ZK	2	2P+0S	Z,L	V
B0B16FI1	Philosophy 1 Peter Zamarovský Peter Zamarovský (Gar.)	KZ	4	2P+2S	Z	V
B0B16HTE	History of technology and economic Marcela Efmertová, Jan Mikeš Marcela Efmertová (Gar.)	ZK	2	2P+0S	Z,L	V
B0B16HT1	History of science and technology 1 Marcela Efmertová, Jan Mikeš Marcela Efmertová (Gar.)	KZ	4	2P+2S	Z	V
B0B16HI1	History 1 Milena Josefovi ová Milena Josefovi ová Milena Josefovi ová (Gar.)	KZ	4	2P+2S	Z	V
B0B16MPS	Psychology Jan Fiala Jan Fiala (Gar.)	Z,ZK	4	2P+2S	Z,L	V
B0B16MPL	Psychology for managers Jan Fiala Jan Fiala (Gar.)	ZK	2	2P+0S	Z,L	V
A003TV	Physical Education	Z	2	0+2	L,Z	V

Characteristics of the courses of this group of Study Plan: Code=2015_BKYRH Name=Humanities subjects

B0B16ET1	Ethic 1	KZ	4
Aim of this subject i	is to provide the students an orientation not only in general problems of ethics but above all to offer instructions for solv	ving various situations of hum	an life. Essentia
parts of the subject	t are discussions in which students can react to lectures but also to actual questions coming with news and look for the	e communal answers.	
B0B16FIL	Philosophy	ZK	2
We deal with the m	nost important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nat	ure of philosophy and conne	ction of old
philosophical thoug	ghts with recent problems of science, technology, economics and politics.		
B0B16FI1	Philosophy 1	KZ	4
	1 mesophy i	1112	•
We deal with the m	nost important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nat		1 -
			1 -
	nost important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nat		1 -
philosophical thoug	nost important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nat ghts with recent problems of science, technology, economics and politics.	ure of philosophy and conne	1 -
philosophical thoug B0B16HTE	nost important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary national transdisciplinary national phis with recent problems of science, technology, economics and politics. History of technology and economic	ure of philosophy and conne	ction of old
philosophical thoug B0B16HTE B0B16HT1	nost important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary natights with recent problems of science, technology, economics and politics. History of technology and economic History of science and technology 1	ure of philosophy and conne	ction of old
philosophical thoug B0B16HTE B0B16HT1 B0B16HI1	nost important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary natights with recent problems of science, technology, economics and politics. History of technology and economic History of science and technology 1 History 1	ure of philosophy and conne	2 4 4

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

	0 1 7 = 0 0 0		
B0B04A21	English Language A2-1	Z	
The course is open to s	students who are beginners in their second language. Course objective: Achieving competence in basic English.		
B0B04A22	English Language A2-2	Z	0
The course is open to s	students who are beginners in their second foreign language. The course objective is to develop and sustain their basic knowl	edge of the Englis	sh language.
B0B04B11	English Language B1-1	Z	0
Course objective: Broad	lening the basic knowledge of general English; mastering basic specialised language; focusing on text analysis and vocabulary	expansion; under	standing spoken
English.			

B0B04B12 | English Language B1-2 | Z | 0 |
Course objective: Broadening the basic knowledge of general English; mastering basic specialised language; focusing on text analysis and vocabulary expansion; understanding spoken English.

B0B04B21 | English Language B2-1 | Z | 3 |
This course is designed as a full-year, two semester preparation course for the university's compulsory B2-level English Examination (Anglický jazyk B2 - zkouška - B0B04B2Z*). While the course is focused on helping students reach a level required to pass the B2-level English Examination (or improve their English for a higher mark), it also focuses more on the

This course is designed as a full-year, two semester preparation course for the university's compulsory B2-level English Examination (Anglický jazyk B2 - zkouška - B0B04B2Z*). While the course is focused on helping students reach a level required to pass the B2-level English Examination (or improve their English for a higher mark), it also focuses more on the academic and technical vocabulary and grammar expected of students at the university level. *NOTE: This exam is also used for determining an appropriate level of English for Erasmus / International Study.

This course is designed as a full-year, two semester preparation course for the university's compulsory B2-level English Examination (Anglický jazyk B2 - zkouška - B0B04B2Z *). While the course is focused on helping students reach a level required to pass the B2-level English Examination (or improve their English for a higher mark), it also focuses more on the academic and technical vocabulary and grammar expected of students at the university level. *NOTE: This exam is also used for determining an appropriate level of English for Erasmus / International Study.

Code of the group: BTV

B0B04B22

Name of the group: Physical education

English Language B2-2

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	٧
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_BKYRVOL Name of the group: Elective subjects Requirement credits in the group: Requirement courses in the group:

Credits in the group: 0

Note on 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
B0B01DRN	Differencial Equations and Numerical Analysis	Z,ZK	4
	ces students to the classical theory of ordinary differential equations (separable and linear ODEs) and also to bsics of numerical meth Il solutions of algebraic and differential equations and their systems). The course takes advantage of the synnergy between theoretic	*	
B0B01LAG	Linear Algebra	Z,ZK	8
	he initial parts of linear algebra. Firstly, the basic notions of a linear space and linear mappings are covered (linear dependence and independence)	-	
etc). The calculus of	of matrices (determinants, inverse matrices, matrices of a linear map, eigenvalues and eigenvectors, diagonalisation, etc) is covered solving systems of linear equations, the geometry of a 3D space (including the scalar product and the vector product) and S'		ons include
B0B01LGR	Logic anad Graphs	Z,ZK	5
This course covers	basics of mathematical logic and graph theory. Syntax and semantics of propositional and predicate logic are introduced. The importanc and of the relationship between a formula and its model is stressed. Further, basic notions from graph theory are introduce		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	Z,ZK	7
The subject cover	s an introduction to the differential and integral calculus in several variables and basic relations between curve and surface integrals	Other part contain	ns function
	series and power series with application to Taylor and Fourier series.		
B0B01PST	Probability and Statistics	Z,ZK	7
B0B04A21	English Language A2-1	Z	
<u> </u>	The course is open to students who are beginners in their second language. Course objective: Achieving competence in basic E	nglish.	·
B0B04A22	English Language A2-2	Z	0
	en to students who are beginners in their second foreign language. The course objective is to develop and sustain their basic knowle		
B0B04B11	English Language B1-1	Z	0
Course objective: B	roadening the basic knowledge of general English; mastering basic specialised language; focusing on text analysis and vocabulary exp English.	oansion; understan	ding spoken
B0B04B12	English Language B1-2	Z	0
Course objective: B	roadening the basic knowledge of general English; mastering basic specialised language; focusing on text analysis and vocabulary exp English.	bansion; understan	ding spoken
B0B04B1K	English language B1 - classified assessment verifying of the student's skills of B1 level	KZ	0
B0B04B21	English Language B2-1	Z	3
This course is design	gned as a full-year, two semester preparation course for the university's compulsory B2-level English Examination (Anglický jazyk B2	ı - zkouška - B0B04	B2Z*). While
academic and tech	used on helping students reach a level required to pass the B2-level English Examination (or improve their English for a higher mark) nical vocabulary and grammar expected of students at the university level. *NOTE: This exam is also used for determining an appropriation of the property of the propert	ate level of English	for Erasmus
the course is focu	English Language B2-2 gned as a full-year, two semester preparation course for the university's compulsory B2-level English Examination (Anglický jazyk B2 - used on helping students reach a level required to pass the B2-level English Examination (or improve their English for a higher mark) nical vocabulary and grammar expected of students at the university level. *NOTE: This exam is also used for determining an appropria / International Study.	, it also focuses m	ore on the
B0B04B2Z	English language B2 - exam	Z,ZK	0
	xam is a compulsory subject for all Faculty of Electrical Engineering students at the Czech Technical University. According to the Stu		I
Regulations for Stu	dents at CTU (Part III, Article 4), a compulsory subject is one "whose completion is a necessary condition in order to successfully co	mplete the study p	orogramme."
	equires the "passing of an examination evaluated on the scale A, B, C, D, or E" (SERR Part III, Article 6). II) According to the Comr uages (CEFR), an international standard for describing language ability, the definition of an English language learner who has achieve	-	
	.can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field	•	
	uency 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 succeptible to the post five years may present their postificate to the Department of Languages. Fearly of Electrical Engineering Linear approximations are recorded to the post five years may present their postificate to the Department of Languages.		
international exam	within the past five years may present their certificate to the Department of Languages, Faculty of Electrical Engineering. Upon appropriate the Written Test and the Oral Part. For a list of approved international example on the department website: http://iazy/y/y/fe		men exempt
DOD46FT4	from both the Written Test and the Oral Part. For a list of approved international exams go the department website: http://jazyky.fe		1
B0B16ET1	Ethic 1 s to provide the students an orientation not only in general problems of ethics but above all to offer instructions for solving various situ	KZ	4 fe Essential
· ·	the subject are discussions in which students can react to lectures but also to actual questions coming with news and look for the c		
B0B16FI1	Philosophy 1	KZ	4
	e most important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nature of philosophy.	I	1
DUD16EII	philosophical thoughts with recent problems of science, technology, economics and politics.	ZK	2
B0B16FIL We deal with the	Philosophy e most important persons, schools and ideas of ancient philosophy. We are concerned especially on transdisciplinary nature of philosophy. philosophical thoughts with recent problems of science, technology, accommiss, and politics.	I	2 ion of old
B0B16HI1	philosophical thoughts with recent problems of science, technology, economics and politics. History 1	KZ	4
B0B16HT1	History of science and technology 1	KZ	4
B0B16HTE	History of science and technology in	ZK	2
B0B16MPL	Psychology for managers	ZK	2
B0B16MPS	Psychology	Z,ZK	4

B0B33OPT	Optimization	Z,ZK	7
	es an introduction to mathematical optimization, specifically to optimization in real vector spaces of finite dimension. The theory is illustrated		1
	You will refresh and extend many topics that you know from linear algebra and calculus courses.		
B0B35APO	Computer Architectures	Z,ZK	5
B0B35LSP	Logic systems and processors	Z,ZK	6
ne course introdu	ices computing resources' basic hardware structures, design, and architecture. It provides an overview of the possibilities of performing dat	ta operations at	the hardwa
_	ng embedded processor systems with peripherals on modern FPGA programmable logic circuits, which are increasingly widely used too	=	
-	HDL, from logic to more complex sequential circuits to practical finite state machine (FSM) designs. They will also master the correct des		_
mulation. Practica	al problems are solved using development boards that hundreds of leading universities worldwide also use. The course ends with RISC-\	/ processor stru	cture, cache
DODONIKAT	and pipeline processing. [last updated January 2024]	7 71/	7
B3B01KAT	Complex Analysis and Transformations	Z,ZK	
B3B02FY1	Physics 1	Z,ZK	6
	of physics at the Faculty of Electrical Engineering - Physics 1, is devoted to the introduction into two important areas of physics. The first he is the electric and magnetic field. Within the framework of the classical mechanics, the students study the particle kinematics; dynamics		
of mass particles tudies. The classi	and rigid bodies. The students should be able to solve basic problems dealing with the description of mechanical systems, which they clical mechanics is followed by the relativistic mechanics, electric and magnetic field - both stationary as well as non-stationary. The stude the study of electrical circuits, theory of electrotechnical materials or radioelectronics. Apart of this, the knowledge gained in this course is consecutive course Physics 2.	can meet during ents can use the	their furthe facts gaine
B3B02FY2	Physics 2	Z,ZK	6
he course Physic	cs 2 is closely linked with the course Physics 1. Within the framework of this course the students will first of all learn foundations of therr	modynamics. Fo	lowing topi
the theory of way	ves - will give to the students basic insight into the properties of waves and will help to the students to understand that the presented de	scription of the	waves has
	cter in spite of the waves character. Particular types of waves, such as acoustic or optical waves are the subjects of the following section		
	will complete the student?s general education in physics. The knowledge gained in this course will help to the students in study of such		as robotics,
	mputer vision, measuring technique and will allow them to understand the principles of novel technologies and functioning of new electr		
B3B04PRE		KZ	2
B3B04PSA	Academic Writing	KZ	2
Practically focus	sed course in which students learn how or improve their ability to correctly and effectively formulate common written documents such as	their own notes	, research,
DOD4 4EDD	reports, protocols, articles, etc. Students will be acquainted with the main principles of writing professional texts.	7 71/	
B3B14EPR	Electric Drive for Automation and Robotics	Z,ZK	4
-	brief overview of basic types of electric drives. It deals with drives with DC, asynchronous, synchronous and special motors including power		
pics include cont	trol strategies such as scalar, vector, direct, sensorless control of AC drives, pulse width modulation strategies and various load types. It	is focused on ui	nderstandir
e physical nature	e of a given type of drive, general derivation of basic differential equations describing transient and steady states, and creating correspo	onding mathema	atical mode
analyzed system			
analyzod byblon	ns suitable for both off-line simulation and online-adapted dynamic and real-time control using the basis of modern microprocessor techn	-	of operatin
	ns suitable for both off-line simulation and online-adapted dynamic and real-time control using the basis of modern microprocessor techn Id diagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electro	ology. Problems	-
		ology. Problems	-
	d diagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electrons and diagnostics of electric drives are also discussed.	ology. Problems	-
B3B31EPO	d diagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electronal and control theory are assumed.	onlogy. Problems omagnetic field, Z,ZK	circuit theor
B3B31EPO The course introd	and diagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electronal control theory are assumed. Electronic devices and circuits duces students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their elements of electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis	ology. Problems omagnetic field, Z,ZK ary application.	circuit theor
B3B31EPO The course introduce basic fundame	and control theory are assumed. Electronic devices and circuits duces students to the basic principles and methods of analysis of electroal circuits. Defines the circuit elements and gives their elements of electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis to the use of cybernetics and control systems.	ology. Problems omagnetic field, Z,ZK ary application. of these circuits	6 It deals with
B3B31EPO The course introduce basic fundame B3B31SAS	didiagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electronic devices and control theory are assumed. Electronic devices and circuits duces students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their elements of electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis to the use of cybernetics and control systems. Signals and systems	Z,ZK ary application. of these circuits	6 It deals with respec
B3B31EPO The course introduce basic fundame B3B31SAS The course focuse	didiagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electronic devices and control theory are assumed. Electronic devices and circuits duces students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their elements of electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis to the use of cybernetics and control systems. Signals and systems es on explaining basic terms used for the description and analysis of determined signals and systems (including filters) in continuous- and	Z,ZK ary application. of these circuits Z,ZK	circuit theor 6 It deals with with respect
B3B31EPO The course introd ne basic fundame B3B31SAS he course focuse will acquire	didiagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electronic devices and control theory are assumed. Electronic devices and circuits duces students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their elements of electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis to the use of cybernetics and control systems. Signals and systems so on explaining basic terms used for the description and analysis of determined signals and systems (including filters) in continuous- and a basic overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and	Z,ZK ary application. of these circuits Z,ZK d discrete-time.	circuit theor 6 It deals with with respective to the graduat soults.
B3B31EPO The course introd ne basic fundame B3B31SAS the course focuse will acquire B3B33ALP	didiagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electronic devices and control theory are assumed. Electronic devices and circuits duces students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their elements of electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis to the use of cybernetics and control systems. Signals and systems so on explaining basic terms used for the description and analysis of determined signals and systems (including filters) in continuous- and a basic overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and Algorithms and programming	Z,ZK ary application. of these circuits Z,ZK d discrete-time. d discuss the reserved.	6 It deals with with respective graduates sults.
B3B31EPO The course introd ne basic fundame B3B31SAS he course focuse will acquire B3B33ALP This subject will	didiagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electronic devices and control theory are assumed. Electronic devices and circuits duces students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their elements of electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis to the use of cybernetics and control systems. Signals and systems es on explaining basic terms used for the description and analysis of determined signals and systems (including filters) in continuous- and a basic overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and Algorithms and programming I give students a basic understanding of algorithms and programming and teach them to design, implement and test algorithms for simple	Z,ZK ary application. of these circuits Z,ZK d discrete-time. Z,ZK	6 It deals with with respersion of the gradual sults. 6 udents will
B3B31EPO The course introd ne basic fundame B3B31SAS The course focuse will acquire B3B33ALP This subject will understand the no	In diagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electronic devices and control theory are assumed. Electronic devices and circuits duces students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their elements of electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis to the use of cybernetics and control systems. Signals and systems so on explaining basic terms used for the description and analysis of determined signals and systems (including filters) in continuous-and a basic overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and Algorithms and programming I give students a basic understanding of algorithms and programming and teach them to design, implement and test algorithms for simportion of computational complexity. They will learn about basic program building blocks such as loops, conditional statements, variables, to	Z,ZK ary application. of these circuits Z,ZK d discrete-time. Z,ZK d discrete-time. T,ZK ole tasks. The str	6 It deals with with respectively solution. 5 The graduate sults. 6 udents will solution. We
B3B31EPO The course introd ne basic fundame B3B31SAS he course focuse will acquire B3B33ALP This subject will understand the no	In diagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electrostic and control theory are assumed. Electronic devices and circuits Discuss students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their elements of electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis to the use of cybernetics and control systems. Signals and systems Busic overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and a habit overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and a habit overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and a habit overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and a habit of computational complexity. They will learn about basic program building blocks such as loops, conditional statements, variables, the most often used data structures (queue, stack, list, array etc) and operations on them. We will show the basic algorithms, for example	Z,ZK ary application. of these circuits Z,ZK d discrete-time. Z,ZK d discrete-time. T,ZK ole tasks. The str	6 It deals with with respectively solution. 5 The graduate sults. 6 udents will solution. We
B3B31EPO The course introd the basic fundame B3B31SAS the course focuse will acquire B3B33ALP This subject will understand the no will introduce the	In diagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electronic devices and control theory are assumed. Electronic devices and circuits Discuss students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their elements are the sents of electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis to the use of cybernetics and control systems. Signals and systems Es on explaining basic terms used for the description and analysis of determined signals and systems (including filters) in continuous-and a basic overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and a largorithms and programming I give students a basic understanding of algorithms and programming and teach them to design, implement and test algorithms for simple ofton of computational complexity. They will learn about basic program building blocks such as loops, conditional statements, variables, the most often used data structures (queue, stack, list, array etc) and operations on them. We will show the basic algorithms, for example Students will learn to write simple programs in Python.	Z,ZK ary application. of these circuits Z,ZK d discrete-time. Z,ZK d discrete-time. T,ZK le tasks. The str functions and re for searching ar	6 It deals with with respect to the graduate sults. 6 Undents will recursion. We not sorting.
B3B31EPO The course introd he basic fundame B3B31SAS he course focuse will acquire B3B33ALP This subject will understand the no will introduce the	In diagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electronic devices and control theory are assumed. Electronic devices and circuits	Z,ZK ary application. of these circuits Z,ZK d discrete-time. Z,ZK d discuss the reconstruction and reference for searching and Z,ZK	6 It deals with with respect to the graduate sults. 6 Undents will recursion. We not sorting.
B3B31EPO The course introduce basic fundame B3B31SAS the course focuse will acquire B3B33ALP This subject will understand the not will introduce the B3B33KUI The course introduce	In diagnostics of electric drives are also discussed. Basic knowledge of mathematics, mechanics, kinematics, dynamics, theory of electrose and control theory are assumed. Electronic devices and circuits Discuss students to the basic principles and methods of analysis of electrical circuits. Defines the circuit elements and gives their elements are the sof electronic systems based on analog as well as digital circuits. The course presents operational principles and methods of analysis to the use of cybernetics and control systems. Signals and systems Be so on explaining basic terms used for the description and analysis of determined signals and systems (including filters) in continuous- and a basic overview of the issues and learn how to work with concepts, perform simple analysis of systems and signals, and interpret and a largorithms and programming I give students a basic understanding of algorithms and programming and teach them to design, implement and test algorithms for simple often used data structures (queue, stack, list, array etc) and operations on them. We will show the basic algorithms, for example students will learn to write simple programs in Python. Cybernetics and Artificial Intelligence duces the students into the field of artificial intelligence and gives the necessary basis for designing machine control algorithms. It advantages and circuits and circuits and circuits and circuits. Defines the circuit elements and gives the necessary basis for designing machine control algorithms. It advantages and circuits. Defines the circuit elements and gives the necessary basis for designing machine control algorithms. It advantages and circuits. Defines the circuit elements and gives the necessary basis for designing machine control algorithms.	Z,ZK ary application. of these circuits Z,ZK d discrete-time. Z,ZK d discrete-time. T,ZK ble tasks. The str functions and re for searching ar Z,ZK nces the knowle	6 It deals with with respect to the graduate sults. 6 It deals with respect to the graduate sults. 6 It deals will excursion. We not sorting. 6 It does not state the graduate sults. 6 It does not sorting.
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B3B35MSD	Modeling and simulation of dynamic systems	Z,ZK	4
B3B35PAR	Programming of logic controllers and robots	Z,ZK	4
B3B35RO	Robots	KZ	2
B3B36PRG	Programming in C	Z,ZK	6
_	to gain a deep, comprehensive knowledge of the C programming language in terms of program operation, access and memory mana	-	
	applications. The course emphasizes acquiring programming habits for creating readable and reusable programs. Students get acqu		•
	nd their debugging. Lectures are based on the presentation of basic software constructs and demonstration of motivational programs w	•	
-	and structure of source code, real computational complexity, and related tools for profiling and debugging. Students get acquainted		-
programming of mu	ulti-threaded applications, synchronization mechanisms, and models of multi-threaded applications. At the end of the semester, the basic C++ extension are briefly presented.	reatures or the or	ject-onented
Danaokhe		Z,ZK	T 6
B3B38KDS	Communication and Distributed Systems sed on communication principles used within the distributed systems (DS). Initially the physical layer media are described, including c		6
•	ital modulation techniques. Information theory is introduced together with coding methods for error detection, correction and/or inform		
	ms are explained (addressing, media access control, flow control, ARQ methods). Finally the most widely used distributed systems	•	•
	together with the family of TCP/IP protocols and typical distributed systems applications.	gg	p
B3B38LPE	Laboratories of Industrial Electronics and Sensors	KZ	4
	the "Laboratories" is to introduce students in a playful and interactive way with basic blocks of an industrial sensor system - from the		ugh signal
	, analog to digital signal conversion, software processing by a microcontroller up to the sending of the results to the superior system or c		
	to the user within the concept "Internet of Things".		
B3B38OTE	Circuit Technology	Z,ZK	4
Basic types of circu	uits and blocks of digital measuring instruments are described and analysed. Range and linearity for analogue circuits and interfaces	for digital circuits	are analysed
	in detail.		
B3B38SME	Sensors and Measurements	Z,ZK	6
B3B38VSY	Embedded Systems	Z,ZK	4
This subject is foci	used on the embedded system design, especially using ARM Cortex-M based microcontrollers. The students need to solve two simple	e and two comple	x projects of
	embedded system design using microcontroller. These projects include both circuit and program realization.		
B3BPROJ4	Bachelor project	Z	4
BBAP16	Bachelor thesis	Z	16
BEZB	Safety in Electrical Engineering for a bachelor's degree	Z	0
	safety course is to give the students basic knowledge of electrical equipment and installation as to avoid danger arising from operatio		
contains funda	amentals of Safety Electrical Engineering. In this way the students receive qualification of instructed person that enables them to wor	k on electrical equ	ıipment.
BEZZ	Basic health and occupational safety regulations	Z	0
	re worked out based on The Training Scheme for Health and Occupational Safety designed for employees and students of the Czech		
which was provide	ed by the Rector's Office of the CTU. Safety is considered one of the basic duties of all employees and students. The knowledge of He	ealth and Occupat	ional Safety
	regulations forms an integral and permanent part of qualification requirements. This program is obligatory.		_
TV-V1	Physical education	Z	1
TVKLV	Physical Education Course	Z	0
TVKZV	Physical Education Course	Z	0
TVV	Physical education	Z	0
TVV0	Physical education	Z	0

For updated information see http://bilakniha.cvut.cz/en/f3.html Generated: day 2024-05-19, time 21:58.