## Study plan

## Name of study plan: BS Aplikovaná informatika

Faculty/Institute/Others: Department: Branch of study guaranteed by the department: Welcome page Garantor of the study branch: Program of study: Applications of Natural Sciences Type of study: Bachelor full-time Required credits: 155 Elective courses credits: 25 Sum of credits in the plan: 180 Note on the plan:

Name of the block: Compulsory courses of the specialization Minimal number of credits of the block: 155 The role of the block: PO

Code of the group: BSAPINPP1 Name of the group: BSAPIN - povinné p edm ty 1. ro ník Requirement credits in the group: In this group you have to gain at least 54 credits Requirement courses in the group: In this group you have to complete at least 20 courses Credits in the group: 54 Note on the group:

Note on the g						
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
02DEF1	History of Physics 1 Igor Jex, Miroslav Myška Miroslav Myška Igor Jex (Gar.)	Z	2	2+0	Z	PO
02FYZ1	Physics 1 Jaroslav Biel ík	Z,ZK	3	2+1	Z	PO
02FYZ2	Physics 2 Jaroslav Biel ík	Z,ZK	3	2+1	L	PO
01MATZ1	Mathematics, Examination 1 Radek Fu ík Radek Fu ík Radek Fu ík (Gar.)	ZK	2	-	Z	PO
01MATZ2	Mathematics, Examination 2 Radek Fu ík, Mat j Tušek Mat j Tušek Radek Fu ík (Gar.)	ZK	2	-	L	PO
01MAT1	Mathematics 1 Radek Fu ík Radek Fu ík Radek Fu ík (Gar.)	Z	4	3P+3C	Z	PO
01MAT2	Mathematics 2 Radek Fu ík Radek Fu ík Radek Fu ík (Gar.)	Z	4	3P+3C	L	PO
12PIN1	Practical Informatics for Technics 1 Milan Kucha ík, Richard Liska Milan Kucha ík Milan Kucha ík (Gar.)	Z	2	1+1	L	PO
00PT	Preparatory Week Petr Ambrož, Milan Krbálek Petr Ambrož Petr Ambrož (Gar.)	Z	2	týden	Z	PO
01PSL	LaTeX - Publication Instrument Petr Ambrož Petr Ambrož Petr Ambrož (Gar.)	Z	2	0+2	L	PO
04ABKK	Course in Communication Skills - Examination	ZK	3		L	PO
04ABK1	Course in Communication Skills 1	Z	2	0+2	Z	PO
04ABK2	Course in Communication Skills 2	Z	2	0+2	L	PO
04ABS1	Course in Language Structures 1	KZ	3	0+2	Z	PO
04ABS2	Course in Language Structures 2	KZ	3	0+2	L	PO
04ABUK	Introduction to English for Specific Purposes - Examination	ZK	3		L	PO
04ABU1	Introduction to English for Specific Purposes 1	Z	2	0+2	Z	PO
04ABU2	Introduction to English for Specific Purposes 2	Z	2	0+2	L	PO
18ZALG	Basics of Algorithmization Petr Pauš, Vladimír Jarý, František Vold ich, Miroslav Virius, František Gašpar, Zuzana Pet í ková Vladimír Jarý Miroslav Virius (Gar.)	Z,ZK	4	2+2	L	PO

18ZPROBasics of Programming Maksym Dreval, Petr Pauš, Vladimír Jarý, František Vold ich, Miroslav Virius, Zuzana Pet í ková, Jakub Klinkovský, Jan Tomsa Miroslav Virius Miroslav Virius (Gar.)	Z	4	4C	Z	PO
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Characteristics of	the courses of this group of Study Plan: Code=BSAPINPP1 Name=BSAPIN - povinné p ed	lm ty 1. ro ní	í <b>k</b>
02DEF1	History of Physics 1	Z	2
Physics and its place in	the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural ph	ilosophers, Aristo	tle. Physics in
Helenistic period, Archi	med. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galilec	, Huygens. The bi	rth of physics
as experimental scienc	e. Newton and his work.		
02FYZ1	Physics 1	Z,ZK	3
History, principles and a	applications of mechanics, waves and thermodynamics ? basic level. The lecture is supplemented with practical investigation		n of selected
physical phenomena			
02FYZ2	Physics 2	Z,ZK	3
	ricity and magnetism, modern physics. The lecture is supplemented with practical investigation and demonstration of selecter		nena.
01MATZ1	Mathematics, Examination 1	ZK	2
01MATZ2	Mathematics, Examination 2	ZK	2
01MAT22		Z	4
	Mathematics 1	- 1	
	o the study of the basics of calculus of one variable. It includes an introduction to differential and integral calculus, with partic	ulai emphasis on	applications in
practical problems.		7	
01MAT2	Mathematics 2	Z	4
	e continuation of Mathematics 1, is devoted to the integration techniques, improper Riemann integral, introduction to paramet	ric curves (especi	ally in polar
	s of sequences and infinite series, and finally to the Taylor and power series and their applications.	- 1	
12PIN1	Practical Informatics for Technics 1	Z	2
	g systems. Personal computer, workstation and supercomputers. Processor, memory, bus, devices, hard disk, network interfa		
	ystems. Requirements on operating system for research and technical computing. Operating system UNIX. Basic principles, kern		
	s, working with files. Text editors: vi, emacs. Command interpreter (shell) sh, csh and its programming (scripts). Controlling pro		
	s. Standard tools. Graphical user interface X-windows. Computer networks. Local computer networks. Global computer netwo	rks: Internet. Addr	esses and
	ork configutation of a computer. Network services: hardware sharing, mail, ftp, etc. Network applications	- 1	
00PT	Preparatory Week	Z	2
01PSL	LaTeX - Publication Instrument	Z	2
The course is devoted t	o the basics and facilities of computer typography, particularly to the system LaTeX		
04ABKK	Course in Communication Skills - Examination	ZK	3
The course content is t	ne examination as given by the study plan. The examination tests how well student has mastered vocabulary and facts of cou	rses 04APK1 and	04APK2. The
examination consists of	two parts - written (duration 100 minutes), and oral (about 30 minutes).		
04ABK1	Course in Communication Skills 1	Z	2
The course will develop	communication strategy and skills of student acquired at secondary school or elsewhere. Competence at B1 level of CEFR	s a prerequisite fo	or registering for
the course. It runs for 3	semesters, being a core course of the Applied Information Technology programme. It will develop student's communication s	kills in an integral	form (e.g.,
listening and discussion	n on a topic). The list of topics is similar to that of the State Language Examination. Student will develop their vocabulary for v	arious communica	ation situations
and will master their co	mmunication strategy. He/she will be trained to express his/her ideas clearly and according to current English usage.		
04ABK2	Course in Communication Skills 2	Z	2
The course is also cond	zerned with developing speaking skills in English acquired at secondary school and course 04APK1. Speaking skills will be t	ained alongside lis	stening skills.
Topics will concentrate	on everyday life and cover topics of the State Language Examination, stressing mastery of speaking strategy in various situa	tions. The course	will emphasise
developing student's vo	pcabulary, ability to express thoughts with accuracy in correct English.		
04ABS1	Course in Language Structures 1	ΚZ	3
The course is designed	to instruct how to correctly use and to revise English grammar structures acquired by student at secondary school, develop	them, view them a	is a system of
communication and stre	engthen them. The required level for registration is B1 of CEFR. The course stresses mainly frequency of structures and those	e difficult to maste	r by Czech
students.			
04ABS2	Course in Language Structures 2	ΚZ	3
	a sequel to course 04APS1. Its purpose is also to correctly use and revise further English grammar structures as acquired ar	·	Ũ
04ABUK	Introduction to English for Specific Purposes - Examination	ZK	3
	he examination as given by the study plan. Examination 04APUK consists of two parts - written part (duration 100 minutes) a		
	2-semester programme. To be eligible for examination, student will have passed courses 04APU1 and 04APU2 and the exami		
	n use the acquired basic knowledge and skills typical of English for Specific Purposes (ESP).		
04ABU1	Introduction to English for Specific Purposes 1	Z	2
	e student into English for Specific Purposes (ESP) and acquaint him/her with its functions in subtechnical or easy technical t	I I	
	P and it introduces student to basic mathematics and information technology terms.	exis. It brilligs voca	abulary and
		Z	2
04ABU2	Introduction to English for Specific Purposes 2		
	a sequel to course 04APU, concentrating more thoroughly on ESP text content, text grammar and vocabulary. It introduces mad information technology terms	iore auvanceu fun	cuons typical of
	ed information technology terms.	7 71/	
18ZALG	Basics of Algorithmization	Z,ZK	4
	to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of the		-
18ZPRO	Basics of Programming	Z	4
	mainly for students with little or no experience in programming. It familiarizes the students with the basic concepts in program	nming and with the	e Python
programming language			

Code of the group: BSAPINPP2

Name of the group: BSAPIN - povinné p edm ty 2. ro ník

Requirement credits in the group: In this group you have to gain at least 50 credits

#### Credits in the group: 50 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)	Completion	Credits	Scope	Semester	Role
	Tutors, authors and guarantors (gar.)					
04ABA	Course in Applied English Usage Hana ápová	Z	2	0+2	L	PO
04ABAK	Course in Applied English Usage - Examination	ZK	3		L	PO
01DIM1	Discrete Mathematics 1 Edita Pelantová, Zuzana Masáková, Lubomíra Dvo áková Lubomíra Dvo áková Zuzana Masáková (Gar.)	Z	2	2P+0C	Z	PO
01DIM2	Discrete Mathematics 2 Edita Pelantová, Zuzana Masáková Zuzana Masáková Zuzana Masáková (Gar.)	Z	2	2P+0C	L	PO
04ABR1	Life and Institutions of English Speaking Countries and the CR 1 Jana Ková ová	Z	2	0+2	L	PO
01LAWA	Linear Algebra with Applications	ZK	2	2+0	L	PO
01MAT3	Mathematics 3 David Krej i ík, Severin Pošta David Krej i ík (Gar.)	Z,ZK	4	2+2	Z	PO
01MAT4	Mathematics 4	Z,ZK	4	2+2	L	PO
04ABOK	Mat j Tušek Mat j Tušek (Gar.)           Text Analysis and Comperhension - Examination	ZK	3		L	PO
04ABO1	Hana ápová Text Analysis and Comprehension 1	Z	2	0+2	Z	PO
04ABO2	Text Analysis and Comprehension 2	Z	2	0+2	L	PO
12PIN2	Practical Informatics for Technics 2	Z	2	1+1	Z	PO
12PIN3	Milan Ši or Milan Ši or Milan Ši or (Gar.) Practical Informatics for Technics 3	Z	2	1+1	L	PO
18PRC1	Milan Ši or Milan Ši or Milan Ši or (Gar.) Programming in C++ 1 Vladimír Jarý, Miroslav Virius Miroslav Virius Miroslav Virius (Gar.)	Z	4	2+2	Z	PO
18PRC2	Programming in C++ 2 Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)	КZ	4	2+2	L	PO
04AB3KK	Course in Communication Skills- Final Examination	ZK	3		Z	PO
04ABK3	Course in Communication Skills 3	Z	2	0+2	Z	PO
04ABSK	Course in Langugae Structures - Final Examination	ZK	3		Z	PO
04ABS3	Course in Language Structures 3	Z	2	0+2	Z	PO
04ABA C To sign in for the course, st	e courses of this group of Study Plan: Code=BSAPINPP2 Name ourse in Applied English Usage udent will have passed final examination in Course in Language Structures (04APSK). T and ESP language situations, laying stress on choice of exact and adequate language	he course conclu	des study of	f grammar s	Z tructures and a	
04ABAK C	ourse in Applied English Usage - Examination				ZK	3
The course content is the e - 100 minutes, oral part - c	examination as given by the study plan. Written and oral parts of the examination test sk	ills and knowledg	e acquired i	n course 04	APA. Duration:	written
	iscrete Mathematics 1				Z	2
	elementary number theory and applications. It includes individual problem solving.				Z	2
	recurrence relations. It includes individual problem solving.				Z	
	ife and Institutions of English Speaking Countries and the CR 1 paring the student for the state language examination and is based on topics required for	or this examinatio	n. Great em	 phasis is pla		2 g oral
	English speaking-countries in comparison with the Czech Republic. The course covers	one third of topics	s for the stat	te language		
1	inear Algebra with Applications ic domains of linear algebra and their applications in economy and other disciplines. The	alanguage of inst	ruction is Fr	 alish	ZK	2
	lathematics 3	. anguage of mot	JULION IS LI	-	Z,ZK	4
The subject summarises th	ne most important notions and theorems related to the study of finite-dimensional vector	spaces.				
1	lathematics 4 rential equations of the first order. Linear differential equations of higher order with const	ant coefficients.	lultivariable		Z,ZK	4 ns.
The course content is the e	ext Analysis and Comperhension - Examination examination as given by the study plan. To be eligible to take the examination students w of two parts: written (duration 100 minutes) and oral (about 30 minutes). Students will pr			ed the 04AF		
both courses. 04ABO1 Te	ext Analysis and Comprehension 1				Z	2
U U U U U U U U U U U U U U U U U U U				1	-	∠ glish for

		,						
04ABO2	Text Analysis and Comprehension 2	Z	2					
The course is a sequel to course 04APO1 and focuses on guided writing (e.g., note-taking, précis, abstract). It is intended as preparation for writing the bachelor's project by developing								
text grammar practice and acquainting with basics of English punctuation.								
12PIN2	Practical Informatics for Technics 2	Z	2					
Practically oriented thre	e semester course of basics and applications of informatics for science and engineering included as obligatory alternative co	urse. Constituent	part is realized					
in computer classrooms	. The second part of the course is "Introduction to computer algebra systems?.							
12PIN3	Practical Informatics for Technics 3	Z	2					
Practically oriented thre	e semester course of basics and applications of informatics for science and engineering included as obligatory alternative co	urse. Constituent	part is realized					
in computer classrooms	. The third part of the course is "Introduction to scientific computing?.							
18PRC1	Programming in C++ 1	Z	4					
This course covers main	hly the C programming language and non-object oriented features of the C++ language.							
18PRC2	Programming in C++ 2	KZ	4					
This course covers the c	object oriented programming and othesr advanced constructs in the C+;+ programming language and the Standard Template	Library.						
04AB3KK	Course in Communication Skills- Final Examination	ZK	3					
The course content is th	e examination as given by the study plan. Final examination 04AP3KK covers syllabi of all three courses in communication sk	cills. It is usually o	ral, but a written					
test may be administere	d. Examination requirements are similar to those of state examination. Student will be able to engage in communication and d	discussion on a g	iven topic, using					
appropriate vocabulary	and grammar structures.							
04ABK3	Course in Communication Skills 3	Z	2					
The last semester of co	nversation course. Student will further develop his/her speaking skills to be able to use English competently, speak about topi	cs covered by pre	evious courses					
without making mistakes	s and making use of appropriate vocabulary.							
04ABSK	Course in Langugae Structures - Final Examination	ZK	3					
The course content is th	e examination as given by the study plan. To register for final examination 04APSK student will have passed a 3-semester pr	ogramme compri	sing courses					
04APS1, 04APS2, and	04APS3. It consists of two parts: written (duration 100 minutes) and oral (duration about 30 minutes). Student will demonstrat	e he/she has ma	stered English					
grammar and can reliably use it in practice as well as explain why a rule applies.								
04ABS3	Course in Language Structures 3	Z	2					
The course 04APS3 is a sequel to course 04APS2. Its purpose is also to correctly use and revise further English grammar structures as acquired by student, to develop them and use								
in practice.								

#### Code of the group: BSAPINPP3

Name of the group: BSAPIN - povinné p edm ty 3. ro ník

Requirement credits in the group: In this group you have to gain at least 51 credits Requirement courses in the group: In this group you have to complete at least 17 courses Credits in the group: 51

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
01BPAI1	Bachelor's Degree Project 1 Pavel Strachota, Václav K s Pavel Strachota Pavel Strachota (Gar.)	Z	5	0+5		PO
01BPAI2	Bachelor's Degree Project 2 Pavel Strachota Pavel Strachota Pavel Strachota (Gar.)	Z	10	0+10		PO
01EIGR	Elementary Introduction to Graph Theory Petr Ambrož Petr Ambrož Zuzana Masáková (Gar.)	KZ	2	2+0	Z	PO
04ABJP	Language Support to Bc Project Eliška Rafajová Jana Ková ová	Z	5	0+1	L,Z	PO
01KAP	Combinatorics and Probability Václav K s Václav K s Václav K s (Gar.)	ZK	2	2+0	Z	PO
04ABRK	Life and Institutions of English Speaking Countries and the CR 1	ZK	3		Z	PO
04ABR2	Life and Institutions of English Speaking Countries and the CR 2	Z	3	0+4	Z	PO
01POGR1	Computer Graphics 1 Pavel Strachota Pavel Strachota (Gar.)	Z	2	2	Z	PO
01POGR2	Computer Graphics 2 Pavel Strachota Pavel Strachota (Gar.)	Z	2	2	L	PO
01SITE1	Computer Networks 1 Miroslav Minárik Miroslav Minárik Miroslav Minárik (Gar.)	Z	2	1+1	Z	PO
01SITE2	Computer Networks 2 Miroslav Minárik Miroslav Minárik Miroslav Minárik (Gar.)	Z	2	1+1	L	PO
04ABI	Presentation Course Hana ápová	Z	3	0+2	Z	PO
01PW	Windows Programming Zden k ulík Zden k ulík Zden k ulík (Gar.)	Z	2	2+0	Z	PO
01BSEM	Bachelor Seminar Pavel Strachota Pavel Strachota (Gar.)	Z	2	0+2	L	PO
01TIGR	Trivial Introduction to Graph Theory Petr Ambrož	Z	2	2+0		PO
01UOP	Introduction to Object Programming Zden k ulík Zden k ulík Zden k ulík (Gar.)	ZK	2	0+2		PO

01UTI	Introduction to Computer Science Petr Ambrož Petr Ambrož Petr Ambrož (Gar.)	KZ	2	2+0	L	PO
01ZOS	Introduction to Operating Systems Zden k ulík Zden k ulík Zden k ulík (Gar.)	Z	2	2+0	L	PO
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Characteristics of	the courses of this group of Study Plan: Code=BSAPINPP3 Name=BSAPIN - povinné p ed	m ty 3. roní	k
01BPAI1	Bachelor's Degree Project 1	Z	5
Bachelor's Degree proje	ct on the selected topic under the supervision. Supervision and regular checking of the bachalor project under preparation.		
01BPAI2	Bachelor's Degree Project 2	Z	10
Bachelor's Degree proje	ct on the selected topic under the supervision. Supervision and regular checking of the bachalor project under preparation.	·	
01EIGR	Elementary Introduction to Graph Theory	KZ	2
The course provides an	explanation of basic graph theory followed by a survey of common graph algorithms.	I	
04ABJP	Language Support to Bc Project	Z	5
To sign in for the course	students will have passed all the English courses from the previous 5 semesters. The course instructs students in the strategy	of writing, submit	ing, presenting,
and defending the Bach	elor Project in English. Their progress is continuously monitored and assessed. To finish the course, students will give a pres	entation of their B	achelor Project.
01KAP	Combinatorics and Probability	ZK	2
The course is devoted to	o combinatorial rules, definition of the probability, explication of random variable and its characteristics. It explains term of dis	ribution function	and examples
of discrete and continuo	us random variables are mentioned. Emphasis is placed on using of these terms and rules.		
04ABRK	Life and Institutions of English Speaking Countries and the CR 1	ZK	3
The course content is th	e examination as given by the study plan. To be eligible to take the examination students will have successfully completed th	e 04APR1 and 04	APR2.courses
The examination consist	is of two parts: written (duration 100 minutes) and oral (about 30 minutes). Students will prove they can use and apply the kn	owledge and skills	s acquired in
both courses.			
04ABR2	Life and Institutions of English Speaking Countries and the CR 2	Z	3
The course following the	04APR1 course is again aimed at preparing the student for the state language examination and is based on topics required for	this examination.	Great emphasis
is placed on training ora	I presentation of facts about English speaking-countries in comparison with the Czech Republic. The course covers two remains	ining thirds of top	ics for the state
language examination.			
01POGR1	Computer Graphics 1	Z	2
The first part of the two-	semester "Computer Graphics" course is devoted to the specifics of digital display devices spanning from history up to the stat	e of the art technology	ologies. Further,
	problems in 2D computer graphics is given together with their solutions. Focus is put on mathematical description of problems and		
	dge previously obtained in a variety of subjects available at FNSPE. The final part of the course covers the applications of co	mputer graphics a	approaches in
	scientific documents and presentations.		
01POGR2	Computer Graphics 2	Z	2
	wo-semester "Computer Graphics" course begins with a brief introduction to signal theory in the context of aliasing - a pheno		
	structured survey of fundamental problems in 3D computer graphics is given together with their solutions, from the description		
	on mathematical description of problems and explanation of the corresponding algorithms using knowledge previously obtaine		-
-	n implementation aspect such as data structures design etc. is also a matter of concern. In the last lecture, a number of theor source 3D modeling and rendering software instrument.	elical concepts al	e demonstrated
		7	
01SITE1	Computer Networks 1	Z	2
-	ry and present network (LAN, WAN, use the principles and technologies). Architecture of reference model ISO/OSI. Network . Internet services - mail, remote access, www. Secure communication, tunneling. Directory services, certificates, certification a		
	etwork security - firewalls (packet filters, proxies, gateways, NAT, DMZ), practical exercises. (According to the interest - the se	-	-
01SITE2	Computer Networks 2	Z	2
	ry and present network (LAN, WAN, use the principles and technologies). Architecture of reference model ISO/OSI. Network	- 1	_
-	. Internet services - mail, remote access, www. Secure communication, tunneling. Directory services, certificates, certification a	-	
	etwork security - firewalls (packet filters, proxies, gateways, NAT, DMZ), practical exercises. (According to the interest - the se		-
04ABI	Presentation Course	7	3
-	students for presenting issues in their field by mastering the strategies and techniques of oral presentation. The course include		J. J
	disagreement). Students will be able to respond to comments on their presentation and answer questions addressed to them		
	ence of the Bachelor Project. Students will learn the basic structure of a Bachelor Project and rules for writing a paper.		
01PW	Windows Programming	Z	2
	ms for MS Windows. Basic editing controls. File input and output. User defined components, dynamic type identification and i		2
01BSEM	Bachelor Seminar	Z	2
	nical details of bachelor thesis, format and processing, prerequisities, individual student presentations of their research result	1	2
01TIGR	Trivial Introduction to Graph Theory	Z	2
01UOP	Introduction to Object Programming ming languages. Object oriented programming libraries for graphics, databases and distributed systems.	ZK	2
		1/7	
01UTI	Introduction to Computer Science	KZ	2
	computer science: algorithms, various types of automata, introduction to information theory and coding theory.		
01ZOS	Introduction to Operating Systems	Z	2
muoduction to structure	of operating systems. Processes, thread, memory management. Synchronization of multi=threaded applications. Memory management	appeu mes.	

Name of the block: Compulsory elective courses Minimal number of credits of the block: 0 The role of the block: PV

Code of the group: BSSPOLVEDY Name of the group: BS - Social Sciences 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:

Only one of these courses is obligatory.

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
00EKOT	Economy in Technology Jana Ková ová	Z	1	2+0		PV
00ETV	Ethics of Science and Technology Jakub Hají ek <b>Jana Ková ová</b>	Z	1	0+2	L	PV
00RET	Rhetoric Jana Ková ová <b>Jana Ková ová</b>	Z	1	0+2		PV
00UPRA	Introduction to Law Martin ech Jana Ková ová	Z	1	0+2		PV
00UPSY	Introduction to Psychology Jakub Hají ek Jana Ková ová	Z	1	0+2		PV

#### Characteristics of the courses of this group of Study Plan: Code=BSSPOLVEDY Name=BS - Social Sciences

00EKOT	Economy in Technology	Z	1
The course introdu	ices the basics of micro- and macroeconomics.		·
00ETV	Ethics of Science and Technology	Z	1
00RET	Rhetoric	Z	1
The course is focu	sed on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the	he composition of	public speech
as well as to its no	nverbal aspects. Stylistics exercises, strategies for coping with stage-fright and a short excursion into the history of rhetoric are ar	n integral part of th	ne course.
00UPRA	Introduction to Law	Z	1
00UPSY	Introduction to Psychology	Z	1
000-31			

Code of the group: BSJAZYKY

Name of the group: BS - languages

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
04AMZK	English for Intermediate Students Examination Jana Ková ová, Slav na Brownová, Hana ápová <b>Jana Ková ová</b> Hana ápová (Gar.)	ZK	4		z	PV
04APZK	English for Advanced Students Examination Slav na Brownová, Darren Copeland	ZK	5		Z	PV
04CESMZK	Czech for Intermediate Students Examination Jana Ková ová Jana Ková ová	ZK	4		Z	PV
04CESPZK	Czech for Foreign Students - Advanced Examination Jana Ková ová	ZK	5		Z	PV
04FMZK	French for Intermediate Students Examination V ra Šlechtová V ra Šlechtová (Gar.)	ZK	4		Z	PV
04FPZK	French for Intermediate Students Examination V ra Šlechtová V ra Šlechtová (Gar.)	ZK	5		Z	PV
04FZZK	French for Beginners Examination V ra Šlechtová V ra Šlechtová V ra Šlechtová (Gar.)	ZK	3		L	PV
04NMZK	German for Intermediate Students Examination Miloslava echová Miloslava echová Miloslava echová (Gar.)	ZK	4		Z	PV
04NPZK	German for Advanced Students Examination Miloslava echová Miloslava echová Miloslava echová (Gar.)	ZK	5		Z	PV
04RMZK	Russian for Intermediate Students Examination Zhanna Isaeva Jana Ková ová Zhanna Isaeva (Gar.)	ZK	4		Z	PV
04RPZK	Russian for Intermediate Students Examination Zhanna Isaeva Zhanna Isaeva (Gar.)	ZK	5		Z	PV
04RZZK	Russian for Beginners Examination Zhanna Isaeva Miloslava echová Zhanna Isaeva (Gar.)	ZK	3		L	PV
04SMZK	Spanish for Intermediate Students Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	4		Z	PV
04SPZK	Spanish for Advanced Students Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	5		Z	PV
04SZZK	Spanish for Beginners Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	3		L	PV

Characteristics of the courses of this group of Study Plan: Code=BSJAZYKY Name=BS - languages

04AMZK	English for Intermediate Students Examination	ZK	4
The course content is the	e examination as given by the study plan. The examination covers the 04AM1, 04AM2, and 04AM3 courses and consists of	two parts - writter	(100 min) and
oral (20-30 min). The stud	dent is expected to master the AM syllabus and demonstrate the ability to apply their knowledge gained in the three English	n courses.	
	English for Advanced Students Examination	ZK	5
The course content is the	e examination as given by the study plan. The student is supposed to demonstrate mastering the 04AP3 syllabus and the al	bility to apply their	knowledge
obtained in the three 04A	P courses. The examination consists of 2 parts - written (110 min) and oral (30 min) and includes also oral presentation of	a topic from the st	udent's field of
study.			
	Czech for Intermediate Students Examination	ZK	4
The course content is the	e examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04	CESM1,2,3 cours	es and can only
be taken after successful	completion of the 3 courses. Detailed information is to be obtained from the teacher.		
04CESPZK	Czech for Foreign Students - Advanced Examination	ZK	5
The course content is the	$_{ m e}$ examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 0-	4CESP1,2,3 cours	es and can only
be taken after successful	completion of the 3 courses. Detailed information is to be obtained from the teacher.		
04FMZK	French for Intermediate Students Examination	ZK	4
The content is the examin	nation as given by the study programme. The whole French programme is ended with an examination covering the contents	s of FM1-FM3. The	examination
consists of a written and	oral part and is organized according to Examination Instructions, a document available on the web.		
04FPZK	French for Intermediate Students Examination	ZK	5
The whole French progra	m is ended with an examination covering the contents of FP1-FP3. The examination consists of a written and/or an oral pa	rt and is organized	according to
Examination Instructions,	, a document available on the web. Assessment of the presentation is included into the examination grading.		
04FZZK	French for Beginners Examination	ZK	3
	nation as given by the study plan. The course is terminated with an examination consisting of oral and written part. The exa	1 1	y the document
Instruction for examinatio	n. Its content covers the levels FZ1 - FZ5.		-
04NMZK	German for Intermediate Students Examination	ZK	4
	examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examinati	ion consisting of tv	/o parts - written
and oral, which cover the	courses 04NM1 - 04NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 asse	essment. More deta	ailed information
is to be obtained from the	e teacher.		
04NPZK	German for Advanced Students Examination	ZK	5
The course content is the	e examination as given by the study plan. The whole German for Advanced Students Course is completed by an examinatic	on consisting of two	o parts - written
and oral, which cover the	courses 04NM1 - 04NM3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 une	graded assessmer	nt. More detailed
information is to be obtain	ned from the teacher.		
04RMZK	Russian for Intermediate Students Examination	ZK	4
The course content is the	e examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	vledge and skills a	cquired in RM1
- RM3. Students are eligil	ble for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given instruc	tions by the teache	er.
04RPZK	Russian for Intermediate Students Examination	ZK	5
The course content is the	e examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	vledge and skills a	cquired in RP1
- RP3. Students are eligit	ole for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instructi	ions by the teache	r.
04RZZK	Russian for Beginners Examination	ZK	3
The course content is the	e examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	vledge and skills a	cquired in RZ1
- RZ5. Students are eligit	ble for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instructi	ons by the teache	r.
04SMZK	Spanish for Intermediate Students Examination	ZK	4
The course content is the	e examination as given by the study plan. 04SMZK examination consists of two parts - written and oral; to be eligible for the	written part, stude	ents will have
obtained non-graded ass	essment for course 04SM3.Oral examination follows the written part.		
04SPZK	Spanish for Advanced Students Examination	ZK	5
	examination as given by the study plan. Examination 04SPZK consists of two parts, namely oral and written. The prerequi	site for admission	-
	n test. Examination content is based on syllabi of courses SP1, SP2, and SP3 or on an individual study plan of the student.		-
04SZZK	Spanish for Beginners Examination	ZK	3
	examination as given by the study plan. Examination consists of two parts - written and oral. Student can register for oral	1 1	-
passed the written exami		,	
L			

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

Code of the group: BSVOLPREDM Name of the group: BS - volitelné p edm ty 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
12AUX	Administration of UNIX System Milan Ši or <b>Milan Ši or</b> Milan Ši or (Gar.)	KZ	2	2+0	L	V
01ALG	Algebra Pavel Š oví ek	ZK	4	4+0	Z	V

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01ALGE	Algebra Zuzana Masáková <b>Zuzana Masáková</b> Zuzana Masáková (Gar.)	Z,ZK	6	4+1		v
11ANEL	Linear Circuit Analysis Pavel Jiroušek Pavel Jiroušek Pavel Jiroušek (Gar.)	Z,ZK	4	4	Z	v
15CHEM	Analytical Calculations and Chemometry Principals Ji í Zima Ji í Zima Ji í Zima (Gar.)	ZK	2	2+0	Z	V
04ABZK	English - State Examination Jana Ková ová	ZK	5	2	L	V
04AM1	English for Intermediate Students M1 Jana Ková ová	Z	1	0+2	Z	v
04AM2	English for Intermediate Students M2	Z	1	0+2	L	V
04AM3	English for Intermediate Students M3	Z	1	0+2	Z	V
04AP1	Jana Ková ová Hana ápová (Gar.) English for Advanced Students P1	Z	1	0+2	Z	v
04AP2	English for Advanced Students P2	Z	1	0+2	L	v
04AP3	English for Advanced Students P3	Z	1	0+2	Z	v
	Application of Ionizing Radiation in Analytical Methods		-	-		
16APLB	Tomáš echák Application of Lasers	ZK	5	4+0	L	V
12APL	Helena Jelínková, Alexandr Jan árek <b>Helena Jelínková</b> Helena Jelínková (Gar.)	Z,ZK	2	2+0	Z	V
11APLG	Applications of Group Theory in Solid State Physics Zden k Pot ek Zden k Pot ek Zden k Pot ek (Gar.)	ZK	2	2	Z	V
02AMS	Atomic and Molecular Spectroscopy Svatopluk Civiš Svatopluk Civiš (Gar.)	Z,ZK	4	2+2	Z	v
04CESM1	Czech for foreigners - Intermediate Jana Ková ová	Z	1	0+2	Z	V
04CESM2	Intermediate Czech 2 Jana Ková ová	Z	1	0+2	L	V
04CESM3	Intermediate Czech 3 Jana Ková ová Jana Ková ová (Gar.)	Z	1	0+2	Z	V
04CESP1	Czech for Foreign Students - Advanced Examination Jana Ková ová	Z	1	0+2	Z	V
04CESP2	Czech for Foreigners - Advanced Jana Ková ová	Z	1	0+2	L	V
04CESP3	Czech for Foreigners - Advanced Jana Ková ová	Z	1	0+2	Z	V
15DALCH	History of Alchemy and Chemistry Vladimír Karpenko Vladimír Karpenko Vladimír Karpenko (Gar.)	ZK	2	2+0	Z	V
02DEF1	History of Physics 1 Igor Jex, Miroslav Myška Miroslav Myška Igor Jex (Gar.)	Z	2	2+0	Z	V
02DEF2	History of Physics 2 Igor Jex Miroslav Myška Igor Jex (Gar.)	Z	2	2+0	L	V
01DEM	History of Mathematics Lubomíra Dvo áková Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	Z	1	0+2	L	V
02DRG	Differential Equations, Symmetries and Groups	Z	4	2+2	Z	V
01DIM1	Discrete Mathematics 1 Edita Pelantová, Zuzana Masáková, Lubomíra Dvo áková Lubomíra Dvo áková Zuzana Masáková (Gar.)	Z	2	2P+0C	Z	v
01DIM2	Discrete Mathematics 2 Edita Pelantová, Zuzana Masáková Zuzana Masáková Zuzana Masáková (Gar.)	Z	2	2P+0C	L	v
01DIM3	Discrete Mathematics 3 Lubomíra Dvo áková	Z	2	2+0	Z	V
00EKOT	Economy in Technology Jana Ková ová	Z	1	2+0		V
11ELEA	Instrumentation and Measurement Pavel Jiroušek Pavel Jiroušek (Gar.)	Z,ZK	2	2	L	V
14ELMI	Electron Microscopy	Z,ZK	3	2+0		V
18ESPG1	European Computer Driving Licence 1	Z	2	0+2	Z	V
18ESPG2	European Computer Driving Licence 2	Z	2	0+2	L	V
16EPAM	Exact Methods in Research of Historic Monuments Ladislav Musílek Ladislav Musílek (Gar.)	ZK	2	2+0	Z	V
02EXF1	Experimental Physics 1 Jan epila	Z	2	2+0	L	V
02EXF2	Experimental Physics 2	ZK	2	2+0	Z	V
17ENF	Experimental Neutron Physics	KZ	2	2+1	L	V
04FM1	Jan Rataj French for Intermediate Students M1	Z	1	0+2	Z	V

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04FM3	French for Intermediate Students M3 V ra Šlechtová (Gar.)	Z	1	0+2	Z	V
04FP1	French for Advanced Students P1 Michal Beneš	Z	1	0+2	Z	V
04FP2	French for Advanced Students P2 V ra Šlechtová	Z	1	0+2	L	V
04FP3	French for Advanded Students P3 V ra Šlechtová (Gar.)	Z	1	0+2	Z	V
04FZ1	French for Beginners Z1 V ra Šlechtová	Z	1	0+4	L	V
04FZ2	French for Beginners Z2 Michal Beneš	Z	1	0+4	Z	v
04FZ3	French for Beginners Z3 V ra Šlechtová	Z	1	0+4	L	V
04FZ4	French for Beginners Z4     V ra Šlechtová (Gar.)	Z	1	0+4	Z	V
04FZ5	French for Beginners Z5 V ra Šlechtová V ra Šlechtová (Gar.)	Z	1	0+4	L	v
01FKP	Functions of Complex Variable	ZK	2	2+0	Z	V
01FKPB	Severin Pošta, Pavel Šoví ek <b>Pavel Šoví ek</b> Pavel Šoví ek (Gar.) Functions of Complex Variable B	Z	2	2+0	Z	v
01FAN1	Pavel Š oví ek Functional Analysis 1	Z,ZK	4	2+2		v
01FA1	Pavel Š oví ek <b>Pavel Š oví ek</b> Pavel Š oví ek (Gar.) <b>Functional Analysis 1</b>	Z,ZK	3	2+1	Z	v
01FA1	Pavel Š oví ek Functional Analysis 2	Z,ZK	4	2+1	L	v v
UTFAZ	Pavel Š oví ek <b>Pavel Š oví ek</b> Pavel Š oví ek (Gar.) Experimental Laboratory 1	Ζ,ΖΝ	4	2+2		
02PRA1	Libor Škoda, Katarína K ížková Gajdošová, Barbara Antonina Trzeciak, Jaroslav Biel ík <b>Jaroslav Biel ík</b> Jaroslav Biel ík (Gar.)	ΚZ	6	0+4	Z	V
02PRA2	Experimental Laboratory 2 Libor Škoda, Jaroslav Biel ík Jaroslav Biel ík (Gar.)	KZ	6	0+4	L	V
02FYS1	Physical Seminar 1 Vojt ch Svoboda (Gar.)	Z	2	0+2	Z	V
02FYS2	Physical Seminar 2 Jan epila	Z	2	0+2	L	v
01GTDR	Geometric Theory of Ordinary Differential Equations Michal Beneš Michal Beneš Michal Beneš (Gar.)	Z	2	0+2	Z	V
12INS1	Information Systems 1	Z,ZK	2	2	Z	V
12INS2	Information Systems 2 Antonín Novotný	Z,ZK	2	2	L	v
16ZJTB	Nuclear Energy Facilities and Accelerators Kamil Augsten, Tomáš echák Kamil Augsten Tomáš echák (Gar.)	ZK	2	2+0	Z	V
17JARE	Nuclear Reactors Tomáš Bílý Tomáš Bílý Tomáš Bílý (Gar.)	ZK	2	2	L	V
01JEPR	Simple Compilers Zden k ulík Zden k ulík Zden k ulík (Gar.)	Z	2	2	L	v
16KPR	Clinical Propaedeutic Jana Votrubová Jana Votrubová Jana Votrubová (Gar.)	ZK	2	2+0	Z	V
04AKS	English Conversation Jana Ková ová Jana Ková ová (Gar.)	Z	1	0+2	L	v
02KF	Quantum Physics	Z,ZK	3	2P+1C	Z	V
02LCF1	Filip Petrásek Libor Snobl (Gar.)         Experimental Laboratory 1	Z	2	0+2	Z	v
02LCF2	Jaroslav Biel ík Jaroslav Biel ík (Gar.) Experimental Laboratory 2	Z	2	0+2	L	v
12LT1	Jaroslav Biel ík Jaroslav Biel ík (Gar.) Laser Technique 1	Z,ZK	3	2+1	Z	v
12LT2	Václav Kube ek Václav Kube ek Václav Kube ek (Gar.)	Z,ZK	2	2+0	L	v v
12L12	Helena Jelínková Laser Systems	Z,ZK	3	2+0	L	v v
	Václav Kube ek Václav Kube ek Václav Kube ek (Gar.) Linear Programming					
01LIP	Jan Volec estmír Burdík Jan Volec (Gar.) Macroeconomics 1	Z,ZK	3	2+1	Z	V
18MAK1	Quang Van Tran Quang Van Tran Quang Van Tran (Gar.) Macroeconomics 2	Z,ZK	4	2+2	L 	V
18MAK2	Quang Van Tran Quang Van Tran Quang Van Tran (Gar.)	Z,ZK	4	2+2	Z	V
01MAPR 18EKO1	Markov processes Jan Vybíral Jan Vybíral (Gar.)	Z,ZK	4	2+2		V
	Mathematical Economics 1	Z,ZK	5	2+2	Z	V

01MASC	Mathematical Statistics - Seminar Tomáš Hobza Tomáš Hobza (Gar.)	Z	2	0+2		v
00MAM1	Essentials of High School Course 1	Z	1	0+1		V
00MAM2	Essentials of High School Math Course 2 Lukáš Heriban Severin Pošta Lukáš Heriban (Gar.)	Z	1	0+1		v
01MMPV	Mathematical Models of Groundwater Flow           Ji í Mikyška Ji í Mikyška Ji í Mikyška (Gar.)	KZ	2	2+0	L	v
01MMF	Methods of Mathematical Physics Pavel Š oví ek	Z,ZK	6	4+2	L	v
18MIK1	Microeconomics 1	Z,ZK	5	2P+2C	Z	v
18MIK2	Quang Van Tran Quang Van Tran (Gar.) Microeconomics 2	Z,ZK	5	2P+2C	L	v
11MIK	Quang Van Tran Quang Van Tran (Gar.)           Logical Circuits and Microprocessors	Z,ZK	4	4	L	v
12MPR1	Pavel Jiroušek, Petr Levinský <b>Pavel Jiroušek</b> Pavel Jiroušek (Gar.) Microprocessors 1	ZK	4	4+0	Z	v
12MPR2	Miroslav ech Miroslav ech Miroslav ech (Gar.) Microprocessors 2	ZK		-		
	Miroslav ech Miroslav ech Miroslav ech (Gar.) Molecular Physics		2	2+0	L	V
12MOF	Jan Proška, Martin Michl Martin Michl Jan Proška (Gar.)	ZK	2	2+0	L	V
12NT	Nanotechnology Jan Proška, Eduard Hulicius Jan Proška Eduard Hulicius (Gar.)	ZK	2	2+0	Z	V
02NSAD	Simulations and Data Analysis Tools Jan epila	Z	2	2+0		V
04NM1	German for Intermediate Students M1	Z	1	0+2	Z	V
04NM2	German for Intermediate Students M2 Miloslava echová Miloslava echová (Gar.)	Z	1	0+2	L	V
04NM3	German for Intermediate Students M2 Miloslava echová Miloslava echová (Gar.)	Z	1	0+2	Z	v
04NP1	German for Advanced Students P1	Z	1	0+2	Z	V
04NP2	German for Advanced Students P2 Miloslava echová	Z	1	0+2	L	v
04NP3	German for Advanced Students P3 Miloslava echová Miloslava echová (Gar.)	Z	1	0+2	Z	V
01NME2	Numerical Methods 2 Michal Beneš Michal Beneš Michal Beneš (Gar.)	KZ	2	2+0	L	v
15CH1	General Chemistry 1 Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z	3	2+1	Z	v
15CH2	General Chemistry 2 Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z,ZK	3	2+1	L	v
02OR	General Relativity Old ich Semerák Boris Tomášik Boris Tomášik (Gar.)	ZK	3	3+0	L	v
01POPJ1	Computers and Natural Language 1	Z	2	0+2	Z	v
01POPJ2	Computers and Natural Language 2	Z	2	0+2	L	V
12POAL	Computer Algebra Richard Liska Richard Liska (Gar.)	KZ	2	2	Z	v
01POGR1	Computer Graphics 1 Pavel Strachota Pavel Strachota (Gar.)	Z	2	2	Z	v
01POGR2	Computer Graphics 2 Pavel Strachota Pavel Strachota Pavel Strachota (Gar.)	Z	2	2	L	v
01SITE1	Computer Networks 1 Miroslav Minárik Miroslav Minárik Miroslav Minárik (Gar.)	Z	2	1+1	Z	v
01SITE2	Computer Networks 2 Miroslav Minárik Miroslav Minárik Miroslav Minárik (Gar.)	Z	2	1+1	L	v
01POPR	Advanced Probability Tomáš Hobza	Z	2	2+0		v
12PIN1	Practical Informatics for Technics 1	Z	2	1+1	L	v
12PIN2	Milan Kucha ík, Richard Liska <b>Milan Kucha ík</b> Milan Kucha ík (Gar.) Practical Informatics for Technics 2	Z	2	1+1	Z	v
12PIN3	Milan Ši or <b>Milan Ši or</b> Milan Ši or (Gar.) Practical Informatics for Technics 3 Milan Ši or Milan Ši or (Gar.)	Z	2	1+1	L	v
15INPR	Milan Ši or <b>Milan Ši or</b> Milan Ši or (Gar.) Laboratory Practice in Instrumental Methods	KZ	4	0+4	L	V
01PRA1	Probability and Mathematical Statistics 1	Z,ZK	6	4+2	Z	v
01PRA1	Václav K s Probability and Mathematical Statistics 2	Z,ZK	2	2+0	L	
	Václav K s Probability and Statistics					V
01PRST	Tomáš Hobza <b>Tomáš Hobza</b> Tomáš Hobza (Gar.) Probability and Statistics B	Z,ZK	4	3+1	Z	V
01PRSTB	Tomáš Hobza <b>Tomáš Hobza</b> Tomáš Hobza (Gar.)	KZ	4	3+1	Z	V

16UAZB	Principles of Ionizing-Radiation Applications Ladislav Musílek Kamil Augsten Ladislav Musílek (Gar.)	ZK	2	2+0	Z	V
16FNZB	Problems of Non-ionizing Radiation	ZK	2	2+0	Z	V
12PSEM	Problem Seminary	Z	2	0+4	L	V
01PERI	Programming of Peripherals Devices Zden k ulik Zden k ulik (Gar.)	Z	2	2+0	Z	V
01PW	Windows Programming Zden k ulík Zden k ulík Zden k ulík (Gar.)	Z	2	2+0	Z	V
18PRC1	Programming in C++ 1 Vladimír Jarý, Miroslav Virius Miroslav Virius Miroslav Virius (Gar.)	Z	4	2+2	Z	V
18PRC2	Programming in C++ 2 Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)	ΚZ	4	2+2	L	V
18PJ	Programming in Java Miroslav Virius Miroslav Virius Miroslav Virius (Gar.)	Z,ZK	5	2P+2C	Z	V
18MTL	Programming in MATLAB	Z,ZK	5	2+2	Z	V
18MPT	Programming in MATLAB	KZ	5	0+4	Z	V
18PAS	Pascal Programming Miroslav Virius	Z	4	2+2	L	V
12PDR1	Data Communication and Interfaces 1	Z	2	2+0	Z	V
12PDR2	Data Communication and Interfaces 2 Josef Blažej	Z	2	2+0	L	V
01PSL	LaTeX - Publication Instrument Petr Ambrož Petr Ambrož Petr Ambrož (Gar.)	Z	2	0+2	L	V
00RET	Rhetoric Jana Ková ová <b>Jana Ková ová</b>	Z	1	0+2		V
01RMF	The Equations of Mathematical Physics Václav Klika Václav Klika Václav Klika (Gar.)	Z,ZK	6	4+2	Z	V
02RQGP1	Seminar on Quark-Gluon Plasma 1 Jaroslav Biel ík	Z	1	2+0		V
02RQGP2	Seminar on Quark-Gluon Plasma 2 Jaroslav Biel ík	Z	1	2+0		V
04RM1	Russian for Intermediate Students M1 Michal Beneš	Z	1	0+2	Z	V
04RM2	Russian for Intermediate Students M2 Miloslava echová	Z	1	0+2	L	V
04RM3	Russian for Intermediate Students M3 Zhanna Isaeva (Gar.)	Z	1	0+2	Z	V
04RP1	Russian for Advanced Students P1 Michal Beneš	Z	1	0+2	Z	V
04RP2	Russian for Advanced Students P2 Miloslava echová	Z	1	0+2	L	V
04RP3	Russian for Advanced Students P3 Zhanna Isaeva (Gar.)	Z	1	0+2	Z	V
04RZ1	Russian for Beginners Z1 Miloslava echová	Z	1	0+4	L	V
04RZ2	Russian for Beginners Z2 Michal Beneš	Z	1	0+4	Z	V
04RZ3	Russian for Beginners Z3 Miloslava echová	Z	1	0+4	L	V
04RZ4	Russian for Beginners Z4 Zhanna Isaeva (Gar.)	Z	1	0+4	Z	V
04RZ5	Russian for Beginners Z5 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	1	0+4	L	V
01RSWP	Project Management of Software Projects	KZ	2	0+2	Z	V
02SMF	Seminar of Mathematical Physics Ladislav Hlavatý (Gar.)	Z	2	0+2	Z	V
01SSM1	Seminar of Contemporary Mathematics 1 Mat j Tušek Edita Pelantová (Gar.)	Z	2	0+2	Z	V
01SSM2	Seminar of Contemporary Mathematics 2 Václav Klika	Z	2	0+2	L	V
16SED1	Dosimetry Seminar 1 Kate ina Pila ová Kate ina Pila ová (Gar.)	Z	2	0+2		V
16SED2	Dosimetry Seminar 2 Kate ina Pila ová	Z	2	0+2		V
01SMB1	Seminar on Calculus B1 Milan Krbálek	Z	2	0+2	Z	V
01SMB2	Seminar on Calculus B2 Milan Krbálek	Z	2	0+2	L	V
01SOS1	Software Seminar 1 Zden k ulík Zden k ulík Zden k ulík (Gar.)	Z	2	0+2	Z	V
01SOS2	Software Seminar 2 Zden k ulík Zden k ulík Zden k ulík (Gar.)	Z	2	0+2	L	V

02SPRA1	<b>Special Practicum 1</b> Lukáš Novotný, Jan epila <b>Jan epila</b> Jan epila (Gar.)	KZ	6	0+4	Z	V
02SPRA2	Special Practicum 2 Jan epila Jan epila (Gar.)	KZ	6	0+4	L	V
01STR	Statistical Decision Theory Václav K s Václav K s Václav K s (Gar.)	ZK	2	2+0	L	V
11SFBM	Structure and Function of Biomolecules Petr Kolenko, Tomáš Kova Petr Kolenko Petr Kolenko (Gar.)	Z,ZK	3	2+1	Z	V
04SM1	Spanish for Intermediate Students M1	Z	1	0+2	Z	V
04SM2	Spanish for Intermediate Students M3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	1	0+2	L	V
04SM3	Spanish for Intermediate Students M3 Beatriz Vadillo Gonzalo (Gar.)	Z	1	0+2	Z	V
04SP1	Spanish for Advanced Students P1	Z	1	0+2	Z	V
04SP2	Spanish for Advanced Students P2	Z	1	0+2	L	V
04SP3	Spanish for Advanced Students P3 Beatriz Vadillo Gonzalo (Gar.)	Z	1	0+2	Z	V
04SZ1	Spanish for Beginners Z1	Z	1	0+4	L	V
04SZ2	Spanish for Beginners Students Z2	Z	1	0+4	Z	V
04SZ3	Spanish for Beginners Z3 Beatriz Vadillo Gonzalo (Gar.)	Z	1	0+4	L	V
04SZ4	Spanish for Beginners Z3 Beatriz Vadillo Gonzalo (Gar.)	Z	1	0+4	Z	V
04SZ5	Spanish for Beginners Z5 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	1	0+4	L	V
14TM	Engineering Mechanics Ji í Kunz, Aleš Materna <b>Ji í Kunz</b> Ji í Kunz (Gar.)	Z,ZK	4	2+2	3	V
14TEM	Engineering Mechanics Jií Kunz <b>Jií Kunz</b> Jií Kunz (Gar.)	Z,ZK	6	4	5	V
12TAIS	Ion Beam Techniques and Applications.	ZK	3	3+0	L	V
TV-1	Physical Education	Z	1		Z	V
TV-2	Physical Education	Z	1		L	V
TV-3	Physical education	Z	1	0+2	Z	V
TV-4	Physical education	Z	1	0+2	L	V
02TEF1	Theoretical Physics 1 Petr Novotný Petr Novotný Igor Jex (Gar.)	Z,ZK	4	2+2	Z	V
02TEF2	Theoretical Physics 2 Filip Petrásek, Petr Novotný Josef Schmidt Petr Novotný (Gar.)	Z,ZK	4	2+2	L	V
01DYSY	Theory of Dynamic Systems Branislav Rehák Branislav Rehák Branislav Rehák (Gar.)	ZK	3	3+0	L	V
01TKO	Theory of Codes Edita Pelantová, Jan Volec Edita Pelantová Jan Volec (Gar.)	ZK	2	2P+0C	L	V
02TER	Heat and Molecular Physics Filip Petrásek Petr Novotný Petr Jizba (Gar.)	Z,ZK	4	2+2	L	V
02TSFA	Thermodynamics and Statistical Physics Igor Jex, Jaroslav Novotný Antonín Hoskovec Igor Jex (Gar.)	Z,ZK	4	2+2	L	V
01TOP	Topology estmír Burdík estmír Burdík estmír Burdík (Gar.)	ZK	2	2+0	Z	V
16MCRB	Transport of Ionizing Radiation and Monte Carlo Method	Z,ZK	4	2+2	L	V
18INTA	Development of internet applications Jakub Klinkovský, Dana Majerová Dana Majerová (Gar.)	KZ	4	2P+2C	L	V
01DYK	Introduction to Continuum Dynamics Pavel Strachota	Z	2	0+2		V
16ZIVB	Introduction to Ecology Hana Pr šová Hana Pr šová (Gar.)	KZ	2	2+0	Z	V
02UFEC	Introduction to Elementary Particle Physics Jaroslav Biel ík, Marek Matas Jaroslav Biel ík Jaroslav Biel ík (Gar.)	Z	2	2+0	Z	V
11UFPLN	Introduction to Solid State Physics Petr Kolenko, Ivo Kraus Petr Kolenko Ivo Kraus (Gar.)	ZK	2	2+0	L	V
17UINZ	Introduction to Engineering	Z,ZK	3	2+1	Z	V
02UKP	Introduction to Curves and Surfaces	Z	2	1+1	L	V
12ULT	Introduction to Laser Technique	Z,ZK	3	2+1	Z	V
12UMF	Introduction to Modern Physics Jan Pšikal Jan Pšikal Jan Pšikal (Gar.)	Z	3	2+1	L	V
18UOA	Introduction into Object Oriented Architecture Rudolf Pecinovský Rudolf Pecinovský	Z,ZK	4	2P+2C	Z	V
	Introduction to Law	Z	1	0+2		

00UPSY	Introduction to Psychology Jakub Hají ek Jana Ková ová	Z	1	0+2		V
01UTIZ	Introduction to Theoretical Informatics Petr Ambrož	ZK	2	2+0		V
11UVOD	Introduction to Specialization	Z	2	0+2	Z	V
12VAK	Vacuum Physics and Technology Richard Švejkar Richard Švejkar (Gar.)	KZ	4	2+2	Z	V
12PYTH	Scientific Programming in Python Jakub Urban, Pavel Váchal Pavel Váchal Pavel Váchal (Gar.)	Z	2	0+2	L	V
12VTV	Scientific and Technical Computing Ivan Procházka Ivan Procházka (Gar.)	Z	2	1+1	L	V
12VFT	High Frequency and Impulse Circuitry Jaroslav Pavel Jaroslav Pavel Jaroslav Pavel (Gar.)	Z,ZK	2	2+0	L	V
17VYR	Research Reactors	ZK	2	2	L	V
12EPR1	Basic Electronics Practicum 1 Ivan Procházka, Jaroslav Pavel Ivan Procházka Ivan Procházka (Gar.)	KZ	3	0+2	Z	V
12EPR2	Basic Electronics Practicum 2 Ivan Procházka, Jaroslav Pavel Ivan Procházka Ivan Procházka (Gar.)	KZ	3	0+2	L	V
12ZPLT	Basic Laser Technique Laboratory Václav Kube ek, Josef Blažej Josef Blažej Václav Kube ek (Gar.)	KZ	6	0+4	L	V
12ZPOP	Basic Optical Laboratory Alexandr Jan árek Alexandr Jan árek Alexandr Jan árek (Gar.)	KZ	6	0+4	L	V
18ZALG	Basics of Algorithmization Petr Pauš, Vladimír Jarý, František Vold ich, Miroslav Virius, František Gašpar, Zuzana Pet í ková Vladimír Jarý Miroslav Virius (Gar.)	Z,ZK	4	2+2	L	V
16AMMB	Fundamentals of Analytical Measurement Methods	ZK	2	2+0	L	V
16ZBAF1	Hana Pr šová Hana Pr šová Hana Pr šová (Gar.) Fundamentals of Human Biology, Anatomy and Physiology 1 Alena Doubková, Šimon Vaculín, Zde ka Polívková, Josef Stingl Alena	Z,ZK	4	2+2	Z	V
16ZBAF2	Doubková         Alena         Doubková (Gar.)           Fundamentals of Human Biology, Anatomy and Physiology 2         Alena         Doubková, Šimon Vaculín, Josef Stingl Alena         Doubková Alena           Doubková (Gar.)         Doubková (Gar.)         Doubková (Gar.)         Doubková (Gar.)         Doubková (Gar.)	Z,ZK	4	2+2	L	V
16ZDOZ1	Fundamentals of Radiation Dosimetry 1 Tomáš Trojek Tomáš Trojek Tomáš Trojek (Gar.)	Z,ZK	4	2+2		V
16ZDOZ2	Fundamentals of Radiation Dosimetry 2 Tomáš Trojek Tomáš Trojek Tomáš Trojek (Gar.)	ZK	2	2+0	L	V
17ZEH	Basics of Economic Assessment	ZK	2	2+0	Z	V
17ZEL	Basics of Electronics Martin Kropík Martin Kropík (Gar.)	KZ	3	2+2	Z	V
12ZEL1	Basic Electronics 1 Jaroslav Pavel Jaroslav Pavel Jaroslav Pavel (Gar.)	Z,ZK	3	2+1	Z	V
12ZEL2	Basic Electronics 2 Jaroslav Pavel Jaroslav Pavel Jaroslav Pavel (Gar.)	Z,ZK	3	2+1	L	V
02ZFM1	Foundations of Physical Measurements 1	Z	2	2+0	Z	V
02ZFM2	Foundations of Physical Measurements 2 Jan epila	Z	2	0+2	L	V
11ZFPL	Basic to Solid State Physics Ladislav Kalvoda, Eva Mihóková Eva Mihóková Ladislav Kalvoda (Gar.)	KZ	2	26P+0C	Z	V
12ZFP	Principles of Plasma Physics Ji í Limpouch, Martin Jirka Martin Jirka Ji í Limpouch (Gar.)	Z,ZK	4	3+1	L	V
02ZJF	Nuclear Physics Vladimír Wagner Vladimír Wagner (Gar.)	Z,ZK	6	3+2	Z	V
02ZJFB	Nuclear Physics B           Vladimír Wagner Vladimír Wagner (Gar.)	KZ	3	3+0	Z	V
15ZKJE	Nuclear Power Plants Design and Operation Tomáš Bilý, Lenka Frýbortová, ubomír Sklenka Lenka Frýbortová Tomáš Bílý (Gar.)	ZK	3	2+0	L	V
16MEZB	Fundamentals of Ionizing-Radiation Metrology	Z,ZK	4	2+1	Z	V
01ZOS	Introduction to Operating Systems Zden k ulík Zden k ulík Zden k ulík (Gar.)	Z	2	2+0	L	V
12ZAOP	Fundamentals of Optics Ivan Richter, Pavel Kwiecien Ivan Richter Ivan Richter (Gar.)	Z,ZK	2	2+0	Z	V
01ZPB1	Introduction to Computer Security 1 Petr Voká Petr Voká Petr Voká (Gar.)	Z	2	1+1		V
16ZPSP	Basic Work with PC Kamil Augsten Kamil Augsten (Gar.)	Z	2	0+2	1	V
18ZPRO	Basics of Programming           Maksym Dreval, Petr Pauš, Vladimír Jarý, František Vold ich, Miroslav Virius,           Zuzana Pet í ková, Jakub Klinkovský, Jan Tomsa Miroslav Virius Miroslav           Virius (Gar.)	Z	4	4C	Z	V

02ZSM	Basics of Radiation Protection Aneta Dušková Aneta Dušková (Gar.)	Z	2	2+0		V
	Introduction to the Standard Model Zden k Hubá ek Zden k Hubá ek (Gar.)	ZK	2	2+0		v
16ZEDB	Basics of Experimantal Data Processing Kate ina Pila ová Kate ina Pila ová Kate ina Pila ová (Gar.)	ZK	2	2+0	Z	V
14ZZKS	Testing and Processing of Metals and Alloys	KZ	4	4	6	V
12ZDP	Data Processing for Publishing Antonín Novotný Antonín Novotný Antonín Novotný (Gar.)	Z	2	2	Z	V
	the courses of this group of Study Plan: Code=BSVOLPREDM	lame=BS - vol	itelné p	edm ty	-	
-	History of Physics 1 he system of sciences. The relationship of man and nature. Natural sciences in ancient	Orientand Grooce	Grook patu	ral philosoph	Z	2 Physics in
, ,	ed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordan	,			,	
as experimental science			io, riopioi, c	Jamoo, Hayge		i oi pilyoloo
· · · · · · · · · · · · · · · · · · ·	Practical Informatics for Technics 1				Z	2
1	systems. Personal computer, workstation and supercomputers. Processor, memory, bu	s devices hard dis	k network i	1		
	stems. Requirements on operating system for research and technical computing. Operating					
	, working with files. Text editors: vi, emacs. Command interpreter (shell) sh, csh and its p					
-	Standard tools. Graphical user interface X-windows. Computer networks. Local comput		-		-	
	k configutation of a computer. Network services: hardware sharing, mail, ftp, etc. Network			ietworks. Inte	met. Addres	
					Z	2
	LaTeX - Publication Instrument the basics and facilities of computer typography, particularly to the system LaTeX			I	<b>∠</b>	2
						A
1	Basics of Algorithmization	d an address of the state of the state			"ZK	4
	selected algorithms and methods for algorithm design. This course intruduces selected	d methods for the de	etermination	n of the algor		
	Basics of Programming				Z	4
This course is intended	nainly for students with little or no experience in programming. It familiarizes the studen	ts with the basic co	ncepts in pr	ogramming a	ind with the F	Python
programming language.						
01DIM1	Discrete Mathematics 1				Z	2
The seminar is devoted	o elementary number theory and applications. It includes individual problem solving.			'	1	
01DIM2	Discrete Mathematics 2				Z	2
1	p recurrence relations. It includes individual problem solving.			I	- 1	
	Practical Informatics for Technics 2				Z	2
I	semester course of basics and applications of informatics for science and engineering	included as obligat	orv alternat	ive course C	I	_
-	The second part of the course is "Introduction to computer algebra systems?.	included as obligat	ory alternat	ive course. C	onstituent pa	
· · · · · · · · · · · · · · · · · · ·					7	
	Practical Informatics for Technics 3			1	Z	2
-	semester course of basics and applications of informatics for science and engineering	included as obligat	ory alternat	ive course. C	onstituent pa	art is realize
· · · · · · · · · · · · · · · · · · ·	The third part of the course is "Introduction to scientific computing?.					
1	Programming in C++ 1				Z	4
	y the C programming language and non-object oriented features of the C++ language.					
	Programming in C++ 2				KZ	4
This course covers the c	pject oriented programming and othesr advanced constructs in the C+;+ programming I	anguage and the S	tandard Ten	nplate Library	<i>.</i>	
01POGR1	Computer Graphics 1				Z	2
The first part of the two-s	emester "Computer Graphics" course is devoted to the specifics of digital display device	s spanning from his	story up to th	ne state of the	e art technolo	gies. Furth
a survey of fundamental	roblems in 2D computer graphics is given together with their solutions. Focus is put on ma	thematical description	on of probler	ms and explar	nation of the c	correspondi
algorithms using knowle	ge previously obtained in a variety of subjects available at FNSPE. The final part of the	course covers the	applications	s of computer	graphics ap	proaches in
the process of authoring	scientific documents and presentations.					
01POGR2	Computer Graphics 2				Z	2
1	vo-semester "Computer Graphics" course begins with a brief introduction to signal theo	ry in the context of	aliasing - a	phenomenon	1	
	structured survey of fundamental problems in 3D computer graphics is given together w	-	-	-	-	-
graphics. Further, a well	n mathematical description of problems and explanation of the corresponding algorithms					
	implementation aspect such as data structures design etc. is also a matter of concern.	• • •				
rendering. Focus is put o					•	
rendering. Focus is put o at FNSPE. The algorithm						
rendering. Focus is put o at FNSPE. The algorithm using Blender, an open-	ource 3D modeling and rendering software instrument.				7	2
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12AUX Administration of UNIX System	KZ	2
Basic and more advanced administration of Unix operating system 01ALG Algebra	ZK	4
After an introduction into the set theory standard algebraic structures are dealt with: groups, rings, fields, modules, linear algebras, lattices, Boole	1	-
commutative fields.		
01ALGE Algebra	Z,ZK	6
Firstly, the Peano axioms are treated in detail. Elements of the set theory cover only: equivalence and subvalence, the Cantorov-Bernstein theore statements, definition of ordinals and cardinals. Further standard algebraic structures are addressed: semigroups, monoids, groups, rings, integr	,	
fields, lattices. Independent chapters are devoted to divisibility in integral domains and to finite fields.		,
11ANEL Linear Circuit Analysis	Z,ZK	4
The course is the introduction to the linear electronics for physicists. In the first part it describes basic methods of linear circuit analysis. It is especial of the computer methods of analysis. The second part gives a short list of most commonly used circuits in experimental equipment.	ecially oriented to the	understanding
15CHEM Analytical Calculations and Chemometry Principals	ZK	2
Lecture deals with basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of error		
two-tailed significance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing		-
solving, titration stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations ir spectrophotometry and separation methods, solving of complex forming equilibria.	i potentionneti y, coulc	ineu y,
04ABZK English - State Examination	ZK	5
The course content is the examination as given by the study plan. Student is eligible for the State language examination (level C1 or B2 of CEFR		
respective courses and examinations (04AP3KK, 04APAK, 04API, and 04APRK). From its first semester, part of the APIN programme covers als examination conditions comply with respective rules and regulations for state language examinations.	o examination subject	cts. As required,
04AM1 English for Intermediate Students M1	Z	1
The course is designed for students who have successfully completed the full secondary school English language course at least at the A2 level	of the Common Euro	pean Framework
of Reference for Languages (CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into fundament	-	
professional oral and written communication situations. Thus it covers topics related to the student's life and needs as well as topics of subtechn extending the knowledge of grammar issues used in EAP.	ical interest. Attentior	i is also paid to
04AM2 English for Intermediate Students M2	Z	1
The 04AM2 course expects the student to have completed the 04AM1 course. It develops their skills for work with subtechnical texts, focusing also		
and lexical items typical of ESP and EAP (e.g., definition, existence and classification of phenomena, object descriptions). Part of the course is also revision is included.	guided writing. If nec	essary, grammar
04AM3 English for Intermediate Students M3	Z	1
The course develops the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing sub	-	and independent
understanding of professional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communic		
equivalents. The course also includes studying abstracts and rules for writing them as well as basic rules for preparing and giving a short presen student's field.	tation on a chosen to	pic related to the
04AP1 English for Advanced Students P1	Z	1
The course is designed for students who have successfully completed the full secondary school English language course (at least the B1 level of		ean Framework
of Reference for Languages - CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into the fundation of the second		-
grammar, and style typical of professional oral and written communication situations (fundamentals of terms in mathematics and physics, definiti covers professional oral and written communication on topics related to the undergraduate's life and needs. It develops skills for free professional wi		
polite request). If necessary, revision of selected grammar topics is included.		··· · · · · · · · · · · · · · · · · ·
04AP2 English for Advanced Students P2	Z	1
The 04AP2 course is based on 04AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of c		-
to the students' needs it concentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typica types of descriptions, and, if possible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading		
materials. The course extends the student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focu	• •	•
sentence and paragraph structure, linking, cohesion and coherence in texts.		
04AP3 English for Advanced Students P3 The 04AP3 course is based on 04AP2 and expects the student to work without any guidance with authentic professional materials and to interpre-	et the text. It includes	training oral and
written communication skills and functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summ		•
possible, also preparing a project on a given or chosen topic and presenting it. The course places emphasis on distinguishing levels of formal an	d informal language l	ooth in oral and
written communication. 16APLB Application of Ionizing Radiation in Analytical Methods	ZK	5
16APLB Application of Ionizing Radiation in Analytical Methods Subject The application of ionizing radiation in analytical methods is devoted to radioanalytical methods and the use of radionuclides and ionizing	1	-
of technological processes.	,	5
12APL Application of Lasers	Z,ZK	2
Application of lasers in industrial technologies, medicine, remote sensing, energetics, telecommunication, military, entertainment and other brand		
11APLG Applications of Group Theory in Solid State Physics Consideration of atomic system symmetry allows, without any quantitative calculations, rigorously and precisely determine how many energy sta	TES there are and wh	2 at interactions
and transitions between them may occur. Therefore, the main purpose of this course is to describe the methods by which we can extract the info		
alone will provide. The application of these methods is illustrated by an example of molecular orbitals, inner orbitals of ions in the crystal field environment of the second se	ironment, normal mo	des of molecular
vibrations, and selection rules for optical absorption transitions.	7 71	4
02AMS Atomic and Molecular Spectroscopy The lecture is devoted to atomic and molecular spectroscopy.	Z,ZK	4
04CESM1 Czech for foreigners - Intermediate	Z	1
The course is focused on correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extendir	ng the student's vocal	oulary for various
social situations.	7	1
04CESM2 Intermediate Czech 2 The course develops the topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and		
in understanding common abbreviations, abbreviated words, and mathematical terms and formulas.		
04CESM3 Intermediate Czech 3	Z	1
The last course revises morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is explicitly and on developing the student's writing skills.	specially focused on s	stylistics and
issues and an deterophily the orderer o mining order.		

The preve quiette of the	Czech for Foreign Students - Advanced Examination	L 2	1
	course is very good knowledge of the Czech language, i.e., communicative competences at least at level B2 of the Common E		
	evision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of		e
-	le of engineering and professional communication, both in spoken and written form. The topics include University Studies and n with teachers and faculty administrators.	a Student Life. wri	tten practice
04CESP2		Z	1
	Czech for Foreigners - Advanced estudent's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with technical a		-
emphasis on individual		and specialist texts	s placing greater
04CESP3	Czech for Foreigners - Advanced	Z	1
	e student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation	1 1	
	ing skills necessary for professional communication are trained.	on, and, many, pro	esentation of the
15DALCH	History of Alchemy and Chemistry	ZK	2
	e overview of crafts with chemical and/or metallurgical basis. Development of alchemy from ancient times in China, India, and		
	is dedicated to Alchemy in Arabic world and various aspects of alchemy in Latin Europe. The influence of alchemical approact		
advancement is illustra	ted.		
02DEF2	History of Physics 2	Z	2
Development of classic	al mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. E	lectricity and mag	netism -
electrostatics, galvanis	m, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzmar	nn. The birth of mo	odern quantum
and relativistic physics,	Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclear e	energy, Elementary	y particles,
standard model. The co	procept of Nature and Universe of today.		
01DEM	History of Mathematics	Z	1
The subject has the for	m of regular seminars where the members of the department of mathematics, but also invited speakers - specialists in the field	d - give their talks o	on varoius topics
from the history of mat	nematics.		
02DRG	Differential Equations, Symmetries and Groups	Z	4
	ure is to teach students computation of symmetries of the differential equations.		
01DIM3	Discrete Mathematics 3	Z	2
-	to elementary proofs of non-trivial combinatoriwal identities and to generating functions and their applications. In the seminar	students present	a problem with
solution chosen from the	e given literature.		
11ELEA	Instrumentation and Measurement	Z,ZK	2
The course is the intro	uction to the instrumentation and measurement for physicists.		
14ELMI	Electron Microscopy	Z,ZK	3
In this course the stude	ents are introduced to the microscopic methods used for the characterization of materials, thin layers or nanoparticles. The int	roductory part is o	dedicated to the
	ctron microscopy and to various types of microscopes. An important part of the course is given to the interaction of different t		
	ons and tools used in microscopy and to the description of particular parts of the microscopes. Introduction to kinematic and d		
	ion and imaging techniques are also covered. A particular attention is given to analytical methods and imaging techniques in		
18ESPG1	European Computer Driving Licence 1	Z	2
	s are an important tool, especially for students and graduates in Software engineering in economics. The winter semester intro		
office tools. The accent	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag		
office tools. The accent and user functions will	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed.	e will be introduce	ed and macros
office tools. The accent and user functions will 18ESPG2	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2	e will be introduce	ed and macros
office tools. The accent and user functions will 18ESPG2 Spreadsheet calculator	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2 s are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows	e will be introduce Z the winter semeste	ed and macros 2 er with advanced
office tools. The accent and user functions will 18ESPG2 Spreadsheet calculator VBA programming topi	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2	e will be introduce Z the winter semeste	ed and macros 2 er with advanced
office tools. The accent and user functions will 18ESPG2 Spreadsheet calculator VBA programming topi computer science.	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2 s are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows in control context, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathematical context, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathematical context, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathematical context, objects, graphical user interface, add-ins programming) and introduces some applications in economics.	e will be introduce Z the winter semeste atics, operational r	ed and macros 2 er with advanced esearch, and
office tools. The accent and user functions will 18ESPG2 Spreadsheet calculator VBA programming topi computer science. 16EPAM	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2 s are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows in cs (charts, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathema Exact Methods in Research of Historic Monuments	e will be introduce Z the winter semeste atics, operational r ZK	ed and macros 2 er with advanced esearch, and 2
office tools. The accent and user functions will 18ESPG2 Spreadsheet calculator VBA programming topi computer science. 16EPAM Aims and methods of his	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2 s are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows in cs (charts, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathema Exact Methods in Research of Historic Monuments storic monument investigations, methods of age determination (radiocarbon, thermoluminescence and related methods, further radiocarbon).	e will be introduce Z the winter semeste atics, operational r ZK diation methods, de	ed and macros 2 er with advanced esearch, and 2 endrochronology,
office tools. The accent and user functions will 18ESPG2 Spreadsheet calculator VBA programming topi computer science. 16EPAM Aims and methods of his archaeomagnetism), at	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2 s are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows in cs (charts, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathema Exact Methods in Research of Historic Monuments	e will be introduce Z the winter semeste atics, operational r ZK diation methods, de	ed and macros 2 er with advanced esearch, and 2 endrochronology,
office tools. The accent and user functions will 18ESPG2 Spreadsheet calculator VBA programming topi computer science. 16EPAM Aims and methods of his archaeomagnetism), at photogrammetry.	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2 s are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows in cs (charts, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathema Exact Methods in Research of Historic Monuments storic monument investigations, methods of age determination (radiocarbon, thermoluminescence and related methods, further radially tical methods for determination of origin and production technologies of artefacts (activation analysis, X-ray fluorescence	e will be introduce Z the winter semeste atics, operational r ZK diation methods, de analysis and othe	ed and macros 2 er with advanced esearch, and 2 endrochronology, r methods),
office tools. The accent and user functions will 18ESPG2 Spreadsheet calculator VBA programming topi computer science. 16EPAM Aims and methods of his archaeomagnetism), at photogrammetry. 02EXF1	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2 s are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows to cs (charts, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathema Exact Methods in Research of Historic Monuments storic monument investigations, methods of age determination (radiocarbon, thermoluminescence and related methods, further radialytical methods for determination of origin and production technologies of artefacts (activation analysis, X-ray fluorescence Experimental Physics 1	e will be introduce Z the winter semeste atics, operational r ZK diation methods, de analysis and othe Z	ed and macros 2 er with advanced esearch, and 2 endrochronology, er methods), 2
office tools. The accent and user functions will 18ESPG2 Spreadsheet calculator VBA programming topi computer science. 16EPAM Aims and methods of his archaeomagnetism), at photogrammetry. 02EXF1 Lecture represents an	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2 s are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows to cs (charts, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathema Exact Methods in Research of Historic Monuments storic monument investigations, methods of age determination (radiocarbon, thermoluminescence and related methods, further radionalytical methods for determination of origin and production technologies of artefacts (activation analysis, X-ray fluorescence Experimental Physics 1 ntroductory course in experimental physics. Students will learn methods of measurement of basic physical quantities and me	e will be introduce Z the winter semeste atics, operational r ZK diation methods, de analysis and othe Z thods of measure	ed and macros 2 er with advanced esearch, and 2 endrochronology, er methods), 2 ment evaluation.
office tools. The accent and user functions will 18ESPG2 Spreadsheet calculator VBA programming topi computer science. 16EPAM Aims and methods of his archaeomagnetism), at photogrammetry. 02EXF1 Lecture represents an 02EXF2	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag be addressed. European Computer Driving Licence 2 s are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows to cs (charts, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathema Exact Methods in Research of Historic Monuments storic monument investigations, methods of age determination (radiocarbon, thermoluminescence and related methods, further radionalytical methods for determination of origin and production technologies of artefacts (activation analysis, X-ray fluorescence Experimental Physics 1 ntroductory course in experimental physics. Students will learn methods of measurement of basic physical quantities and me Experimental Physics 2	e will be introduce Z the winter semester atics, operational r ZK diation methods, de analysis and othe Z thods of measure ZK	ed and macros 2 er with advanced esearch, and 2 endrochronology, er methods), 2 ment evaluation. 2
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04FP1	French for Advanced Students P1	Z	1
	The objective of this three-semester course is to improve and further develop communication in the French language in both		
	cate in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit	•	
	I4FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topic sé-imparfait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of to the second se	-	-
	wer to an advert, environmental issues, success of French science and technology, chosen topics from French regional cultu		
	hysics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation.		
04FP2	French for Advanced Students P2	Z	1
With the link to P1 conte	ents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication o	n given topics. Fea	atures typical of
technical and scientific of	communication are stressed (passive voice, nominalization, word formation).		
04FP3	French for Advanded Students P3	Z	1
	n systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in		-
	ter texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally cov	vers a technical /a	pplied science
	k compiled from 3 French sources. Preparation of several set topics for oral examination.		
	French for Beginners Z1	Z	1
-	e objective of this 5-level course is to be able to communicate in French orally and in writing in situations of everyday life, in a nch for specific / technical communication and reading of popular science and scientific texts. 04FZ1 The objective is to be al		
	knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Pravda		
	te ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4 : introductions		-
· ·	ple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronunciat		, 0
04FZ2	French for Beginners Z2	Z	1
	with 04FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 d	of the textbook: Pra	avda - Pravdová
: French for Beginners .	Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreen	nent - disagreeme	nt, apology,
<b>0 0 1</b>	of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm	unication. Specific	topics covered:
	work? A few expressions concerning the study. Name of University and Faculty.		
04FZ3	French for Beginners Z3	Z	1
	04FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda		-
	uations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for in	nformation and lou	d as part of
	Reading covers short adapted texts of general interest first, and later popular science texts.	7	4
04FZ4	French for Beginners Z4	Z	1
	04FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The tbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lea	-	-
	burse covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sho		s 5
	ow to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.	in 3,, .	
04FZ5	French for Beginners Z5	Z	1
	5		
All four skills acquired in	FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topic. The	y present it orally i	n the class. The
	FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topic. The red by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other materials.		
general contents is cove notes, success of Frenc	ared by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other materials." In science and technology, information about France. Grammar is systemized and complemented with syntax (subordinate cl	Topics: on physics	from lecture
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12INS1	Information Systems 1	Z,ZK	2
	architecture of the databases, network databases, cloud application Google, Microsoft, information managament, aproaches to		-
12INS2	Information Systems 2	Z,ZK	2
	on systems 1 is required. In more details: Information technology, architecture of the databases, network databases, cloud ap	oplication Google,	Microsoft,
	nt, aproaches to solve task of information systems	71/	2
16ZJTB	Nuclear Energy Facilities and Accelerators ar reactor and nuclear power plant, chain fission reaction development, main components of nuclear energetic reactor, most i	ZK	
	rs, linear high-frequency accelerators, accelerators based on cyclotron, microtron, betatron, electron and proton synchrotron	-	
accelerators, targets.			
17JARE	Nuclear Reactors	ZK	2
	er issue. Previous evolution of power reactor. Nuclear fission reactors, fuel assemblies, active core, control systems, safety sy	1	-
of reactors into IV gene	rations. Standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. F	Pressurized water	reactors (PWR).
Western-type PWR (We	estinghouse, KWU, Framatom). VVER-type reactors, Temelín nuclear power plant. Boiling water reactors. Heavy water reactor	ors, fast breeder r	eactors,
	ooled reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF a		es. Evaluation
	ed systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in long-term ou		
01JEPR	Simple Compilers	Z	2
-	lysis, code generation, simple optimizations, development environments, reflection.	71/	2
16KPR	Clinical Propaedeutic Ir with the basics of anamnesis, physical examination, examinational methods of different organs, hematological and biochemi		2
04AKS			1
	English Conversation the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral commun	∣ ∠ vication The stude	I I I I I I I I I I I I I I I I I I I I
	ious communication situations and will master their communication strategy. They will also practise their listening skills in orde		-
-	dent will be trained to express their ideas clearly and according to current English usage, and become a more confident spea		
02KF	Quantum Physics	Z,ZK	3
State description, wave	function, postulates of quantum mechanics, Born s statistical interpretation, expectation values, Schrödinger equation, Heis		ty principle,
quantization of angular	momentum, solution of simple systems, hydrogen atom.		
02LCF1	Experimental Laboratory 1	Z	2
Cavendish experiment.	Elasticity. Thermal capacities. Electric measurements, Acoustic. Oscillations.		
02LCF2	Experimental Laboratory 2	Z	2
	ield, microwaves, Xray and gamma rays, geometric optics		
12LT1	Laser Technique 1	Z,ZK	3
	lity. Transverse and Longitudinal Modes. Elements of Open Resonators. Threshold of laser oscillations. Gausian beam as an a		
	Dptical radiation propagation in resonant medium. Two-level approximation. Equations for polarisation and inversion, dispersic pagation. Optical solitons. Photon echo. Superradiation. Amplified spontaneous emission Lasers without optical resonator.	on, saturation. Cor	herent and
12LT2	Laser Technique 2	Z,ZK	2
	e equation, the laser amplifier, Q-switching, mode-locking	2,213	2
12LAS	Laser Systems	Z.ZK	3
	second lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers.	, ,	-
and raman lasers. Sem	iconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultr	aviolet lasers. X-r	ay lasers. High
power continuous laser	s. Infrared high power lasers. Submilimeter lasers. Lasers with high degree of coherence. Free electron lasers.		
01LIP	Linear Programming	Z,ZK	3
	ems about constrained extremum problems for multivariable functions (the function is linear and the constraint equations are g	iven by linear equ	ations and linear
inequalities).		7 71/	
18MAK1	Macroeconomics 1	Z,ZK	4
	ides students with a fundamental theoretical basis for understanding how an economy works. It introduces main macroeconc rium theory, fundamentals of open economy theory, inflation, unemployment, economic growth, economic fluctuations, basic		-
	tions for economic policies. The learning outcomes of the course is to equip students with ability to analyze macroeconomic phe		
-	e them under the conditions of modern economic life.		
18MAK2	Macroeconomics 2	Z,ZK	4
Macroeconomics II exte	ends theoretical knowledge acquired from Macroeconomics I of its students with the latest knowledge of contemporary macro	economics. They	are models of
economic growth, espe	cially those with an emphasis on the role of human capital and technological progress. Furthermore, it introduces students to	modern principle	es of economic
-	onomic models derived from microeconomic behavior of subjects and economics and their rational expectations. It also provide	s students with mo	odern knowledge
of labor market modelin			
01MAPR	Markov processes	Z,ZK	4
18EKO1	Mathematical Economics 1	Z,ZK	5
	selected models and methods for economic decision making. The main attention is given to optimization models of linear proc olving by means of the current software products.	gramming, possibi	lities of their real
18EKO2	Mathematical Economics 2	Z,ZK	5
	selected models and methods for economic decision making. The main attention is given to optimization models in graphs, pi	, ,	1
	rministic and stochastic demand, queuing theory and simulation models.	lojoot managomo	n, monory
01MASC	Mathematical Statistics - Seminar	Z	2
	to practical use of statistical methods studied in the course Mathematical Statistics 01MAS. The tutorial deals with calculation	1	1
statistical models, findir	ng unbiased estimators with minimal variance, parameter estimation by method of moments and method of maximum likelihoo	od, derivation of c	ritical regions for
	g the Neyman-Pearson lemma and likelihood ratio, calculation of confidence intervals and non-parametric density estimation.		
00MAM1	Essentials of High School Course 1	Z	1
00MAM2	Essentials of High School Math Course 2	Z	1
Review of basics of hig			-
01MMPV	Mathematical Models of Groundwater Flow	KZ	2
	overview of computational methods for selected groundwater flow problems. The first part of the course is devoted to mathe part is aimed at selected numerical methods, emphasizing implementation issues related to these methods.	matical formulatio	ons of these
Problema. The second p			

01MMF	Methods of Mathematical Physics	Z,ZK	6
	introduction to the theory of distributions with applications to solutions of partial differential equations with constant coefficient	· · ·	-
	ase of a continuous kernel on a compact set as well as Sturm-Liouville operators on bounded intervals, and applications of the		
to the solution of some	boundary value problems and mixed problems.		
18MIK1	Microeconomics 1	Z,ZK	5
	t of theories, which help us to understand processes by which the scarce resources are allocated among alternative uses. M	1	plains the role of
	nese processes, and makes more clear behaviour of the economic agents. This course of Microeconomics I consist of introdu		-
Consumer Theory.			
18MIK2	Microeconomics 2	Z,ZK	5
	t of theories, helping us to understand process by which scarce resources are allocated among alternative uses. Microecono	, ,	-
	and make clear economic agents behaviour. The lectures of Microeconomics II are oriented on Theory of Firm and Industria	-	
11MIK	Logical Circuits and Microprocessors	Z,ZK	4
	Logical official and incroprocessors luction to the digital electronics for physicists. It describes the function principles of combination circuits, simple sequential ci		
	nicrocomputer architecture and principles of interfacing is shown.	cuits and comple	SA CITCUITS INC
		ZK	4
12MPR1	Microprocessors 1	1	
	crocomputer, microprocessor types, memory types CPU, memory, Input output. Code and data, addressing modes( direct, in s, IO devices - program control, interrupt. Microprocessor Microchip PIC16F877A, Instruction codes- Assembler and Macroas	-	
		sembler, program	ining languages.
RISC processors - princ		71/	0
12MPR2	Microprocessors 2	ZK	2
	a types and addressing. Memory segmentation and paging. Real and privileged mode. Instruction set, Assembler. description	1	
12MOF	Molecular Physics	ZK	2
Basic ideas on multi-ato	mic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular structure deter	mination.	
12NT	Nanotechnology	ZK	2
Lectures will introduce :	students mainly to modern technological methods of preparation of semiconductor, metal and dielectric nanostructures. Phys	sical and chemica	I fundaments of
different technologies (I	NBE, MOVPE, EBL, sol-gel and colloidal solution) will be explained. Substantive attention will be devoted to epitaxial technol	ogies which are s	substantial for
nanostructure preparati	on. Particular emphasis will be focused on detail characterization of "in situ" and "ex situ" techniques, their applications for h	eterostructure and	d nanostructure
growths will be discusse	ed as well. Some supportive technical methods - lithography, diffusion, evaporation, ion implantation, contact and dielectric la	ayer preparation w	vill be mentioned
as well as soldering and	d encasement.		
02NSAD	Simulations and Data Analysis Tools	Z	2
Data analysis and simu	ations of high energy elementary particle collisions. ROOT and Pythia programs.		
04NM1	German for Intermediate Students M1	Z	1
	rse is to level off the students' skills in the German language. The course focuses on revision of more difficult phenomena ar	nd structures (e.g.	the passive) and
	es (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Repu		
	gether with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physicis		
	communication on related topics and is aimed at correct pronunciation, grammatical correctness and understandability.		
04NM2	German for Intermediate Students M2	Z	1
-	ther more complex grammatical structures and their application in communication based on technical texts, such as the relation	-	logy and society.
	ng of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and		
-	mation and reading aloud, and appropriate language for various purposes in oral and written communication. The course system		
	or professional discourse (participles, relative clauses).		
04NM3	German for Intermediate Students M2	Z	1
	ther more complex grammatical structures and their application in communication based on technical texts, such as the relation	-	
	ng of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and		
	mation and reading aloud, and appropriate language for various purposes in oral and written communication. The course system		
	or professional discourse (participles, relative clauses).	nationally reviewe e	strior grammatioar
04NP1	German for Advanced Students P1	Z	1
-		1	1
	od grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be le nen focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading fo		
-	tructures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on	practical everyda	y communication,
i.e., telephoning.	O server for A designed O to devide DO	7	4
04NP2	German for Advanced Students P2	Z	1
	e students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while exten		
	oduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and	a practising forma	a communication,
	V, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indirect speech).		
04NP3	German for Advanced Students P3	Z	1
	3 main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a v	-	
	r accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the v	, ,	
	ing, the environment, computer science, and car technology, will also be extended. Only authentic professional texts are use		•
	process information gained from their reading of complex and difficult texts and present it to the class in a simplified oral form. T	ne course also inc	cludes translation
practice to and from Ge			-
01NME2	Numerical Methods 2	KZ	2
	o numerical solution of boundary-value problems and intial-boundary-value problems for ordinary and partial differential equation		ethods converting
	ns to initial-value problems and finite-difference methods for elliptic, parabolic and first-order hyperbolic partial differential equin	1	
15CH1	General Chemistry 1	Z	3
The most important cor	ncepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practive	cal use are illustra	ated by examples
solved in exercises.			
15CH2	General Chemistry 2	Z,ZK	3
The subject is the contin	nuation of the course General chemistry I. The main attention is paid to general principles governing chemical processes. Us	ing various exam	ples, the fact that
the validity of these prin	ciples is not restricted only to chemical processes is documented. The significance and practical use of explained principles	are illustrated by	examples solved
in exercises.			
02OR	General Relativity	ZK	3
	theory of relativity: principle of equivalence and principle of general covariance, parallel transport and geodesic equation, gra	1	Curvature and
-	aw. Schwarzschild solution of the Einstein equations, homogeneous and isotropic cosmological models.		

01POPJ1 Computers and Natural Language 1	Z	2
Basic course of computational processing and understanding of natural languages. Automatic methods of morphological and syntactic a		
of result disambiguation will be discussed. Two-level morphology, tagging and language models, Viterbi algorithm, grammars, chart pars		
01POPJ2 Computers and Natural Language 2	<b>Z</b>	2
The goal of the course is to get acquainted with the broad topic of machine translation (MT). Machine translation is a challenging task th		
of systems as complex as natural languages. We cover several rather different approaches to the task as well as issues related to auton		-
quality.		
12POAL Computer Algebra	KZ	2
Lisp, representation of basic objects (integers, rational and algebraic numbers, polynomials, rational functions, radicals, algebraic functions	1 1	
divisor, resultant, derivation, series summation, integration, ordinary differential equations, factorization, equations solving, quantifier elir		
algebraic programming, graphics, Maple - detailed introduction and solving of practical examples, applications, overview of other systems	(Axiom, Macsyma, Mathemat	ica), miniproject.
01POPR Advanced Probability	Z	2
The subject is devoted to advanced Theory of probability and statistics on measure-theoretic level for general distributions of random va	riables. We deal with sample a	and integral
characteristics of random variables and convergence criteria. Further, the theory of statistical model estimation and testing is extended f	or parametric and nonparame	tric cases.
15INPR Laboratory Practice in Instrumental Methods	KZ	4
Practical training of students in the use of selected modern instrumental methods and techniques for solving some physico-chemical an	alytical and others problems.	The training is
carried out in the laboratories of Czech Academy of Sciences (Institute of Physical Chemistry) and partly in laboratory at the Departmer	t of Nuclear Chemistry.	-
01PRA1 Probability and Mathematical Statistics 1	Z.ZK	6
The subject is devoted to the introduction to Theory of probability and statistics on measure-theoretic level for discrete models, continuo	· · · · ·	istributions of
random variables. We deal with sample an integral characteristics of random variables and variants of limit theorems are derived (LLN, C		
statistical processing of observations and statistical parametric model estimation.		
01PRA2 Probability and Mathematical Statistics 2	ZK	2
The subject is devoted to the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximu	ا m likelihood principle, Uniform،	ly most powerful
tests, Goodness of fitness tests of models, confidence regions, etc. We focus on real practical applications of these statistical techniques	s in frame of the specific exam	ples.
01PRST Probability and Statistics	Z,ZK	4
It is a basic course of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical	I I I	ne Kolmogorov
definition. The notions as random variable, distribution function of random variable and characteristics of random variable are treated an	-	-
On the basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis te		
01PRSTB Probability and Statistics B	KZ	4
It is a basic course of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical	1 1	•
definition. The notions as random variable, distribution function of random variable and characteristics of random variable are treated an	-	-
On the basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis te		
16UAZB Principles of Ionizing-Radiation Applications	ZK	2
Historical outline of applications, review of interaction of radiation with a matter, radiation sources, detectors and instrumentation, evaluation	1 1	
penetration and scattering of radiation beams, selected radioanalytical methods, tracer methods, radionuclide dating, further possibilities		
16FNZB Problems of Non-ionizing Radiation	ZK	2
Subject is focused on biological effects of non-ionizing radiation and its use in physical praxis. Information about principles, biological eff	1 1	_
resonance and ultrasound as applied in various types of technical or medical equipment are given as well.		g
12PSEM Problem Seminary	Z	2
25 seminaries with topics from the region of solid materials engineering, physical electronics, materials science, nuclear reactors, dosim	I = I	
01PERI Programming of Peripherals Devices	Z	2
Memory organization, input and output ports, computer bus. Software libraries for computer peripherals, 3D graphic libraries. Principles		2
		E
18PJ Programming in Java	Z,ZK	5
This course is devoted to the Java platform and to the development of the basic types of applications for this platform.	771	
18MTL Programming in MATLAB	Z,ZK	5
Introducing Matlab environment as efficient tool for computation in complex arrays and symbolic variables, namely for linear algebra, ma	itnematic analysis, statistics, a	algorithmization
and geometric representation of results.		
18MPT Programming in MATLAB	KZ	5
The subject acquaints students with various programming techniques in the Matlab environment. The emphasis is placed on the different accurate to allogate the subject acquaints students with various programming techniques in the Matlab environment.	ices in programming methodo	logy in Matlab
compared to classical languages.	·	
18PAS Pascal Programming	Z	4
This lecture is intended mainly for students, with little or no experience in programming. It familiarizes the students with the basic conception of the students with the basic conception.	ots in programming and with th	ne Pascal
programming language.	·	
12PDR1 Data Communication and Interfaces 1	Z	2
Principles of computer networks, networks architectures and data transfer. Specification of existing network architectures.		
12PDR2 Data Communication and Interfaces 2	Z	2
Principles of Ethernet standards and basics of protocol suite TCP/IP.		
01RMF The Equations of Mathematical Physics	Z,ZK	6
The subject of this course is solving integral equations, theory of generalized functions, classification of partial differential equations, the	ory of integral transformations	s, and solution of
partial differential equations (boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).		
02RQGP1 Seminar on Quark-Gluon Plasma 1	Z	1
The aim of the seminar is discuss the selection of the most fundamental articles in heavy ion physics.		
02RQGP2 Seminar on Quark-Gluon Plasma 2	Z	1
The aim of the seminar is discuss the selection of the most fundamental articles in heavy ion physics.		
04RM1 Russian for Intermediate Students M1	Z	1
The course is designed for students with previous knowledge of Russian from secondary schools. Students are supposed to know the Ru	ssian alphabet (both printed a	nd handwritten),
basic vocabulary for communication in everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday		
they can use basic grammar structures (verbal and nominal forms, irregular verbs, pronouns). The initial knowledge corresponds to the	achievement level of the RZ2 of	course. The
contents and scope of the course correspond approximately to the RZ3 course, but for half of the time allotted in the timetable.		
04RM2 Russian for Intermediate Students M2	Z	1
The course is based on the RM1 course, its contents and scope correspond roughly to RZ4, however, for half of the time allotted in the t	imetable.	

04RM3	Russian for Intermediate Students M3	Z	1
The course develops th	e knowledge and skills acquired in RM1 and RM2 and its contents and scope are roughly at the same level as those of RZ5, h	owever, for half of	the time allotted
in the timetable.			
04RP1	Russian for Advanced Students P1	Z	1
	ent for the course is to achieve the B1 CEFR level. The objective of the course is revision of standard language structures, pr	acticing more diffi	cult grammar
	ng the fundamentals of technical language and training writing skills.		
04RP2	Russian for Advanced Students P2 RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives,	Z Vorb asports and	1
	It on independent oral and written communication.	verb aspects, spe	Sinc Synactic
04RP3	Russian for Advanced Students P3	Z	1
	RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraphra	1 1	•
courses require good p	revious knowledge of general language at secondary level (listening, reading, correct communication in everyday situations).	The courses deve	elop and expand
	dy is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and		,
-	cal vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write	accurately and wit	th confidence on
technical topics. 04RZ1	Duccian for Decimera 74	7	4
	Russian for Beginners Z1   the first stage of the five-semester programme, its final aim being reading and understanding professional texts written in Rus	Sian Thus it begin	s with mastering
	or both reading and writing skills) and fundamentals of grammar necessary for everyday communication (listening and speak	-	-
	d stress, understand its contents and summarize it.	3,	
04RZ2	Russian for Beginners Z2	Z	1
The second semester of	f the programme is designed to teach skills for basic communication in everyday situations and for reading easy and short si	ubtechnical texts.	Students will be
	sing short sentences and appropriate structures, and read aloud with confidence a short text without marked stress. They will	also develop their	r vocabulary and
	tical structures. They will have mastered with confidence the Russian alphabet and will be able to use it in writing.		-
04RZ3	Russian for Beginners Z3	L Z	1
	RZ2 and includes further everyday topics, develops understanding of short compact texts on new subtechnical topics (for train	-	-
<b>0</b> ,	duces new grammar. Students will be trained to distinguish intonation patterns while listening to spoken language. They will b ress their opinion. Writing skills will be trained on guided writing tasks and note-taking.	e able to respond	so as to be
04RZ4	Russian for Beginners Z4	Z	1
-	04RZ3. It improves and expands the knowledge of general language in all four skills (reading and understanding longer text	1	-
	ommunication in everyday situations, writing longer texts). Students are trained to use grammar structures effectively (e.g., in		-
patterns from Czech, m	odality, imperatives, conditionals). They practice and develop communication skills for everyday situations (food, travelling, from the second se	ee time), and prac	tice oral and
	on more specific topics (environment, addictions, the green movement). They become acquainted with various geographical	data (e.g., Siberia	), learn how to
	information from the timetable, learn about Russian holidays and typical meals.		
04RZ5	Russian for Beginners Z5	Z	1
-	student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understa ialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. C		-
	ng grammar is based on professional and technical texts and only includes items typically used in professional communication		
	s develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, polite reque		-,,,,.,
01RSWP	Project Management of Software Projects	KZ	2
	agement of software projects is dedicated to an explanation of general ideas, rules and procedures which are common to many		
	rresponds to a lifecycle of typical projects including many other aspects which have to be taken into account in the course of the	eir management.	Specific attention
	ect management and to IT projects in general. Interdisciplinary view of project management is emphasized.		-
02SMF	Seminar of Mathematical Physics		2 cimple teaks
	ninar is to iluminate mathematical physics by virtue of solved examples. It is supposed that the teachers of the physics depart fic activities that could become the topics of the student?s bachelor theses in the next year	inent wii present	simple tasks
01SSM1	Seminar of Contemporary Mathematics 1	Z	2
	a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of basic	1 1	
01SSM2	Seminar of Contemporary Mathematics 2	Z	2
This seminar provides	a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of basic	courses of mather	matics.
16SED1	Dosimetry Seminar 1	Z	2
	sed to motivate the student's interest in the field of dosimetry, especially in medical physics. Introductory lectures will be devo		
	following lectures are given by the former students of DDAIR, who are currently employed in various organizations (SÚRO, v	ν.v.i., ÚJF AV R	v.v.i., ÚJV ež,
	blce, FN v Motole, PTC Czech s.r.o.).		-
16SED2	Dosimetry Seminar 2	Z	2
	follows-up SED1. In this seminary students will listen to the lectures of the older students of DDAIR. The older students give le heses. The course also introduces the principles of creating good presentation and advice for working with scientific literature		progress on the
01SMB1	Seminar on Calculus B1	Z	2
	o support the lectures of Calculus B3.		2
01SMB2	Seminar on Calculus B2	Z	2
	o support the lectures of Calculus B4.	. – 1	_
01SOS1	Software Seminar 1	Z	2
Java, Java Beans, Asse	embly language programming for microprocessors Intel 80x86	·	
01SOS2	Software Seminar 2	Z	2
tor Linux evetome Port	+ and Qt. Development of graphical user interface using C and C++ programming languages. Portable applications for Unix I	ike operating syst	ems, especially
	ability to Microsoft Windows.		
02SPRA1	ability to Microsoft Windows. Special Practicum 1	KZ	6
02SPRA1 Physics measurement	ability to Microsoft Windows. Special Practicum 1 ocused on instrumental techniques that are mainly used in physics and technical professions. Topics of each parts are chose	KZ	6
02SPRA1 Physics measurement with advanced pats of e	ability to Microsoft Windows. Special Practicum 1 coused on instrumental techniques that are mainly used in physics and technical professions. Topics of each parts are chose experimental physics and metrology.	KZ en so that students	6 s can familiarize
02SPRA1 Physics measurement with advanced pats of e 02SPRA2	ability to Microsoft Windows. Special Practicum 1 ocused on instrumental techniques that are mainly used in physics and technical professions. Topics of each parts are chose	KZ en so that students	6 s can familiarize 6

The subject is devoted	Statistical Decision Theory	ZK	2
	to the statistical techniques for general decision procedures based on optimization of suitable stochastic criterion, their mutual	l comparisons with	h respect to their
properties and applicat	ility.		
11SFBM	Structure and Function of Biomolecules	Z,ZK	3
-	lecular structure is crucial for the understanding of its function. The subject is focused on the introduction to building blocks of	macromolecules,	overall structure
	n relationship including macromolecular complexes.	_	-
04SM1	Spanish for Intermediate Students M1	Z	1
-	for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-seme		-
	tention to further grammar topics (e.g., perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, nega		-
	and oral communication on a given everyday or easy subtechnical topic, for which the students are trained by reading texts o	-	1.
04SM2	Spanish for Intermediate Students M3	Z	1
	e students' knowledge from the previous course (SM1). Students are gradually acquainted with fundamentals of Spanish for	specific purposes	s in order to be
	alized texts on the Internet.	7	4
04SM3	Spanish for Intermediate Students M3		1
	upplemented with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of acad net in Spanish and search for information of their specialization or field of interest. Students will use the information to write s		
	nee, general Spanish course based on course books, covers presentations and, finally, a written and oral examination.		summaries. me
04SP1	Spanish for Advanced Students P1	Z	1
	n more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communication	-	I nuisites: lovel B2
of CEFR.			quisites. level DZ
04SP2	Spanish for Advanced Students P2	7	1
	ond part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and sy	I C International Actions	on independent
written communication.			on macpendent
04SP3	Spanish for Advanced Students P3	7	1
	al part of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is		•
	s will need in their career.		roominanioadon
04SZ1	Spanish for Beginners Z1	Z	1
	st stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fun		-
	cate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Spanis	-	
04SZ2	Spanish for Beginners Students Z2	7	1
	I on course 04SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structure	s and lexis will be	chosen so as
	rstand short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countr		
	nish-speaking countries are also included.		
04SZ3	Spanish for Beginners Z3	7	1
	course SZ2, and develops the student's vocabulary and grammar structure. The course covers realia (history and culture) o	f the Spanish-spe	aking countries,
	attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperativ		
	en general topic, for which the student is trained by reading texts or listening to them.		
04SZ4	Spanish for Beginners Z3	Z	1
The course is based or			
The course is based of	course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spani	sh speaking coun	tries, mainly of
	course S23. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spani to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the spani to function		-
Spain. It pays attention			-
Spain. It pays attention	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of		-
Spain. It pays attention to written and oral com 04SZ5	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them.	the imperative, an	d subjunctive),
Spain. It pays attention to written and oral com 04SZ5 The course books are s	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of function on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5	the imperative, an	d subjunctive),
Spain. It pays attention to written and oral com 04SZ5 The course books are s	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of t munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish	the imperative, an	d subjunctive),
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of t munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination.	the imperative, an Z h for specific purp Z,ZK	d subjunctive), 1 oses. In its final 4
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics	the imperative, an Z h for specific purp Z,ZK	d subjunctive), 1 oses. In its final 4
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM The course represents 14TEM	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of i munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain and	the imperative, an Z h for specific purp Z,ZK alysis of real struc Z,ZK	d subjunctive), 1 oses. In its final 4 ture parts. 6
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM The course represents 14TEM Abstract: The course re	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain and Engineering Mechanics	the imperative, an Z h for specific purp Z,ZK alysis of real struc Z,ZK	d subjunctive), 1 oses. In its final 4 ture parts. 6
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM The course represents 14TEM Abstract: The course re	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and Engineering Mechanics presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain stress and strain and presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and presents a link-up bet	the imperative, an Z h for specific purp Z,ZK alysis of real struc Z,ZK	d subjunctive), 1 oses. In its final 4 ture parts. 6
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM The course represents 14TEM Abstract: The course re (elasticity, plasticity, fra 12TAIS	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of i munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain and Engineering Mechanics presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain acture mechanics, etc.). Principles of statics, kinematics, and dynamics and their application.	the imperative, an Z h for specific purp Z,ZK alysis of real struc Z,ZK in analysis of real	d subjunctive), 1 oses. In its final 4 ture parts. 6 structure parts
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM The course represents 14TEM Abstract: The course re (elasticity, plasticity, fra 12TAIS	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish shourse based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain and Engineering Mechanics presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and exture mechanics, etc.). Principles of statics, kinematics, and dynamics and their application. Ion Beam Techniques and Applications. of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications.	the imperative, an Z h for specific purp Z,ZK alysis of real struc Z,ZK in analysis of real	d subjunctive), 1 oses. In its final 4 ture parts. 6 structure parts
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM The course represents 14TEM Abstract: The course re (elasticity, plasticity, fra 12TAIS Production and forming TV-1	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 upplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain and Engineering Mechanics presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and true mechanics, etc.). Principles of statics, kinematics, and dynamics and their application. Ion Beam Techniques and Applications. Physical Education	the imperative, an Z h for specific purp Z,ZK alysis of real struc Z,ZK in analysis of real ZK	d subjunctive), 1 oses. In its final 4 ture parts. 6 structure parts 3
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM The course represents 14TEM Abstract: The course re (elasticity, plasticity, frac 12TAIS Production and forming TV-1 TV-2	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of i munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain and Engineering Mechanics presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and ture mechanics, etc.). Principles of statics, kinematics, and dynamics and their application. Ion Beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications. Physical Education Physical Education	the imperative, an Z h for specific purp Z,ZK alysis of real struc Z,ZK in analysis of real ZK Z Z	d subjunctive), 1 oses. In its final 4 ture parts. 6 structure parts 3 1 1
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM The course represents 14TEM Abstract: The course re (elasticity, plasticity, frac 12TAIS Production and forming TV-1 TV-2 TV-3	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of i munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain and Engineering Mechanics presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and ture mechanics, etc.). Principles of statics, kinematics, and dynamics and their application. Ion Beam Techniques and Applications. of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications. Physical Education Physical Education Physical education	the imperative, an Z h for specific purp Z,ZK alysis of real struc Z,ZK in analysis of real ZK Z Z Z	d subjunctive), 1 oses. In its final 4 ture parts. 6 structure parts 3 1 1 1 1
Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM The course represents 14TEM Abstract: The course re (elasticity, plasticity, fra 12TAIS Production and forming TV-1 TV-2 TV-3 TV-4	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of i munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain and Engineering Mechanics presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain and ture mechanics, etc.). Principles of statics, kinematics, and dynamics and their application. Ion Beam Techniques and Applications. of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications. Physical Education Physical Education Physical education	the imperative, an Z h for specific purp Z,ZK alysis of real struc Z,ZK in analysis of real ZK Z Z Z Z	d subjunctive), 1 oses. In its final 4 ture parts. 6 structure parts 3 1 1 1 1 1
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Spain. It pays attention to written and oral com 04SZ5 The course books are s part, the general Spani 14TM The course represents 14TEM Abstract: The course re (elasticity, plasticity, frac 12TAIS Production and forming TV-1 TV-2 TV-3 TV-4 02TEF1 The course is an introdu to description of dynam problem, the motion of the first part of the cours 02TEF2 Tensors and transforma Minkowski space-time. approximation. 01DYSY The course provides ar up the understanding of detail, including state v explained with the empla	to further grammar topics (perifrasis verbales, future imperfecto, direct object and indirect object pronouns, negative form of imunication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z5 upplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish sh course based on the course book will end with presentations and, finally, a written and oral examination. Engineering Mechanics a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain ans Engineering Mechanics presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain ans Engineering Mechanics remechanics, etc.). Principles of statics, kinematics, and dynamics and their application. Ion Beam Techniques and Applications. of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications. Physical Education Physical Education Physical education Physical education Site (Newton's, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these methods is illustrated on element a system of constrained mass points, and of a rigid body and continuum. The special theory of relativity: relativistic mechanics ar Classical telecrodynamics: Maxwell's equations in the Minkowski space-time, electromagnetic waves in dielectric media, elect Theory of Dynamic Systems introduction to system theory with emphasis on control theory and understanding of the fundamental concepts of systems a the dynamical behavior of systems as well as provide the necessary mathematical background. Internal and external system for the dynamical behavior of systems as well as provide the necessary mathematical background. Internal and external system for the dynamical behavior of systems as well as provide the necessary mathematical background. Internal an	the imperative, and The imperative, and A for specific purp Z,ZK alysis of real struc Z,ZK in analysis of real ZK Z Z Z,ZK ism as well as diferent ary examples like es of mechanics. Z,ZK ism as well as diferent ary examples like es of mechanics. Z,ZK ind classical field t thromagnetic radia ZK and control theory. m descriptions are servability, and read. All stabilizing feed	d subjunctive), 1 oses. In its final 4 ture parts. 6 structure parts 3 1 1 1 1 4 rent approaches the two-body The subject is 4 heory in the tion in the dipole 3 First, we build o described in dizations are dback controllers

02TER	Heat and Molecular Physics	Z,ZK	4
Thermal expansion of r	naterials, heat transfer; stationary and non-stationary heat conduction, heat transfer and penetration; 1st and 2nd thermodyna	amic principle, ide	al and real gas,
entropy; non-chemical s	systems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials; kinetic theory: Maxwell's velocity	distribution, equip	artition theorem.
02TSFA	Thermodynamics and Statistical Physics	Z,ZK	4
	namics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Cha		•
, , ,	escription from a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canon	ical ensemble, Fe	rmi gas, models
of crystals and the blac	k body radiation). The Boltzmann equation is usedto discusses simple transport phenomena.		
01TOP	Topology	ZK	2
	e systematization and deepening the knowledge of general topology.		_
		7 71/	4
16MCRB	Transport of Ionizing Radiation and Monte Carlo Method	Z,ZK	4
Introduction to principle	s of Monte Carlo method and its use for radiation transport simulation, selected concepts of probability theory and mathemat	tical statistics. Phy	sical models of
interaction of different t	pes of radiation and their use for stochastic modeling of their substance transport. Model description concepts, geometric m	odel layout, sourc	e term, scoring
methods, and modeling	of measured variables and parameters. Statistical evaluation of reliability of modeling results, variance reduction methods, pro	gram codes and t	ools for radiation
	NP program, its possibilities and use. Procedures for the practical use of the program for typical tasks in the field of dosimetr	•	
	systems, radiation protection and medical applications.	, approation of it	nii 2 nig raalaalon,
18INTA	Development of internet applications	KZ	4
The lectures provide ar	overview of modern technologies for the development of web applications. Students will learn basic web languages and con	cepts (HTML, UR	L, etc.) and they
will also be introduced	o relational database systems. The tutorials are dedicated to practical examples of building web applications, from the simple	est to more advan	ced. The course
	ards backend technologies and using the Python languages, but covers also frontend frameworks and JavaScript.		
		_	-
01DYK	Introduction to Continuum Dynamics	Z	2
This course is an introd	uction to the mathematical description of continuum dynamics. It summarizes the necessary mathematical apparatus with en	nphasis on vector	and tensor
calculus, differential for	ms, and integration on manifolds. It includes the basic concepts of continuum mechanics such as strain and stress tensors or	substantial derivation	ative, by means
	derive the fundamental laws of conservation of mass, momentum, angular momentum, and energy in integral and differential		-
	s are adapted to the case of viscous and inviscid fluid and linear and nonlinear elastic body.		art of the obtailed,
16ZIVB	Introduction to Ecology	KZ	2
The subject inform about	t basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the en	vironment and ev	aluate economic
indicators and sustaina	ble development.		
		7	0
02UFEC	Introduction to Elementary Particle Physics	Z	2
The course provides ar	easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subject	are presented.	
11UFPLN	Introduction to Solid State Physics	ZK	2
-	ure is to introduce the undergraduate students to the study of the solid state physics.		-
		7 71	-
17UINZ	Introduction to Engineering	Z,ZK	3
The course is devoted t	o an introduction to the engineering profession. Students will gradually learn the characteristics and specialties of engineerin	g work, including	an overview of
the basics of selected e	ngineering disciplines, such as the basics of materials science, manufacturing technology, quality control and assurance and	ecology. Further,	the course will
	it R&:D activities organization and on selected parts of technical drawings and the work with AutoCAD code.		
	f R&D activities organization and on selected parts of technical drawings and the work with AutoCAD code.	7	
02UKP	Introduction to Curves and Surfaces	Z	2
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12EPR2 Basic Electronics Practicum 2	KZ	3
The aim of the practicum is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formula	tion of the results.	The practicum
consists of blocks lasting 4 hours.		
12ZPLT Basic Laser Technique Laboratory	KZ	6
Lasers, solid state Nd:YAG laser, laser crystal, laser discharge lamp, laser cavity, resonator, free-running, Q-switching, laser amplifier. second harn		discharges, laser
diode, diode pumped Nd:YAG laser, CO2 laser marking, laser materials properties, non-linear transmission, laser beam transverse profile, acouste		
12ZPOP Basic Optical Laboratory	KZ	6
The practical laboratories give advanced practical skills by experimental work in optics and optoelectronics. Laboratory records must be elaborated	1	1 -
16AMMB Fundamentals of Analytical Measurement Methods	ZK	2
Basic principles, technical performance and utilization of methods of chemical analysis. Basic methodology of analytical determination, gravimetry,		
polarography, refractometry, polarimetry, UV-VIS spectroscopy, atomic emission and absorption spectroscopy, infrared and Raman spectroscopy, J		
magnetic and electron spin resonance, mass spectrometry, thermometric methods, gas and liquid chromatography.	tray off dotardi aria	iyolo, nuoloal
16ZBAF1 Fundamentals of Human Biology, Anatomy and Physiology 1	Z,ZK	4
Organization of living systems, non-cellular and cellular organisms, prokaryotic and eukaryotic cell. Molecular and cell biology. Biopolymers. Molec		
their regulation. General human anatomy. Basics of medical terminology. Overview of tissues. Skeleton. Muscle anatomy in general. Digestive syste		• • •
system and physiology of respiration. Excretory and genital tract.		gy. Respiratory
16ZBAF2 Fundamentals of Human Biology, Anatomy and Physiology 2	Z.ZK	4
Heart and physiology of cardiac activity. General anatomy of blood vessels, main arteries of the body, overview of veins and physiology of blood, b	1 '	1
CNS. Visual system and physiology of the visual system. Auditory and vestibular system and physiology of hearing and balance. Skin, endocrine g	-	new of fielves.
		4
16ZDOZ1   Fundamentals of Radiation Dosimetry 1	Z,ZK	4
History, development, and objectives of dosimetry. Quantities and units used for description of sources, fields, interactions of ionizing radiation, ion	izations, energy tra	inster and
absorption. Fundamentals of the effects of ionizing radiation.		
16ZDOZ2   Fundamentals of Radiation Dosimetry 2	ZK	2
Fundamentals of biological effects of ionizing radiation. Quantities and units used in radiation protection. Recommendations of ICRP and ICRU. Princ	ples and methods of	of measurements
in dosimetry. Determination of activity and neutron source emission. Measurements of absorbed dose and exposure.		T
17ZEH Basics of Economic Assessment	ZK	2
The course focuses on the economic evaluation of Nuclear power plants. Introductory lectures are concerned with an introduction to economy and	-	-
microeconomics. Lectures continued with insight into the business and managerial economics, explanation of the concepts of incomes, expenses, e	tc. and their applica	tions in electrical
energy resources evaluation. Second part of lectures is focused on evaluation of nuclear power plants - the fuel cycle and operations of NPP.		
17ZEL Basics of Electronics	KZ	3
Lectures provide basic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors and	nd solution of elect	rical circuits with
them. Next, lectures deal with semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor com	-	
and triacs). Lectures continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analog	/digital converters.	Lectures are
completed with electronic laboratory exercises.		
12ZEL1 Basic Electronics 1	Z,ZK	3
The subject provides primary knowledge of circuit theory concerning principles of electronic circuits in both stationary and harmonic stable state. C	Circuit analysis met	hods for linear
circuits include symbolic and complex method are explained. Proper circuit analysis is also lectured. The subject's final part deals with transient eff	ects inside linear c	ircuits.
12ZEL2 Basic Electronics 2	Z,ZK	3
The subject follows up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basi	c themes of logical	circuits field.
02ZFM1 Foundations of Physical Measurements 1	Z	2
The lecture is designed for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however	r, it can be attende	d by students of
other branches. The goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired	data on a PC. Stud	entslearn the
basic habits of work in a physics lab.		
02ZFM2 Foundations of Physical Measurements 2	Z	2
This introductory course is devoted to the essentials of measurements of the most important physical quantities. It is especially recommended to the	ose students who a	re going to study
one of the physicas curricula - Physical engineering and Nuclear engineering. Also the methods of evaluation of statistical data using PC and practi	cal work with meas	urement devices
is involved. Students learn main rules connected with experimental work in physical laboratory.		
11ZFPL Basic to Solid State Physics	KZ	2
Description of fundamental properties of solids following the regular long distance ordering of atoms in a crystal lattice. Based on the introduced bo		1
solids, various types of crystals and their properties are defined. The model of crystalline lattice dynamics in harmonic approximation is described and	basic thermal prop	perties of crystals
are derived. The periodic potential of the crystal lattice is introduced and its relation to the following model describing the energetic state of electro	ns in solids by mea	ins of electron
energy bands explained. The special consequences of band approach to the physical properties of solids are elucidated. The aim of the course is	-	
interpret a broad phenomenological basis of physical properties of crystalline solids		
12ZFP Principles of Plasma Physics	Z,ZK	4
Basic physics of high temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariant	1 1	1
and propagation of electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and p	arametric instabilitie	es are explained.
It comprises brief introduction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas are introduce	d.	
02ZJF Nuclear Physics	Z,ZK	6
This scientific field presents formidable challenges both experimentally and theoretically, simply because we are dealing with the submicroscopic of		1
intuition regarding the behaviour of objects fails us. The lecture is a basic introduction to very interesting regions of subatomic physics.	,	
02ZJFB Nuclear Physics B	KZ	3
This scientific field presents formidable challenges both experimentally and theoretically, simply because we are dealing with the submicroscopic of	1	-
intuition regarding the behaviour of objects fails us. The lecture is a basic introduction to very interesting regions of subatomic physics.	,	
15ZKJE Nuclear Power Plants Design and Operation	ZK	3
Target of lecture is to create basic knowledge of physics of nuclear reactors utilizing fission. Further explains arrangement of nuclear fuel, purpose, tec	1	1
of core. Function and construction of all components are defined wit regard to nuclear physics, physics of shielding, theory of regulation, material s	-	
dosimetry. Creates knowledge for evaluation of nuclear safety and radiation protection in nuclear energy, reliability and economy for comparison w	-	
environment and to strategic importancy of nuclear sources of energy. Gives basic knowledge of construction, operation and decommissioning of nuclear sources of energy.		
high level nuclear waste and spent fuel and their management.	perior oradior	
16MEZB Fundamentals of Ionizing-Radiation Metrology	Z,ZK	4
The course summarizes the basic objectives and content of ionizing radiation metrology. It deals with the interpretation of radiation quantities and u	1 1	1
theoretical and experimental foundations of metrology, the determination of basic parameters of radiation. Lectures are supplemented with basic s		
regulations.		

12ZAOP	Fundamentals of Optics	Z,ZK	2
The lecture covers the	very basics of optics - electromagnetic theory, linear optical physics and material effects, basics of nonlinear effects, and geo	metrical optics. The	e main goal of
the lecture is to obtair	, on the bachelor level, broad and general information on optics, giving an essential orientation in the field, especially with res	pect to character of	f the bachelor
work. Particular topics	are further elaborated during departmental masters program. The lecture stems from the electrodynamic notion of plane wave	s in vacuum (includ	ing polarization
effects), and further fr	om material medium. It explains basics of linear and nonlinear response in material medium and dispersion properties. It next	informs on conseq	uences in
anisotropic media, it e	xplains processes induced by boundary conditions at interfaces. It also discusses the consequences of statistics on interferen	ce processes, expl	ains elements
of two-wave interferen	e and their applications in interferometers. Based on the Fresnel diffraction integral, diffraction processes are presented in a grap	ohical form, includin	g fundamentals
of grating diffraction. B	ased on this diffraction principle, basic functioning of holography is clarified. Finally, the lecture unravels the geometrical optics	limit. It takes notice	on geometrical
approach imaging, su	ostitutive schema of a paraxial imaging system, and optical aberrations. It shows fundamentals of imaging in optical instrumen	its.	
01ZPB1	Introduction to Computer Security 1	Z	2
16ZPSP	Basic Work with PC	Z	2
The aim of the course	is to acquaint students with the basic skills related to working on a personal computer. The introductory part of the course is d	evoted to informatio	on systems and
resources available at	the CTU in Prague and the FNSPE. Emphasis is placed on effective handling of work with office productivity software (text ed	litor, spreadsheet a	nd presentation
software) with exercise	es in MS Office. The practical content focuses mainly on further use during studies (laboratory reports, research work, bachelo	or's and diploma the	eses) and in
specific practice (hosp	itals, state administration, companies). Other sections summarize basic information about computer hardware, software, and s	ecurity. Completion	of independen
home exercises and p	articipation in exercises above 60% is a necessary condition for passing the course.		
16ZRAO	Basics of Radiation Protection	Z	2
The aim of the course	is to familiarize students with the general principles of radiation protection. The main emphasis is put on basic mechanisms and	d concepts, in order	to allow critica
orientation in this field	The course provides answers to the cardinal questions: What is ionizing radiation (IR), where it comes from, whether and how	w it is dangerous fo	r people, what
is the meaning of prot	ective units (Gray, Sievert), how to prevent malicious effect of IR and many others. The content of the lectures does not require	e any prior knowled	ge.
02ZSM	Introduction to the Standard Model	ZK	2
Particles, leptons, had	rons, baryons, mesons, symmetry, symmetry group, quarks, gluons, partons, standard model of electroweak and strong intera	actions, quantum ch	romodynamics
(QCD), cross section,	scattering cross section.		
16ZEDB	Basics of Experimantal Data Processing	ZK	2
Statistical analysis of	experimental data; univariate data; calibration; regression; multivariate data.	1 1	
Statistical analysis of			
14ZZKS		KZ	4
14ZZKS	Testing and Processing of Metals and Alloys , hardness, impact toughness, technological testing, fatigue testing, creep testing. Light microscopy, preparation of specimens	1	т
14ZZKS Abstract: Tension tests	Testing and Processing of Metals and Alloys	for macro- and mic	ro-observation
14ZZKS Abstract: Tension tests	Testing and Processing of Metals and Alloys , hardness, impact toughness, technological testing, fatigue testing, creep testing. Light microscopy, preparation of specimens	for macro- and mic	ro-observation.
14ZZKS Abstract: Tension tests Casting, forming, weld	Testing and Processing of Metals and Alloys , hardness, impact toughness, technological testing, fatigue testing, creep testing. Light microscopy, preparation of specimens ing, soldering, brazing, powder metallurgy, mechanical machining. Copper alloys, aluminium alloys, titanium alloys, special allo	for macro- and mic	ro-observation.
14ZZKS Abstract: Tension tests Casting, forming, weld drawing and CAD. 12ZDP	Testing and Processing of Metals and Alloys , hardness, impact toughness, technological testing, fatigue testing, creep testing. Light microscopy, preparation of specimens	for macro- and mic ys of non-ferrous m	ro-observation etals. Technica
14ZZKS Abstract: Tension tests Casting, forming, weld drawing and CAD. 12ZDP Typography, computer	Testing and Processing of Metals and Alloys , hardness, impact toughness, technological testing, fatigue testing, creep testing. Light microscopy, preparation of specimens ing, soldering, brazing, powder metallurgy, mechanical machining. Copper alloys, aluminium alloys, titanium alloys, special allo Data Processing for Publishing	for macro- and mic ys of non-ferrous m Z ages for typesetting	ero-observation letals. Technica 2 g (TeX, LaTeX,

# List of courses of this pass:

Code	Name of the course	Completion	Credits
00EKOT	Economy in Technology	Z	1
	The course introduces the basics of micro- and macroeconomics.	1	1
00ETV	Ethics of Science and Technology	Z	1
00MAM1	Essentials of High School Course 1	Z	1
00MAM2	Essentials of High School Math Course 2 Review of basics of high school mathematics.	Z	1
00PT	Preparatory Week	Z	2
00RET	Rhetoric	Z	1
	used on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the s nonverbal aspects. Stylistics exercises, strategies for coping with stage-fright and a short excursion into the history of rhetoric are ar		•
00UPRA	Introduction to Law	Z	1
00UPSY	Introduction to Psychology	Z	1
01ALG	Algebra	ZK	4
After an introduction	on into the set theory standard algebraic structures are dealt with: groups, rings, fields, modules, linear algebras, lattices, Boolean alge commutative fields.	bras, rings of polyr	nomials over
01ALGE	Algebra	Z,ZK	6
	axioms are treated in detail. Elements of the set theory cover only: equivalence and subvalence, the Cantorov-Bernstein theorem, the ition of ordinals and cardinals. Further standard algebraic structures are addressed: semigroups, monoids, groups, rings, integral don fields, lattices. Independent chapters are devoted to divisibility in integral domains and to finite fields.		•
01BPAI1	Bachelor's Degree Project 1	Z	5
E	Bachelor's Degree project on the selected topic under the supervision. Supervision and regular checking of the bachalor project unde	r preparation.	I
01BPAI2	Bachelor's Degree Project 2	Z	10
E	Bachelor's Degree project on the selected topic under the supervision. Supervision and regular checking of the bachalor project unde	r preparation.	I
01BSEM	Bachelor Seminar	Z	2
Ba	chelor seminar - technical details of bachelor thesis, format and processing, prerequisities, individual student presentations of their re	esearch results.	
01DEM	History of Mathematics	Z	1
The subject has th	e form of regular seminars where the members of the department of mathematics, but also invited speakers - specialists in the field - g from the history of mathematics.	ive their talks on va	aroius topics

01DIM1	Discrete Mathematics 1	Z	2
	The seminar is devoted to elementary number theory and applications. It includes individual problem solving.	۲	2
01DIM2	Discrete Mathematics 2 The seminar is devoted to recurrence relations. It includes individual problem solving.	Z	2
01DIM3	Discrete Mathematics 3	Z	2
1	d to elementary proofs of non-trivial combinatoriwal identities and to generating functions and their applications. In the seminar stu	idents present a p	oroblem wit
	solution chosen from the given literature.		
01DYK	Introduction to Continuum Dynamics	Z	2
	ntroduction to the mathematical description of continuum dynamics. It summarizes the necessary mathematical apparatus with employee and integration on manifolds. It includes the basis espectate of experiments are such as strain and strain and strain the second strain and strain an		
	orms, and integration on manifolds. It includes the basic concepts of continuum mechanics such as strain and stress tensors or sul to derive the fundamental laws of conservation of mass, momentum, angular momentum, and energy in integral and differential form		-
	these conservation laws are adapted to the case of viscous and inviscid fluid and linear and nonlinear elastic body.	i. In the last part o	
01DYSY	Theory of Dynamic Systems	ZK	3
1	an introduction to system theory with emphasis on control theory and understanding of the fundamental concepts of systems and	control theory. Fir	rst, we buil
up the understanding	g of the dynamical behavior of systems as well as provide the necessary mathematical background. Internal and external system of	lescriptions are d	escribed in
	te variable, impulse response and transfer function, polynomial matrix, and fractional representations. Stability, controllability, obser		
-	phasis always being on fundamental results. State feedback, state estimation, and eigenvalue assignment are discussed in detail. All	-	
	zed using polynomial and fractional system representations. The emphasis in this primer is on linear time-invariant systems, both c		1
01EIGR	Elementary Introduction to Graph Theory The course provides an explanation of basic graph theory followed by a survey of common graph algorithms.	KZ	2
01FA1	Functional Analysis 1	Z,ZK	3
	mathematical analysis and algebra introduction to the basics of functional analysis. There are the concepts that students need to ur and technical disciplines.	,	-
01FA2	Functional Analysis 2	Z,ZK	4
The course aims to	present selected fundamental results from functional analysis including basic theorems of the theory of Banach spaces, closed of Hilbert-Schmidt operators, spectral decomposition of bounded self-adjoint operators.	erators and their	spectrum,
01FAN1	Functional Analysis 1	Z,ZK	4
1	d results are addressed concerning successively topological spaces, metric spaces, topological vector spaces, normed and Banac	•	1 -
01FKP	Functions of Complex Variable	ZK	2
1	advanced properties of systems of holomorphic functions, Ascoli-Vitali's theorem, advanced properties of conformal mappings, trar		1
func	ions. Basic properties of complex functions of several complex variables together with improper line integrals and its applications a	re presented.	
01FKPB	Functions of Complex Variable B	Z	2
	advanced properties of systems of holomorphic functions, Ascoli-Vitali's theorem, advanced properties of conformal mappings, tran		neromorph
	ions. Basic properties of complex functions of several complex variables together with improper line integrals and its applications a		
01GTDR	Geometric Theory of Ordinary Differential Equations	Z	2
	of the qualitative theory of ODEs dealing with the geometric and topological properties of the solution. In this context, we mention su the existence and uniqueness, continuous dependence on parameters and initial conditions. Main part is devoted to the autonomou	-	basic result
01JEPR	Simple Compilers	Z	2
OIGEI IX	Lexical and syntax analysis, code generation, simple optimizations, development environments, reflection.	2	-
01KAP	Combinatorics and Probability	ZK	2
	ed to combinatorial rules, definition of the probability, explication of random variable and its characteristics. It explains term of distrik		d examples
	of discrete and continuous random variables are mentioned. Emphasis is placed on using of these terms and rules.		
01LAWA	Linear Algebra with Applications		
		ZK	2
	course deals with basic domains of linear algebra and their applications in economy and other disciplines. The language of instructi		2
The 01LIP	course deals with basic domains of linear algebra and their applications in economy and other disciplines. The language of instructi Linear Programming		2
01LIP	Linear Programming	on is English. Z,ZK	3
01LIP	Linear Programming plems about constrained extremum problems for multivariable functions (the function is linear and the constraint equations are given inequalities).	ion is English. Z,ZK by linear equation	3 ns and line
01LIP	Linear Programming blems about constrained extremum problems for multivariable functions (the function is linear and the constraint equations are given inequalities). Markov processes	ion is English. Z,ZK by linear equation Z,ZK	3 ns and line 4
01LIP We study special pro 01MAPR 01MASC	Linear Programming blems about constrained extremum problems for multivariable functions (the function is linear and the constraint equations are given inequalities). Markov processes Mathematical Statistics - Seminar	ion is English. Z,ZK by linear equation Z,ZK Z	3 ns and line: 4 2
01LIP We study special pro 01MAPR 01MASC The subject is devo	Linear Programming blems about constrained extremum problems for multivariable functions (the function is linear and the constraint equations are given inequalities). Markov processes Mathematical Statistics - Seminar ed to practical use of statistical methods studied in the course Mathematical Statistics 01MAS. The tutorial deals with calculation of	ion is English. Z,ZK by linear equation Z,ZK Z f Fisher information	3 ns and lines 4 2 on matrix of
01LIP We study special pro 01MAPR 01MASC The subject is devo statistical models, fin	Linear Programming blems about constrained extremum problems for multivariable functions (the function is linear and the constraint equations are given inequalities). Markov processes Mathematical Statistics - Seminar ed to practical use of statistical methods studied in the course Mathematical Statistics 01MAS. The tutorial deals with calculation of ding unbiased estimators with minimal variance, parameter estimation by method of moments and method of maximum likelihood, of	ion is English. Z,ZK by linear equation Z,ZK Z f Fisher informatic derivation of critica	3 ns and lines 4 2 on matrix of
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01MMPV	Mathematical Models of Groundwater Flow	KZ	2
The course prov	des an overview of computational methods for selected groundwater flow problems. The first part of the course is devoted to mathem	I I	
	problems. The second part is aimed at selected numerical methods, emphasizing implementation issues related to these meth		
01NME2	Numerical Methods 2	KZ	2
	ed to numerical solution of boundary-value problems and intial-boundary-value problems for ordinary and partial differential equations.	I I	s converting
bound	lary-value problems to initial-value problems and finite-difference methods for elliptic, parabolic and first-order hyperbolic partial differ	rential equations.	
01PERI	Programming of Peripherals Devices	Z	2
Memory of	ganization, input and output ports, computer bus. Software libraries for computer peripherals, 3D graphic libraries. Principles of perip	herals device drive	ers.
01POGR1	Computer Graphics 1	Z	2
	two-semester "Computer Graphics" course is devoted to the specifics of digital display devices spanning from history up to the state of	-	
	ental problems in 2D computer graphics is given together with their solutions. Focus is put on mathematical description of problems and ex	•	
algorithms using k	nowledge previously obtained in a variety of subjects available at FNSPE. The final part of the course covers the applications of com	puter graphics app	roaches in
	the process of authoring scientific documents and presentations.	· - · ·	
01POGR2	Computer Graphics 2	<u> </u>	2
	f the two-semester "Computer Graphics" course begins with a brief introduction to signal theory in the context of aliasing - a phenom a well structured survey of fundamental problems in 3D computer graphics is given together with their solutions, from the description		-
	put on mathematical description of problems and explanation of the corresponding algorithms using knowledge previously obtained in		
-	provin matternation aspect such as data structures design etc. is also a matter of concern. In the last lecture, a number of theoretic		
g	using Blender, an open-source 3D modeling and rendering software instrument.		
01POPJ1	Computers and Natural Language 1	Z	2
	mputational processing and understanding of natural languages. Automatic methods of morphological and syntactic analysis includir	–	
	isambiguation will be discussed. Two-level morphology, tagging and language models, Viterbi algorithm, grammars, chart parsing, pro	-	
01POPJ2	Computers and Natural Language 2	Z	2
The goal of the cou	irse is to get acquainted with the broad topic of machine translation (MT). Machine translation is a challenging task that can serve as	a good example fo	or modeling
of systems as co	mplex as natural languages. We cover several rather different approaches to the task as well as issues related to automatic and man	ual evaluation of tr	anslation
	quality.		
01POPR	Advanced Probability	Z	2
	evoted to advanced Theory of probability and statistics on measure-theoretic level for general distributions of random variables. We de		-
characteristics c	f random variables and convergence criteria. Further, the theory of statistical model estimation and testing is extended for parametric	and nonparametr	ic cases.
01PRA1	Probability and Mathematical Statistics 1	Z,ZK	6
	voted to the introduction to Theory of probability and statistics on measure-theoretic level for discrete models, continuous distributions	•	
random variables.	We deal with sample an integral characteristics of random variables and variants of limit theorems are derived (LLN, CLT). This know	ledge is further ap	plied to the
	statistical processing of observations and statistical parametric model estimation.		
01PRA2	Probability and Mathematical Statistics 2	ZK	2
	ted to the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihood prin		
01PRST	ess of fitness tests of models, confidence regions, etc. We focus on real practical applications of these statistical techniques in frame of the second statistical techniques in techniques	-	
	Probability and Statistics of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition and o	Z,ZK	4
	ons as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit the	-	-
	e basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testir		
01PRSTB	Probability and Statistics B	· · ·	
	of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition and	<u> </u>	4
		KZ	4 Colmogorov
aenniuon. The nou	ons as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit the	continuing till the K	olmogorov
	ons as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit the e basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testir	continuing till the K corems are stated a	olmogorov
		continuing till the K corems are stated a	olmogorov
On th	e basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testir	continuing till the K corems are stated a ng are explained.	olmogorov and proved.
On th	e basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testir LaTeX - Publication Instrument	continuing till the K corems are stated a ng are explained.	olmogorov and proved.
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Software Seminar 2 and Qt. Development of graphical user interface using C and C++ programming languages. Portable applications for Unix like of for Linux systems. Portability to Microsoft Windows. Seminar of Contemporary Mathematics 1 s a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of basic Seminar of Contemporary Mathematics 2 s a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of basic Statistical Decision Theory he statistical techniques for general decision procedures based on optimization of suitable stochastic criterion, their mutual con properties and applicability. Trivial Introduction to Graph Theory Theory of Codes Algebraic methods used in error detecting and error correcting codes. Topology The aim of lecture is the systematization and deepening the knowledge of general topology.	Z courses of mathe Z courses of mathe ZK	2 matics. 2 matics. 2
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The aim of lecture is the systematization and deepening the knowledge of general topology.		2
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	ZK	2
Object oriented programming languages. Object oriented programming libraries for graphics, databases and distributed system		1
Introduction to Computer Science	KZ	2
ndamental notions of computer science: algorithms, various types of automata, introduction to information theory and coding the	heory.	
Introduction to Theoretical Informatics	ZK	2
Introduction to Operating Systems	Z	2
		2
	Z,ZK	4
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electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzmann. T	The birth of moder	n quantur
	ergy, Elementary	particles,
standard model. The concept of Nature and Universe of today.		1
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	Z	2
•	presented in the	course of
ne problems are chosen, studied and presented by the students themselves, with the possibility to use PC and physical labora	tory equipments.	
Physical Seminar 2	Z	2
	-	
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	a demonstration c	) selected
	7 7K	3
•		1
		3
•	,	-
quantization of angular momentum, solution of simple systems, hydrogen atom.	с ,	
Experimental Laboratory 1	Z	2
Cavendish experiment. Elasticity Thermal capacities. Electric measurements, Acoustic. Oscillations.		
Experimental Laboratory 2	Z	2
Electric and magnetic field, microwaves, Xray and gamma rays, geometric optics		1
Simulations and Data Analysis Tools	Z	2
Data analysis and simulations of high energy elementary particle collisions. ROOT and Pythia programs.		-
General Relativity	ZK	3
General Relativity eory of relativity: principle of equivalence and principle of general covariance, parallel transport and geodesic equation, gravitation	tional redshift. Cu	-
General Relativity eory of relativity: principle of equivalence and principle of general covariance, parallel transport and geodesic equation, gravital Einstein's gravitational law. Schwarzschild solution of the Einstein equations, homogeneous and isotropic cosmological mode	tional redshift. Cu Is.	rvature ar
General Relativity eory of relativity: principle of equivalence and principle of general covariance, parallel transport and geodesic equation, gravitat Einstein's gravitational law. Schwarzschild solution of the Einstein equations, homogeneous and isotropic cosmological mode Experimental Laboratory 1	tional redshift. Cu els. KZ	rvature an
General Relativity eory of relativity: principle of equivalence and principle of general covariance, parallel transport and geodesic equation, gravital Einstein's gravitational law. Schwarzschild solution of the Einstein equations, homogeneous and isotropic cosmological mode	tional redshift. Cu els. KZ ngineering). But it d	rvature an 6 can be als
ttm sid sid sid the the ttm	Introduction to Theoretical Informatics Introduction to Operating Systems structure of operating systems. Processes, thread, memory management. Synchronization of multi=threaded applications. Mer Introduction to Computer Security 1 Atomic and Molecular Spectroscopy The lecture is devoted to atomic and molecular spectroscopy. History of Physics 1 the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural philor ned. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galileo, H as experimental science. Newton and his work. History of Physics 2 History of Physics 2 scieal mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. Et n, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzmann. Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclear en standard model. The concept of Nature and Universe of today. Differential Equations, Symmetries and Groups The purpose of the lecture is to teach students computation of symmetries of the differential equations. Experimental Physics 1 roductory course in experimental physics. Students will learn methods of measurement of basic physical quantities and method Physical Seminar 1 d to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of physics eletions. The problems are chosen studied and presented by the students to deeper understanding of fundamentals of physics a Physics 1 physics 2 Physics 2 Physics 2 Lectricity and magnetism, modern physics. The lecture is supplemented with practical investigation an physical phenomena Physics 1 physics 2 Physics 2 Physics 2 Lectricity and magnetism, studied the presented by the students to deeper understanding of fundamentals of physics Physics 1 Leptonemena Leptoper	Introduction to Theoretical Informatics         ZK           Introduction to Operating Systems         Z           structure of operating systems. Processes, thread, memory magnement. Synchronization of multi=threaded applications. Memory mapped files         Introduction to Computer Security 1         Z           Atomic and Molecular Spectroscopy         Z.ZK           The lecture is devoted to atomic and molecular spectroscopy.         Z           History of Physics 1         Z           atomic and Molecular Spectroscopy.         Z           He system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural philosophers, Aristole.         Z           action of the Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Gallieo, Huygens. The birth as experimental science. Newton and his work.         Z           History of Physics 2         Z         Z         Z           sical mechanics after Newton, Bernoull's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. Electricity and magn, electrodynamics and lectromagnetism. Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzmann. The birth of moder, Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutheford and Bohr. The way to nuclear energy. Elementary standard model. The concept of Nature and Universe of today.         Z           Differential Equations, Symmetries and Groups         Z         Z           reductory course in experimental ph

	Experimental Laboratory 2 d especially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear Er	KZ	6
	is interested in the otherspecializations. In Experimental laboratory students learn how to prepare for experiments (including work with the		
of the measuremen	It (acquire of different experimental procedures and routines), willteach writing the records of measurement, processing and evaluation	-	-
	practically extend the knowledge gained in lectures on physics.		
02RQGP1	Seminar on Quark-Gluon Plasma 1	Z	1
I	The aim of the seminar is discuss the selection of the most fundamental articles in heavy ion physics.		1
02RQGP2	Seminar on Quark-Gluon Plasma 2	Z	1
I	The aim of the seminar is discuss the selection of the most fundamental articles in heavy ion physics.		1
02SMF	Seminar of Mathematical Physics	Z	2
	he seminar is to iluminate mathematical physics by virtue of solved examples. It is supposed that the teachers of the physics departm	ent will present s	imple tasks
	concerning their scientific activities that could become the topics of the student?s bachelor theses in the next year		
02SPRA1	Special Practicum 1	KZ	6
hysics measurem	ent focused on instrumental techniques that are mainly used in physics and technical professions. Topics of each parts are chosen s	o that students ca	an familiari
	with advanced pats of experimental physics and metrology.		
02SPRA2	Special Practicum 2	KZ	6
1	ent focused on instrumental techniques that are mainly used in physics and technical professions. Topics of each parts are chosen s	o that students c	an familiari
-	with advanced pats of experimental physics and metrology.		
02TEF1	Theoretical Physics 1	Z,ZK	4
	roduction to analytical mechanics. The students acquire knowledge of the basic concepts of the Lagrange and Hamiltonian formalism	•	1
	ynamics (Newton's, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these methods is illustrated on elementary		
	on of a system of constrained mass points, and of a rigid body. Advanced parts of the course cover differential and integral principles		
•	the first part of the course of classical theoretical physics (02TEF1, 02TEF2).		
02TEF2	Theoretical Physics 2	Z.ZK	4
-	sformations in physics. Mechanics of point mass, rigid body and continuum. The special theory of relativity: relativistic mechanics and	,	-
	me. Classical electrodynamics: Maxwell's equations in the Minkowski space-time, electromagnetic waves in dielectric media, electror		
	approximation.	0	
02TER	Heat and Molecular Physics	Z,ZK	4
I	of materials, heat transfer; stationary and non-stationary heat conduction, heat transfer and penetration; 1st and 2nd thermodynamic	•	
	cal systems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials; kinetic theory: Maxwell's velocity dist		-
02TSFA	Thermodynamics and Statistical Physics	Z.ZK	4
	nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chateli	,	· · ·
	dy description from a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical		
sadio of many boo	of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena.		r guo, mout
	or oryotale and the black body radiation. The Benzinann equation is dooded bimple transport phonomena.		
	Introduction to Elementary Particle Dhysics	7	2
02UFEC	Introduction to Elementary Particle Physics	Z	2
The cours	se provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su	bject are presen	ted.
The cours	e provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su Introduction to Curves and Surfaces	bject are presen Z	ted.
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	Presentation Course	Z	3	
	pare students for presenting issues in their field by mastering the strategies and techniques of oral presentation. The course includes of nent, disagreement). Students will be able to respond to comments on their presentation and answer questions addressed to them aft	• •	• ·	
comments, agreen	skill required for the defence of the Bachelor Project. Students will learn the basic structure of a Bachelor Project and rules for writin	-	i, which is a	
04ABJP	Language Support to Bc Project	Z	5	
To sign in for the co	urse students will have passed all the English courses from the previous 5 semesters. The course instructs students in the strategy of	writing, submitting,	presenting,	
-	Bachelor Project in English. Their progress is continuously monitored and assessed. To finish the course, students will give a present	ation of their Bache	-	
04ABK1	Course in Communication Skills 1	Z	2	
	velop communication strategy and skills of student acquired at secondary school or elsewhere. Competence at B1 level of CEFR is a is for 3 semesters, being a core course of the Applied Information Technology programme. It will develop student's communication sk			
	ission on a topic). The list of topics is similar to that of the State Language Examination. Student will develop their vocabulary for varie	-		
Ū	and will master their communication strategy. He/she will be trained to express his/her ideas clearly and according to current English			
04ABK2	Course in Communication Skills 2	Z	2	
	o concerned with developing speaking skills in English acquired at secondary school and course 04APK1. Speaking skills will be train	-	-	
Topics will concent	trate on everyday life and cover topics of the State Language Examination, stressing mastery of speaking strategy in various situation	ns. The course will	emphasise	
04ABK3	developing student's vocabulary, ability to express thoughts with accuracy in correct English. Course in Communication Skills 3	7	2	
	of conversation course. Student will further develop his/her speaking skills to be able to use English competently, speak about topics	covered by previo		
	without making mistakes and making use of appropriate vocabulary.			
04ABKK	Course in Communication Skills - Examination	ZK	3	
The course conter	nt is the examination as given by the study plan. The examination tests how well student has mastered vocabulary and facts of course	es 04APK1 and 04	APK2. The	
	examination consists of two parts - written (duration 100 minutes), and oral (about 30 minutes).	·		
04ABO1	Text Analysis and Comprehension 1	Z	2	
	sequel to the 04APU1 and 04APU2 courses and students will have passed the 04APUK examination. It focuses on further written fun (ESP). Increasing attention is given to extending subtechnical vocabulary, text grammar and text comprehension. Students are taugh		°	
Opecilie i diposes	in written and oral communication.	it now to use forme	ananguaye	
04ABO2	Text Analysis and Comprehension 2	Z	2	
	uel to course 04APO1 and focuses on guided writing (e.g., note-taking, précis, abstract). It is intended as preparation for writing the ba	achelor´s project by	developing	
	text grammar practice and acquainting with basics of English punctuation.			
04ABOK	Text Analysis and Comperhension - Examination	ZK	3	
	t is the examination as given by the study plan. To be eligible to take the examination students will have successfully completed the 0			
The examination	consists of two parts: written (duration 100 minutes) and oral (about 30 minutes). Students will prove they can use and apply the know both courses.	wiedge and skills a	icquired in	
04ABR1	Life and Institutions of English Speaking Countries and the CR 1	7	2	
	imed at preparing the student for the state language examination and is based on topics required for this examination. Great emphas	is is placed on trai		
presentation	of facts about English speaking-countries in comparison with the Czech Republic. The course covers one third of topics for the state	language examina	ation.	
04ABR2	Life and Institutions of English Speaking Countries and the CR 2	Z	3	
	g the 04APR1 course is again aimed at preparing the student for the state language examination and is based on topics required for this		at emphasis	
is placed on trainin	g oral presentation of facts about English speaking-countries in comparison with the Czech Republic. The course covers two remaining	فيحاجب وفكر والمساطلا بمرا		
		ng thirds of topics f	for the state	
04ABRK	language examination.	- ·		
04ABRK The course conter		ZK	3	
The course conter	language examination. Life and Institutions of English Speaking Countries and the CR 1	ZK 04APR1 and 04API	3 R2.courses	
The course conter The examination	Life and Institutions of English Speaking Countries and the CR 1           tt is the examination as given by the study plan. To be eligible to take the examination students will have successfully completed the C consists of two parts: written (duration 100 minutes) and oral (about 30 minutes). Students will prove they can use and apply the know both courses.	ZK 04APR1 and 04API wledge and skills a	3 R2.courses cquired in	
The course conter The examination 04ABS1	Ianguage examination.         Life and Institutions of English Speaking Countries and the CR 1         It is the examination as given by the study plan. To be eligible to take the examination students will have successfully completed the C         consists of two parts: written (duration 100 minutes) and oral (about 30 minutes). Students will prove they can use and apply the know both courses.         Course in Language Structures 1	ZK 04APR1 and 04API wledge and skills a KZ	3 R2.courses cquired in 3	
The course conter The examination 04ABS1 The course is des	Ianguage examination.         Life and Institutions of English Speaking Countries and the CR 1         It is the examination as given by the study plan. To be eligible to take the examination students will have successfully completed the C         consists of two parts: written (duration 100 minutes) and oral (about 30 minutes). Students will prove they can use and apply the know both courses.         Course in Language Structures 1         igned to instruct how to correctly use and to revise English grammar structures acquired by student at secondary school, develop the	ZK 04APR1 and 04API wledge and skills a KZ em, view them as a	3 R2.courses cquired in 3 system of	
The course conter The examination 04ABS1 The course is des	Ianguage examination.         Life and Institutions of English Speaking Countries and the CR 1         It is the examination as given by the study plan. To be eligible to take the examination students will have successfully completed the C consists of two parts: written (duration 100 minutes) and oral (about 30 minutes). Students will prove they can use and apply the know both courses.         Course in Language Structures 1         igned to instruct how to correctly use and to revise English grammar structures acquired by student at secondary school, develop the and strengthen them. The required level for registration is B1 of CEFR. The course stresses mainly frequency of structures and those	ZK 04APR1 and 04API wledge and skills a KZ em, view them as a	3 R2.courses cquired in 3 system of	
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The course conter The examination 04ABS1 The course is des communication a 04ABS2	Ianguage examination.         Life and Institutions of English Speaking Countries and the CR 1         It is the examination as given by the study plan. To be eligible to take the examination students will have successfully completed the C consists of two parts: written (duration 100 minutes) and oral (about 30 minutes). Students will prove they can use and apply the know both courses.         Course in Language Structures 1         igned to instruct how to correctly use and to revise English grammar structures acquired by student at secondary school, develop the and strengthen them. The required level for registration is B1 of CEFR. The course stresses mainly frequency of structures and those	ZK P4APR1 and 04API wledge and skills a KZ em, view them as a difficult to master I KZ	3 R2.courses cquired in 3 system of by Czech 3	
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The course conter The examination 04ABS1 The course is des communication a 04ABS2 The course 04ABS3	Ianguage examination.         Life and Institutions of English Speaking Countries and the CR 1         It is the examination as given by the study plan. To be eligible to take the examination students will have successfully completed the C         consists of two parts: written (duration 100 minutes) and oral (about 30 minutes). Students will prove they can use and apply the know both courses.         Course in Language Structures 1         igned to instruct how to correctly use and to revise English grammar structures acquired by student at secondary school, develop the and strengthen them. The required level for registration is B1 of CEFR. The course stresses mainly frequency of structures and those students.         Course in Language Structures 2         e 04APS2 is a sequel to course 04APS1. Its purpose is also to correctly use and revise further English grammar structures as acquired by students 3         3 is a sequel to course 04APS2. Its purpose is also to correctly use and revise further English grammar structures as acquired by students	ZK MAPR1 and 04API Wedge and skills a KZ am, view them as a difficult to master to KZ ed and develop the Z	3 R2.courses cquired in 3 system of by Czech 3 em. 2	
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04AKS	English Conversation	Z	1
The course will de	evelop the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral communication	ation. The student w	vill develop
	or various communication situations and will master their communication strategy. They will also practise their listening skills in order		participate
	liscussions. The student will be trained to express their ideas clearly and according to current English usage, and become a more con	ifident speaker.	
04AM1	English for Intermediate Students M1	Z	1
	gned for students who have successfully completed the full secondary school English language course at least at the A2 level of the Course at (CER). It requires a lister fundamental of		
	anguages (CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into fundamentals of		
professional oral a	and written communication situations. Thus it covers topics related to the student's life and needs as well as topics of subtechnical int extending the knowledge of grammar issues used in EAP.	erest. Allention is a	also palo to
04AM2	English for Intermediate Students M2	Z	1
	e expects the student to have completed the 04AM1 course. It develops their skills for work with subtechnical texts, focusing also more	I – I	r functions
	pical of ESP and EAP (e.g., definition, existence and classification of phenomena, object descriptions). Part of the course is also guided	1 0	
,	revision is included.	g.	,, g
04AM3	English for Intermediate Students M3	Z	1
	ps the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtechnic	al vocabulary and ir	ndependent
understanding of	f professional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communication	and their appropria	ate Czech
equivalents. The co	ourse also includes studying abstracts and rules for writing them as well as basic rules for preparing and giving a short presentation c	n a chosen topic re	elated to the
	student's field.		
04AMZK	English for Intermediate Students Examination	ZK	4
The course conter	nt is the examination as given by the study plan. The examination covers the 04AM1, 04AM2, and 04AM3 courses and consists of two	parts - written (10	0 min) and
	0-30 min). The student is expected to master the AM syllabus and demonstrate the ability to apply their knowledge gained in the thre	e English courses.	
04AP1	English for Advanced Students P1	Z	1
	igned for students who have successfully completed the full secondary school English language course (at least the B1 level of the C	-	
	Languages - CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into the fundament		
	le typical of professional oral and written communication situations (fundamentals of terms in mathematics and physics, definitions, g		,
covers professiona	I oral and written communication on topics related to the undergraduate's life and needs. It develops skills for free professional writing (w	riting a CV, letter of	application,
04400	polite request). If necessary, revision of selected grammar topics is included.		
	English for Advanced Students P2 is based on 04AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of chosen l		1 According
	needs it concentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typical rhet		-
	tions, and, if possible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading of lir		
	burse extends the student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focused c	• •	° I
	sentence and paragraph structure, linking, cohesion and coherence in texts.		
04AP3	English for Advanced Students P3	Z	1
	is based on 04AP2 and expects the student to work without any guidance with authentic professional materials and to interpret the to	1 – 1	ing oral and
written communi	cation skills and functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summarizin	g, writing an abstra	act) and, if
possible, also pre	paring a project on a given or chosen topic and presenting it. The course places emphasis on distinguishing levels of formal and infor	mal language both	in oral and
	written communication.		
04APZK	English for Advanced Students Examination	ZK	5
	tent is the examination as given by the study plan. The student is supposed to demonstrate mastering the 04AP3 syllabus and the ab		
obtained in the thr	ree 04AP courses. The examination consists of 2 parts - written (110 min) and oral (30 min) and includes also oral presentation of a total	pic from the stude	nt's field of
04050144	study.	7	4
04CESM1	Czech for foreigners - Intermediate sed on correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending the s		1 v for vorious
	sed on context pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending the s social situations.	tudent s vocabulary	y ior various
04CESM2	Intermediate Czech 2	Z	1
	pps the topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and readi		
	in understanding common abbreviations, abbreviated words, and mathematical terms and formulas.		
04CESM3	Intermediate Czech 3	Z	1
	revises morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is especi	1 – 1	
	lexicology and on developing the student's writing skills.		-
04CESMZK	Czech for Intermediate Students Examination	ZK	4
	It is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04CE		nd can only
	be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.		
04CESP1	Czech for Foreign Students - Advanced Examination	Z	1
	the course is very good knowledge of the Czech language, i.e., communicative competences at least at level B2 of the Common Euro	pean Framework of	Reference.
	y on revision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of sci		-
basics of function	nal style of engineering and professional communication, both in spoken and written form. The topics include University Studies and	Student Life. Writter	n practice
	includes communication with teachers and faculty administrators.	. <u> </u>	
04CESP2	Czech for Foreigners - Advanced	Z	1
This course extend	ds the student's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with technical and	specialist texts place	cing greater
0405055	emphasis on individual work.	· - ·	
04CESP3	Czech for Foreigners - Advanced	Z	1
The course develo	ps the student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation,	and, finally, present	tation of the
04050571	student's project. Writing skills necessary for professional communication are trained.	71/	
04CESPZK	Czech for Foreign Students - Advanced Examination		5 nd can only
The course conten	t is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04CE be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.	.or 1,∠,3 courses a	na can only
04FM1	French for Intermediate Students M1	Z	1
	ate FM The objective of this three-semester course is to improve and further develop communication in the French language in both	1 1	I m Studente
	pommunicate in social interaction and in academic, scientific and professional environment. They will be able to use the language to tra		
	solve problems. 04FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises, syst	-	

	ous study. The following topics are covered: University studies in our country and in France, writing of transactional letters, CV, perso French culture and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts, w			
04FM2	French for Intermediate Students M2		1	
-	on FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science te	∠   xts_features.tvnical.f	I for technical	
	juage (passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French sci			
	scientists, artists and architects. Description of an object, device, shapes, dimensions, material.		,,	
04FM3	French for Intermediate Students M3	Z	1	
1	ed on improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures (su	bordinate and infinit	ive clauses,	
participle structure	s, compound tenses). Text summaryStudents prepare a written paper which will be delivered in form of an oral presentation in-cla	ass. The paper is lin	ked to the	
field of students' fut	ure specialisation or to their interest and generally covers a technical /applied science topic. It is not a translation but a creative worl	k compiled from Fre	nch articles	
	's own knowledge/experience Longer monologues on topics /situations set for the examination are prepared. Text structure, cohes	sion and coherence.		
04FMZK	French for Intermediate Students Examination	ZK	4	
The content is the	examination as given by the study programme. The whole French programme is ended with an examination covering the contents of		amination	
	consists of a written and oral part and is organized according to Examination Instructions, a document available on the we	1		
04FP1	French for Advanced Students P1	Z	1	
	urse The objective of this three-semester course is to improve and further develop communication in the French language in both v nunicate in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit ge			
	ms. 04FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topic:			
-	mposé-imparfait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of trai	-	-	
	answer to an advert, environmental issues, success of French science and technology, chosen topics from French regional culture		-	
, <b>,</b> ,	mathematics, internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and inter			
04FP2	French for Advanced Students P2	Z	1	
1	ontents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication on g	given topics. Feature	es typical of	
	technical and scientific communication are stressed (passive voice, nominalization, word formation).			
04FP3	French for Advanded Students P3	Z	1	
The course is focuse	ed on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in en	ngineering environm	ent. Special	
skill - translation of	shorter texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally cove	ers a technical /appli	ed science	
	topic. It is a creative work compiled from 3 French sources. Preparation of several set topics for oral examination.			
04FPZK	French for Intermediate Students Examination	ZK	5	
The whole French	program is ended with an examination covering the contents of FP1-FP3. The examination consists of a written and/or an oral part	-	cording to	
04574	Examination Instructions, a document available on the web. Assessment of the presentation is included into the examination g	-		
04FZ1	French for Beginners Z1	Z	1	
-	The objective of this 5-level course is to be able to communicate in French orally and in writing in situations of everyday life, in so			
	French for specific / technical communication and reading of popular science and scientific texts. 04FZ1 The objective is to be able sing the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Prav			
-	a fit a knowledge of closen elementary language. The contents is roughly dufined by lessons 1 - 7 of the textbook 1 ravia - 1 ravi		-	
	rections, simple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronu		aoning ana	
		unciation and gramr	nar.	
		unciation and gramr	nar. 1	
04FZ2	French for Beginners Z2 g up with 04FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of t	Z	1	
04FZ2 The course is linking	French for Beginners Z2	Z he textbook: Pravda	1 - Pravdová	
04FZ2 The course is linking : French for Begin	French for Beginners Z2 up with 04FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of t	Z the textbook: Pravda nent - disagreement	1 - Pravdová , apology,	
04FZ2 The course is linking : French for Begin thanking, travelling,	French for Beginners Z2 g up with 04FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of t ners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreen map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral commun How does the machine work? A few expressions concerning the study. Name of University and Faculty.	Z the textbook: Pravda nent - disagreement nication. Specific topi	1 - Pravdová , apology,	
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04FZ2 The course is linking : French for Begin thanking, travelling, 04FZ3 The course builts up	French for Beginners Z2 g up with 04FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of t ners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreen map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral commun How does the machine work? A few expressions concerning the study. Name of University and Faculty. French for Beginners Z3 on 04FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - F	Z he textbook: Pravda nent - disagreement nication. Specific topi Z Pravdová: French for	1 , - Pravdová , apology, ics covered: 1 Beginners.	
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practise reading for	r information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systemati phenomena important for professional discourse (participles, relative clauses).	cally revises other g	rammatical
04NMZK	German for Intermediate Students Examination	ZK	4
	t is the examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examination of		
and oral, which cov	ver the courses 04NM1 - 04NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessn is to be obtained from the teacher.	nent. More detailed i	nformation
04NP1	German for Advanced Students P1	Z	1
	res good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be level	-	-
	se is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for de mar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on practice of the structures of the structure	-	
	i.e., telephoning.		nunication,
04NP2	German for Advanced Students P2	Z	1
	ps the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending It introduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and pra		
b	oth written and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indi	0	nunication,
04NP3	German for Advanced Students P3	Z	1
	sts of 3 main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a varie nd car accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the voca	-	
	nd car accidents, accident report, ming in a form, complaints). Dased on presentations and technical and subject inical texts, the voca ngineering, the environment, computer science, and car technology, will also be extended. Only authentic professional texts are used.		
	d to process information gained from their reading of complex and difficult texts and present it to the class in a simplified oral form. The c		
	practice to and from German.		
04NPZK	German for Advanced Students Examination	ZK	5
The course conter	nt is the examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination c	onsisting of two par	ts - written
and oral, which cov	ver the courses 04NM1 - 04NM3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungrad	led assessment. Mo	ore detailed
	information is to be obtained from the teacher.		
04RM1	Russian for Intermediate Students M1	Z	1
	gned for students with previous knowledge of Russian from secondary schools. Students are supposed to know the Russian alphabet ( or communication in everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday need, asking		
-	sic grammar structures (verbal and nominal forms, irregular verbs, pronouns). The initial knowledge corresponds to the achievement l		
	contents and scope of the course correspond approximately to the RZ3 course, but for half of the time allotted in the timetab		
04RM2	Russian for Intermediate Students M2	Z	1
-	The course is based on the RM1 course, its contents and scope correspond roughly to RZ4, however, for half of the time allotted in the	e timetable.	
04RM3	Russian for Intermediate Students M3	Z	1
The course develop	ps the knowledge and skills acquired in RM1 and RM2 and its contents and scope are roughly at the same level as those of RZ5, howe	ever, for half of the ti	me allotted
0.451.4714	in the timetable.	71/	
04RMZK	Russian for Intermediate Students Examination t is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled	ZK ZK	4 in PM1
	lents are eligible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given inst		
04RP1	Russian for Advanced Students P1	Z	1
	uirement for the course is to achieve the B1 CEFR level. The objective of the course is revision of standard language structures, prac	ticing more difficult	grammar
	structures, understanding the fundamentals of technical language and training writing skills.		
04RP2	Russian for Advanced Students P2	Z	1
The course is bas	sed on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives, ve	rb aspects, specific	syntactic
04002	structures). Stress is put on independent oral and written communication.	7	1
04RP3	Russian for Advanced Students P3 ed on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraphrasing	Z	1 2P1 - RP3
	bod previous knowledge of general language at secondary level (listening, reading, correct communication in everyday situations). The	S. ,	
	er study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and wi		
develop their subte	echnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write accurate	urately and with cor	fidence on
	technical topics.	· · · · ·	
04RPZK	Russian for Intermediate Students Examination	ZK	5
	nt is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled dents are eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instr		
04RZ1	Russian for Beginners Z1	Z	1
	ents the first stage of the five-semester programme, its final aim being reading and understanding professional texts written in Russian		-
	bet (for both reading and writing skills) and fundamentals of grammar necessary for everyday communication (listening and speaking	-	-
	a short text with marked stress, understand its contents and summarize it.		
04RZ2	Russian for Beginners Z2	Z	1
	ster of the programme is designed to teach skills for basic communication in everyday situations and for reading easy and short subte		
able to communica	ate using short sentences and appropriate structures, and read aloud with confidence a short text without marked stress. They will have mactered with confidence the Russian alphabet and will be able to use it in		bulary and
04RZ3	master further grammatical structures. They will have mastered with confidence the Russian alphabet and will be able to use it in Russian for Beginners Z3	writing.	1
	ed on RZ2 and includes further everyday topics, develops understanding of short compact texts on new subtechnical topics (for training		
	introduces new grammar. Students will be trained to distinguish intonation patterns while listening to spoken language. They will be		-
	understood, and to express their opinion. Writing skills will be trained on guided writing tasks and note-taking.		
04RZ4	Russian for Beginners Z4	Z	1
	ased on 04RZ3. It improves and expands the knowledge of general language in all four skills (reading and understanding longer texts		-
	oral communication in everyday situations, writing longer texts). Students are trained to use grammar structures effectively (e.g., irreg		
	ech, modality, imperatives, conditionals). They practice and develop communication skills for everyday situations (food, travelling, free ation on more specific topics (environment, addictions, the green movement). They become acquainted with various geographical date	, · · ·	
	fill in forms, look up the information from the timetable, learn about Russian holidays and typical meals.		

04RZ5	Russian for Beginners Z5	Z	1
	s the student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understandir	0, 0	U U
	specialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Common sector is a sector in a sector in a sector is a sector in a		
	Studying grammar is based on professional and technical texts and only includes items typically used in professional communication (		barticipies,
	ve voice). Students develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, po		3
04RZZK	Russian for Beginners Examination It is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled	ZK	-
	ents are eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instr		
04SM1	Spanish for Intermediate Students M1	7	1
	igned for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-semes	ter course develops	
	ays attention to further grammar topics (e.g., perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negativ	-	
	), to written and oral communication on a given everyday or easy subtechnical topic, for which the students are trained by reading tex	-	
04SM2	Spanish for Intermediate Students M3	Z	1
	ops the students' knowledge from the previous course (SM1). Students are gradually acquainted with fundamentals of Spanish for sp	becific purposes in c	order to be
	able to work with specialized texts on the Internet.		
04SM3	Spanish for Intermediate Students M3	Z	1
The course books	are supplemented with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of academ	ic style. They will be	competent
enough to use the	Internet in Spanish and search for information of their specialization or field of interest. Students will use the information to write sho	rt articles and sumr	maries. The
	final part of the programme, general Spanish course based on course books, covers presentations and, finally, a written and oral ex	amination.	
04SMZK	Spanish for Intermediate Students Examination	ZK	4
The course conte	ent is the examination as given by the study plan. 04SMZK examination consists of two parts - written and oral; to be eligible for the w	ritten part, students	s will have
	obtained non-graded assessment for course 04SM3.Oral examination follows the written part.		
04SP1	Spanish for Advanced Students P1	Z	1
Course concentrat	es on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communication.	Course prerequisit	es: level B2
	of CEFR.		
04SP2	Spanish for Advanced Students P2	Z	1
Course SP2 is the	second part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and synta	x and focuses on in	Idependent
04000	written communication.	7	4
04SP3	Spanish for Advanced Students P3		1 Interview
Course 045P3 is tr	e final part of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is foculated on what students will need in their career.	used on written con	imunication
04SPZK		ZK	5
	Spanish for Advanced Students Examination nt is the examination as given by the study plan. Examination 04SPZK consists of two parts, namely oral and written. The prerequisit	1 1	-
	aving passed the written test. Examination content is based on syllabi of courses SP1, SP2, and SP3 or on an individual study plan c		Jiai part is
0/1971	Spanish for Beginners 71	7	1
04SZ1 Course 04SZ1 is th	Spanish for Beginners Z1 e first stage of the five-semester programme of Spanish studies: during the first stage the students will master phonetics and fundan	Z	1 uctures and
Course 04SZ1 is the	he first stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundant	nental grammar stru	
Course 04SZ1 is th will be able t	he first stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundan o communicate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Spa	nental grammar stru	
Course 04SZ1 is the will be able to 04SZ2	he first stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundan o communicate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Spanish for Beginners Students Z2	nental grammar stru anish and will devel	op it. 1
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11UFPLN	Introduction to Calid State Device		· · · · · · · · · · · · · · · · · · ·
	Introduction to Solid State Physics The purpose of this lecture is to introduce the undergraduate students to the study of the solid state physics.	ZK	2
11UVOD	Introduction to Specialization The purpose of this lecture is to introduce the undergraduate students to the physical master degree study programmes.	Z	2
11ZFPL		KZ	2
1	Basic to Solid State Physics amental properties of solids following the regular long distance ordering of atoms in a crystal lattice. Based on the introduced bondin		
	s of crystals and their properties are defined. The model of crystalline lattice dynamics in harmonic approximation is described and basi		
	periodic potential of the crystal lattice is introduced and its relation to the following model describing the energetic state of electrons i		
	plained. The special consequences of band approach to the physical properties of solids are elucidated. The aim of the course is to	-	
0,7	interpret a broad phenomenological basis of physical properties of crystalline solids	, ,	
12APL	Application of Lasers	Z,ZK	2
1	plication of lasers in industrial technologies, medicine, remote sensing, energetics, telecommunication, military, entertainment and o		I
12AUX	Administration of UNIX System	KZ	2
405004	Basic and more advanced administration of Unix operating system	1/7	2
12EPR1	Basic Electronics Practicum 1 acticum is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formulation	KZ	3
The all of the pra	consists of blocks lasting 4 hours.	or the results. The	e practicum
12EPR2	Basic Electronics Practicum 2	KZ	3
1	acticum is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formulation	1	-
The aim of the pre	consists of blocks lasting 4 hours.	or the results. The	5 practicum
12INS1	Information Systems 1	Z,ZK	2
-	logy, architecture of the databases, network databases, cloud application Google, Microsoft, information managament, aproaches to sc		
12INS2		Z,ZK	2
1	Information Systems 2 formation systems 1 is required. In more details: Information technology, architecture of the databases, network databases, cloud ap		1
Graddadon or in	information systems in required. In more details, mormation technology, architecture of the databases, nework databases, cloud ap	plication Google, i	microson,
12LAS	Laser Systems	Z.ZK	3
1	Laser Systems e nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. C	1 '	-
	Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultrav		-
	power continuous lasers. Infrared high power lasers. Submilimeter lasers. Lasers with high degree of coherence. Free electron	-	lasers. riigir
12LT1	Laser Technique 1	Z,ZK	3
1	Easer recommute in Stability. Transverse and Longitudinal Modes. Elements of Open Resonators. Threshold of laser oscillations. Gausian beam as an app	1 '	-
-	ethod. Optical radiation propagation in resonant medium. Two-level approximation. Equations for polarisation and inversion, dispersio		
	non-coherent pulse propagation. Optical solitons. Photon echo. Superradiation. Amplified spontaneous emission Lasers without optic		
12LT2	Laser Technique 2	Z,ZK	2
1	Laser oscillator, the rate equation, the laser amplifier, Q-switching, mode-locking		-
101105			-
12MOF 1	MORCHALPONSICS	I 7K	2
12MOF Basic id	Molecular Physics deas on multi-atomic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular struct	ZK ure determination.	2
Basic i	deas on multi-atomic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular struct	ure determination.	
Basic in 12MPR1	deas on multi-atomic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular struct Microprocessors 1	ure determination.	4
Basic in 12MPR1 Microprocessor ar	deas on multi-atomic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular struct	ure determination.	4 ive,, stack
Basic in 12MPR1 Microprocessor ar	deas on multi-atomic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular struct Microprocessors 1 nd microcomputer, microprocessor types, memory types CPU, memory, Input output. Code and data, addressing modes( direct, indir	ure determination.	4 ive,, stack
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Basic i 12MPR1 Microprocessor ar memory, procedure 12MPR2	deas on multi-atomic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular struct Microprocessors 1 nd microcomputer, microprocessor types, memory types CPU, memory, Input output. Code and data, addressing modes( direct, indir a calls, IO devices - program control, interrupt. Microprocessor Microchip PIC16F877A, Instruction codes- Assembler and Macroassen RISC processors - principles	ure determination. ZK ect, register, relati nbler, programming ZK	4 ive,, stack g languages.
Basic i 12MPR1 Microprocessor ar memory, procedure 12MPR2 Arr	deas on multi-atomic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular struct Microprocessors 1 nd microcomputer, microprocessor types, memory types CPU, memory, Input output. Code and data, addressing modes( direct, indir a calls, IO devices - program control, interrupt. Microprocessor Microchip PIC16F877A, Instruction codes- Assembler and Macroassen RISC processors - principles Microprocessors 2 chitecture IA-32. Data types and addressing. Memory segmentation and paging. Real and privileged mode. Instruction set, Assemble	ure determination. ZK ect, register, relati nbler, programming ZK er. description.	4 ive,, stack g languages.
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	Scientific Programming in Python	Z	2
	irse is to learn the fundamentals of the modern Python programming language with a focus on scientific computing. Emphasis is place		
problems. The c	ourse is performed in an interactive form of practical exercises, whose topics can be tailored to the content of other subjects or studen	nt theses. Studen	ts are also
-	ng research. In the introductory part of the course, students learn the basic features of Python? from basic types to object oriented or		-
greater part of th	e course focuses on specific features of Python for scientific programming. Presented are the main numerical libraries NumPy, SciPy	and the Matplotl	ib graphics
	library. We show how to generate efficient code, how to combine Python with other languages, what tools are available.		
12TAIS	Ion Beam Techniques and Applications.	ZK	3
	Production and forming of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical appli	1	-
12ULT	Introduction to Laser Technique	Z,ZK	3
	ctromagnetic radiation sources; laser principle; classification of lasers; characterization and rough application of various types of laser		-
12UMF	Introduction to Modern Physics	Z	3
he course is inter	ided to be a concise introduction to modern / nonclassical physics for students who have already had basic classical physics course. A	part of the cours	e is delivered
	in a computational laboratory.		
12VAK	Vacuum Physics and Technology	KZ	4
Rarefied gasses	:: basic concepts and relations; flow of rarefied gas. Interaction of gas with surface of solid surface; sorption, desorption; evaporation,	condensation; ga	s transport
through solid ma	atter; Vacuum generation. Pumping process. Pumps. Vacuum measurements: vacuum gauges of total and partial pressure; pumping s	peed; gas flow, co	onductivity,
	searching for leaks. Materials and vacuum instalation parts. Practical exercises.		
12VFT	High Frequency and Impulse Circuitry	Z,ZK	2
The goals of cou	rse is to collect advanced knowledge in high frequency technics and high speed events. The course is focused on Maxwell equation s	solution, Gunn's d	iodes, high
U U	frequency technics, microwaves guidelines, striplines, oscillators, amplifiers and pulse generators.		
12VTV	Scientific and Technical Computing	Z	2
	familiar with methods of solving of computational problems in the scientific and technical practice, and with methods of their program	_	
The students get	mainly to programming in the Fortran language.	ining. The course	IS ONEILEU
407400		Z,ZK	
12ZAOP	Fundamentals of Optics	· ·	2
	s the very basics of optics - electromagnetic theory, linear optical physics and material effects, basics of nonlinear effects, and geome		•
	btain, on the bachelor level, broad and general information on optics, giving an essential orientation in the field, especially with respec		
-	pics are further elaborated during departmental masters program. The lecture stems from the electrodynamic notion of plane waves in		
	ther from material medium. It explains basics of linear and nonlinear response in material medium and dispersion properties. It next in		
	, it explains processes induced by boundary conditions at interfaces. It also discusses the consequences of statistics on interference		
	rence and their applications in interferometers. Based on the Fresnel diffraction integral, diffraction processes are presented in a graphica	-	
	n. Based on this diffraction principle, basic functioning of holography is clarified. Finally, the lecture unravels the geometrical optics limit		n geometrica
ap	proach imaging, substitutive schema of a paraxial imaging system, and optical aberrations. It shows fundamentals of imaging in optical	al instruments.	
12ZDP	Data Processing for Publishing	Z	2
Typography, comp	uter computer-assisted publishing, coding of text, OCR (optical code recognition), DTP (desk top publishing), programming language	s for typesetting (	TeX, LaTeX,
HTML, XML,, p	publishing into www pages, cloud computing,commonly used graphical formats, formatting of typical data (PDF, PS, DOC, DOCX, PP	S, PPSX, RFT, XI	LS, XLSX),
	multimedial presentations, multimedial formats.		
12ZEL1	Basic Electronics 1	Z.ZK	3
	des primary knowledge of circuit theory concerning principles of electronic circuits in both stationary and harmonic stable state. Circu	,	-
	le symbolic and complex method are explained. Proper circuit analysis is also lectured. The subject's final part deals with transient eff		
		ects inside linear	circuits.
12ZEL2	Basic Electronics 2	ects inside linear Z,ZK	circuits.
12ZEL2 The subject follo	Basic Electronics 2 ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th	ects inside linear Z,ZK emes of logical c	circuits. 3 ircuits field.
12ZEL2 The subject follow 12ZFP	Basic Electronics 2 ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th Principles of Plasma Physics	ects inside linear Z,ZK emes of logical c Z,ZK	circuits. 3 ircuits field. 4
12ZEL2 The subject follor 12ZFP Basic physics of his	Basic Electronics 2 ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th Principles of Plasma Physics gh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line	ects inside linear Z,ZK emes of logical ci Z,ZK ear theory of wave	circuits. 3 ircuits field. 4 s in plasmas
12ZEL2 The subject follow 12ZFP Basic physics of hi nd propagation of	Basic Electronics 2 ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th Principles of Plasma Physics gh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line f electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and parameter	ects inside linear Z,ZK emes of logical ci Z,ZK ear theory of wave etric instabilities a	circuits. 3 ircuits field. 4 s in plasmas
12ZEL2 The subject follow 12ZFP Basic physics of hi and propagation of	Basic Electronics 2 ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th Principles of Plasma Physics gh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line	ects inside linear Z,ZK emes of logical ci Z,ZK ear theory of wave etric instabilities a	circuits. 3 ircuits field. 4 s in plasmas
12ZEL2 The subject follow 12ZFP Basic physics of hi nd propagation of	Basic Electronics 2 ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th Principles of Plasma Physics gh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line f electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and parameter	ects inside linear Z,ZK emes of logical ci Z,ZK ear theory of wave etric instabilities a	circuits. 3 ircuits field. 4 es in plasmas
12ZEL2 The subject follow 12ZFP Basic physics of hi and propagation of It 12ZPLT	Basic Electronics 2           ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th           Principles of Plasma Physics           gh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line           f electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and parameter           comprises brief introduction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas are	ects inside linear Z,ZK emes of logical ci Z,ZK ear theory of wave etric instabilities a re introduced. KZ	circuits.       3       ircuits field.       4       ss in plasmas       re explained       6
12ZEL2 The subject follow 12ZFP Basic physics of hi and propagation of It 12ZPLT asers, solid state	Basic Electronics 2 ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th Principles of Plasma Physics gh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line f electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and parame comprises brief introduction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas ar Basic Laser Technique Laboratory	ects inside linear Z,ZK emes of logical ci Z,ZK ear theory of wave etric instabilities a re introduced. KZ He-Ne glow disc	circuits.
12ZEL2 The subject follow 12ZFP lasic physics of hi nd propagation of It 12ZPLT asers, solid state diode, diod	Basic Electronics 2           ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th           Principles of Plasma Physics           gh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line           f electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and parame           comprises brief introduction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas ar           Basic Laser Technique Laboratory           Nd:YAG laser, laser crystal, laser discharge lamp, laser cavity, resonator, free-running, Q-switching, laser amplifier. second harmonic,           de pumped Nd:YAG laser, CO2 laser marking, laser materials properties, non-linear transmission, laser beam transverse profile, acoustication	ects inside linear Z,ZK emes of logical ci Z,ZK ear theory of wave etric instabilities a re introduced. KZ He-Ne glow disc usto-optic modula	circuits.
12ZEL2 The subject follow 12ZFP wasic physics of hi nd propagation of It 12ZPLT asers, solid state diode, diod 12ZPOP	Basic Electronics 2           ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th           Principles of Plasma Physics           gh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line           f electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and parame           comprises brief introduction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas ar           Basic Laser Technique Laboratory           Nd:YAG laser, laser crystal, laser discharge lamp, laser cavity, resonator, free-running, Q-switching, laser amplifier. second harmonic,           de pumped Nd:YAG laser, CO2 laser marking, laser materials properties, non-linear transmission, laser beam transverse profile, acou           Basic Optical Laboratory	ects inside linear Z,ZK emes of logical ci Z,ZK ear theory of wave etric instabilities a re introduced. KZ He-Ne glow disc usto-optic modula KZ	circuits.
12ZEL2 The subject follow 12ZFP Basic physics of hi and propagation of It 12ZPLT Lasers, solid state diode, diod 12ZPOP	Basic Electronics 2         ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th         Principles of Plasma Physics         gh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line         i electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and parame         comprises brief introduction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas ar         Basic Laser Technique Laboratory         Nd:YAG laser, laser crystal, laser discharge lamp, laser cavity, resonator, free-running, Q-switching, laser amplifier. second harmonic, de pumped Nd:YAG laser, CO2 laser marking, laser materials properties, non-linear transmission, laser beam transverse profile, accor         Basic Optical Laboratory         he practical laboratories give advanced practical skills by experimental work in optics and optoelectronics. Laboratory records must be	ects inside linear Z,ZK emes of logical ci Z,ZK ear theory of wave etric instabilities a re introduced. KZ He-Ne glow disc usto-optic modula KZ e elaborated.	circuits.       3       ircuits field.       4       ss in plasmas       re explained       6       harges, lase       tors.       6
12ZEL2 The subject follow 12ZFP Basic physics of hi and propagation of It 12ZPLT Lasers, solid state diode, diod 12ZPOP T 14ELMI	Basic Electronics 2         ws up with the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic th         Principles of Plasma Physics         gh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line         i electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and parame         comprises brief introduction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas ar         Basic Laser Technique Laboratory         Nd:YAG laser, laser crystal, laser discharge lamp, laser cavity, resonator, free-running, Q-switching, laser amplifier. second harmonic,         de pumped Nd:YAG laser, CO2 laser marking, laser materials properties, non-linear transmission, laser beam transverse profile, acou         Basic Optical Laboratory         he practical laboratories give advanced practical skills by experimental work in optics and optoelectronics. Laboratory records must b         Electron Microscopy	ects inside linear Z,ZK emes of logical ci Z,ZK ear theory of wave etric instabilities a re introduced. KZ He-Ne glow disc usto-optic modula KZ e elaborated. Z,ZK	circuits.       3       rcuits field.       4       ss in plasmas       re explained.       6       harges, laser       tors.       6       3
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15CHEM	Analytical Calculations and Chemometry Principals	ZK	2
	basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basi	c data distributions	, one- and
two-tailed signification	ance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, sen	ninar part consists	of equation
solving, titration	on stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in p	otentiometry, could	ometry,
	spectrophotometry and separation methods, solving of complex forming equilibria.		
15DALCH	History of Alchemy and Chemistry	ZK	2
	des the overview of crafts with chemical and/or metallurgical basis. Development of alchemy from ancient times in China, India, and H		
The last part of o	course is dedicated to Alchemy in Arabic world and various aspects of alchemy in Latin Europe. The influence of alchemical approacl advancement is illustrated.	les development of	nio crans
15INPR	Laboratory Practice in Instrumental Methods	KZ	4
-	of students in the use of selected modern instrumental methods and techniques for solving some physico-chemical analytical and oth	I I	-
-	out in the laboratories of Czech Academy of Sciences (Institute of Physical Chemistry) and partly in laboratory at the Department of	-	-
15ZKJE	Nuclear Power Plants Design and Operation	ZK	3
Target of lecture is	to create basic knowledge of physics of nuclear reactors utilizing fission. Further explains arrangement of nuclear fuel, purpose, technolo	gical and material o	construction
of core. Function a	nd construction of all components are defined wit regard to nuclear physics, physics of shielding, theory of regulation, material scienc	e, chemistry, heat t	ransfer and
-	tes knowledge for evaluation of nuclear safety and radiation protection in nuclear energy, reliability and economy for comparison with		
environment and to	o strategic importancy of nuclear sources of energy. Gives basic knowledge of construction, operation and decommissioning of nuclear	r power stations. Inf	forms about
101110	high level nuclear waste and spent fuel and their management.	71/	
16AMMB	Fundamentals of Analytical Measurement Methods	ZK	2
	technical performance and utilization of methods of chemical analysis. Basic methodology of analytical determination, gravimetry, titra ractometry, polarimetry, UV-VIS spectroscopy, atomic emission and absorption spectroscopy, infrared and Raman spectroscopy, X-ra		-
polarography, rei	magnetic and electron spin resonance, mass spectrometry, thermometric methods, gas and liquid chromatography.	y structural analysi	3, 11001641
16APLB	Application of Ionizing Radiation in Analytical Methods	ZK	5
	ation of ionizing radiation in analytical methods is devoted to radioanalytical methods and the use of radionuclides and ionizing radiatio		-
	of technological processes.	, <b>,</b>	J
16EPAM	Exact Methods in Research of Historic Monuments	ZK	2
Aims and methods	of historic monument investigations, methods of age determination (radiocarbon, thermoluminescence and related methods, further radiati	on methods, dendro	chronology,
archaeomagneti	sm), analytical methods for determination of origin and production technologies of artefacts (activation analysis, X-ray fluorescence a	nalysis and other n	nethods),
	photogrammetry.		
16FNZB	Problems of Non-ionizing Radiation	ZK	2
Subject is focused	d on biological effects of non-ionizing radiation and its use in physical praxis. Information about principles, biological effects and method	ods used in fields o	f magnetic
	resonance and ultrasound as applied in various types of technical or medical equipment are given as well.		
16KPR	Clinical Propaedeutic	ZK	2
-	miliar with the basics of anamnesis, physical examination, examinational methods of different organs, hematological and biochemical		
16MCRB	Transport of Ionizing Radiation and Monte Carlo Method		
		Z,ZK	4
Introduction to prin	nciples of Monte Carlo method and its use for radiation transport simulation, selected concepts of probability theory and mathematica	l statistics. Physica	I models of
Introduction to prir interaction of diffe	ciples of Monte Carlo method and its use for radiation transport simulation, selected concepts of probability theory and mathematica rent types of radiation and their use for stochastic modeling of their substance transport. Model description concepts, geometric mode	l statistics. Physica el layout, source tel	I models of rm, scoring
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16ZIVB	Introduction to Ecology	KZ	2
The subject inform	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the enviro	onment and evaluat	te economic
	indicators and sustainable development.		
16ZJTB	Nuclear Energy Facilities and Accelerators	ZK	2
	nuclear reactor and nuclear power plant, chain fission reaction development, main components of nuclear energetic reactor, most im		
high-voltage acc	elerators, linear high-frequency accelerators, accelerators based on cyclotron, microtron, betatron, electron and proton synchrotrons,	electron and ion s	ources for
16ZPSP	accelerators, targets. Basic Work with PC	7	2
	rse is to acquaint students with the basic skills related to working on a personal computer. The introductory part of the course is devot	ed to information s	
	e at the CTU in Prague and the FNSPE. Emphasis is placed on effective handling of work with office productivity software (text editor,		
	ercises in MS Office. The practical content focuses mainly on further use during studies (laboratory reports, research work, bachelor's		
specific practice (h	ospitals, state administration, companies). Other sections summarize basic information about computer hardware, software, and secur	ity. Completion of i	ndependent
	home exercises and participation in exercises above 60% is a necessary condition for passing the course.		
16ZRAO	Basics of Radiation Protection	Z	2
	rse is to familiarize students with the general principles of radiation protection. The main emphasis is put on basic mechanisms and con		
	field. The course provides answers to the cardinal questions: What is ionizing radiation (IR), where it comes from, whether and how it ng of protective units (Gray, Sievert), how to prevent malicious effect of IR and many others. The content of the lectures does not requ		-
17ENF	Experimental Neutron Physics	KZ	2
	mainly focused on detailed characterisation of neutron properties, characteristics of neutron (reactor and non reactor) sources, properties		
	etection methods, neutron induced nuclear reactions, modification and adjustment of neutron field, science and industry neutron at		
with experimental of	data processing and analysis. The lectures are supplemented with experimental practices in the field of neutron detection, determination	of delayed neutror	n properties,
study of neutron dif	fusion in various materials, preparation and characterisation of photo-neutron source and neutron source calibration. Experimental practice of the second	ctices will be runnin	ig at training
	reactor VR-1 and in the neutron laboratory.		-
17JARE	Nuclear Reactors	ZK	2
	power issue. Previous evolution of power reactor. Nuclear fission reactors, fuel assemblies, active core, control systems, safety system generations. Standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Pres		
	PWR (Westinghouse, KWU, Framatom). VVER-type reactors, Temelín nuclear power plant. Boiling water reactors. Heavy water react		. ,
	gas cooled reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF and		
and	selection of proposed systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in lo	ng-term outlook	
17UINZ	Introduction to Engineering	Z,ZK	3
	oted to an introduction to the engineering profession. Students will gradually learn the characteristics and specialties of engineering v		
the basics of selec	cted engineering disciplines, such as the basics of materials science, manufacturing technology, quality control and assurance and ec		course will
	focus on some issues of R&D activities organization and on selected parts of technical drawings and the work with AutoCAI		0
17VYR	Research Reactors	ZK	2
	to research reactors and their applications for the need of research and industry. Students get familiar with research reactor types and th experimental equipment needed for particular applications and their specifics. The course is supported by technical visit to research	-	
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177FH	Basics of Economic Assessment	-	
17ZEH The course focu	Basics of Economic Assessment uses on the economic evaluation of Nuclear power plants. Introductory lectures are concerned with an introduction to economy and th	ZK	2
The course focu		ZK e basic componen	2 t parts of
The course focu	ises on the economic evaluation of Nuclear power plants. Introductory lectures are concerned with an introduction to economy and th	ZK e basic componen d their applications	2 t parts of
The course focu microeconomics. L 17ZEL	ises on the economic evaluation of Nuclear power plants. Introductory lectures are concerned with an introduction to economy and th ectures continued with insight into the business and managerial economics, explanation of the concepts of incomes, expenses, etc. and energy resources evaluation. Second part of lectures is focused on evaluation of nuclear power plants - the fuel cycle and operation Basics of Electronics	ZK e basic componen d their applications ns of NPP. KZ	2 t parts of in electrical 3
The course focu microeconomics. L 17ZEL Lectures provide b	Ises on the economic evaluation of Nuclear power plants. Introductory lectures are concerned with an introduction to economy and th ectures continued with insight into the business and managerial economics, explanation of the concepts of incomes, expenses, etc. and energy resources evaluation. Second part of lectures is focused on evaluation of nuclear power plants - the fuel cycle and operation Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors and so	ZK e basic componen d their applications ns of NPP. KZ lution of electrical	2 t parts of in electrical 3 circuits with
The course focu microeconomics. L 17ZEL Lectures provide b them. Next, lectures	Ises on the economic evaluation of Nuclear power plants. Introductory lectures are concerned with an introduction to economy and the ectures continued with insight into the business and managerial economics, explanation of the concepts of incomes, expenses, etc. and energy resources evaluation. Second part of lectures is focused on evaluation of nuclear power plants - the fuel cycle and operation Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors and so is deal with semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components	ZK e basic componen d their applications ns of NPP. KZ lution of electrical nts with more layer	2 t parts of in electrical 3 circuits with s (thyristors
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The course focumicroeconomics. L 17ZEL Lectures provide be them. Next, lecture and triacs). Lecture and triacs). Lecture 18EKO1 The course introdure 18ESPG1 Spreadsheet calcure office tools. The arborner 18ESPG2 Spreadsheet calcure VBA programmin 18INTA The lectures provide will also be introdure 18MAK1 Macroeconomics macroeconomic er AS-AD and their im 18MAK2	ses on the economic evaluation of Nuclear power plants. Introductory lectures are concerned with an introduction to economy and th ectures continued with insight into the business and managerial economics, explanation of the concepts of incomes, expenses, etc. an energy resources evaluation. Second part of lectures is focused on evaluation of nuclear power plants - the fuel cycle and operation Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors and so is deal with semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor component eres continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analog/dig completed with electronic laboratory exercises.  Mathematical Economics 1 ces selected models and methods for economic decision making. The main attention is given to optimization models of linear program applications and their solving by means of the current software products.  Mathematical Economics 2 duces selected models and methods for economic decision making. The main attention is given to optimization models in graphs, pro management with deterministic and stochastic demand, queuing theory and simulation models.  European Computer Driving Licence 1 lators are an important tool, especially for students and graduates in Software engineering in economics. The winter semester introduc cent is put on advanced functions of MS Excel (names, functions will be addressed.  European Computer Driving Licence 2 lators are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows the u g oppics (charts, objects, graphical user interface, add-ins programming) and introduces some applications, from the simplest t is oriented primarily towards backend technologies for the development of web applications.  Macroeconomics 1	ZK e basic componen d their applications is of NPP. KZ lution of electrical ints with more layer jital converters. Lea Z,ZK ming, possibilities Z,ZK inter management, Z ess the students als vill be introduced a X winter semester wit cs, operational rese KZ ts (HTML, URL, et io more advanced. vaScript. Z,ZK ic indicators, mone croeeconomic mode nena and their inter Z,ZK	2 t parts of in electrical 3 circuits with s (thyristors ctures are 5 of their real 5 inventory 2 so into other nd macros 2 ch advanced earch, and 4 c.) and they The course 4 ey market, so of S-LM, connections
The course focumicroeconomics. L	ses on the economic evaluation of Nuclear power plants. Introductory lectures are concerned with an introduction to economy and th ectures continued with insight into the business and managerial economics, explanation of the concepts of incomes, expenses, etc. and energy resources evaluation. Second part of lectures is focused on evaluation of nuclear power plants - the fuel cycle and operation are information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors and so is deal with semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Sener, capacitive, LED), bipolar, unipolar transistors and semiconductor components (standard, Sener, capacitive, LED), bipolar, unipolar transistors and semiconductor componer decision making. The main attention is given to optimization models of linear program applications and their solving by means of the current software products. European Computer Driving Licence 1 lators are an important tool, especially for students and graduates in Software engineering in economics. The winter semester introduc ccent	ZK e basic componen d their applications is of NPP. KZ lution of electrical ints with more layer jital converters. Lea Z,ZK ming, possibilities Z,ZK inter management, Z es the students als vill be introduced a Z winter semester wit cs, operational rese KZ ts (HTML, URL, et io more advanced. vaScript. Z,ZK ic indicators, mone croeconomic mode nena and their inter Z,ZK conomics. They are	2 t parts of in electrical 3 circuits with s (thyristors ctures are 5 of their real 5 inventory 2 so into other nd macros 2 ch advanced earch, and 4 c.) and they The course 4 ey market, sls of IS-LM, connections 4 models of

modeling, i.e., mac	proeconomic models derived from microeconomic behavior of subjects and economics and their rational expectations. It also provides stu of labor market modeling.	dents with moder	n knowledge
18MIK1	Microeconomics 1	Z.ZK	5
Microeconomics is	a set of theories, which help us to understand processes by which the scarce resources are allocated among alternative uses. Micro	,	ns the role of
prices and mark	tets in these processes, and makes more clear behaviour of the economic agents. This course of Microeconomics I consist of introduc Consumer Theory.	tion in Microecon	omics and
18MIK2	Microeconomics 2	Z,ZK	5
Microeconomics is	, a set of theories, helping us to understand process by which scarce resources are allocated among alternative uses. Microeconomics	•	of prices and
markets	in this process and make clear economic agents behaviour. The lectures of Microeconomics II are oriented on Theory of Firm and Inde	ustrial Organisatio	on.
18MPT	Programming in MATLAB	KZ	5
The subject acqu	aints students with various programming techniques in the Matlab environment. The emphasis is placed on the differences in program	ming methodolog	y in Matlab
	compared to classical languages.		
18MTL	Programming in MATLAB	Z,ZK	5
Introducing Matla	o environment as efficient tool for computation in complex arrays and symbolic variables, namely for linear algebra, mathematic analys	is, statistics, algo	rithmization
	and geometric representation of results.		
18PAS	Pascal Programming	Z	4
This lecture is	intended mainly for students, with little or no experience in programming. It familiarizes the students with the basic concepts in program	nming and with th	e Pascal
	programming language.		
18PJ	Programming in Java	Z,ZK	5
	This course is devoted to the Java platform and to the development of the basic types of applications for this platform.		
18PRC1	Programming in C++ 1	Z	4
	This course covers mainly the C programming language and non-object oriented features of the C++ language.		
18PRC2	Programming in C++ 2	KZ	4
This c	ourse covers the object oriented programming and othesr advanced constructs in the C+;+ programming language and the Standard	Template Library.	
18UOA	Introduction into Object Oriented Architecture	Z,ZK	4
18ZALG	Basics of Algorithmization	Z,ZK	4
This course i	s devoted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of		plexity.
18ZPRO	Basics of Programming	Z	4
This course is	intended mainly for students with little or no experience in programming. It familiarizes the students with the basic concepts in program	ming and with the	e Python
	programming language.		
TV-1	Physical Education	Z	1
TV-2	Physical Education	Z	1
		_	1 .
TV-3	Physical education	Z	1

For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 2024-05-19, time 23:53.