# Study plan

## Name of study plan: Jaderné inženýrství - Jaderné reaktory

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Nuclear Engineering
Type of study: Bachelor full-time
Required credits: 0
Elective courses credits: 180
Sum of credits in the plan: 180
Note on the plan:

Name of the block: Povinné p edm ty specializace Minimal number of credits of the block: 0 The role of the block: PS

Code of the group: BSPJIJR1 Name of the group: BS P\_JIB JR 1st year Requirement credits in the group: Requirement courses in the group: In this group you have to complete at least 14 courses Credits in the group: 0 Note on the group: Podmínkou skládání zkoušky 01MANZ je získání zápočtu z 01MAN.

Note on the group	Podmínkou skládání zkoušky 01MANZ je zkoušky 01LALZ je získání zápočtu z 01	•	očtu z 0	1MAN.F	Podmínkou	skládár
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
02ELMA	Electricity and Magnetism Iskender Yalcinkaya, Goce Chadzitaskos, Josef Schmidt, Jan Vysoký Jan Vysoký Goce Chadzitaskos (Gar.)	Z,ZK	6	4+2	L	PS
01LAL	<b>Linear Algebra 1</b> Petr Ambrož, Lubomíra Dvo áková <b>Lubomíra Dvo áková</b> Lubomíra Dvo áková (Gar.)	Z	2	2P+2C		PS
01LALZ	<b>Linear Algebra 1, exam</b> Petr Ambrož, Lubomíra Dvo áková <b>Lubomíra Dvo áková</b> Lubomíra Dvo áková (Gar.)	ZK	2	0P+0C		PS
01LAL2	Linear Algebra 2 Petr Ambrož, Lubomíra Dvo áková Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	Z,ZK	4	2P+2C		PS
01MAN	Calculus 1 Miroslav Kolá, Pavel Strachota, Edita Pelantová Pavel Strachota Edita Pelantová (Gar.)	Z	4	4+4		PS
01MANZ	Calculus 1, exam Miroslav Kolá, Pavel Strachota, Edita Pelantová Pavel Strachota Pavel Strachota (Gar.)	ZK	4	0P+0C		PS
01MAN2	Calculus 2 Severin Pošta, Miroslav Kolá, Edita Pelantová Miroslav Kolá Severin Pošta (Gar.)	Z,ZK	8	4P+4C		PS
02MECH	Mechanics Iskender Yalcinkaya, David B e Michal Jex David B e (Gar.)	Z	4	4+2	Z	PS
02MECHZ	Mechanics - Examination Iskender Yalcinkaya, Goce Chadzitaskos, David B e , Filip Petrásek, Stanislav Skoupý, Antonín Hoskovec, Petr Novotný Antonín Hoskovec David B e (Gar.)	ZK	2	-	Z	PS
00PT	Preparatory Week Petr Ambrož, Milan Krbálek Petr Ambrož Petr Ambrož (Gar.)	Z	2	týden	Z	PS
02TER	Heat and Molecular Physics Filip Petrásek Petr Novotný Petr Jizba (Gar.)	Z,ZK	4	2+2	L	PS
17UING	Introduction to Engineering Jan Frýbort, Petr Haušild, Radek Mušálek Jan Frýbort (Gar.)	KZ	3	2P+1C	Z	PS
16UJRF1	Introductory Nuclear and Radiation Physics 1 Ladislav Musílek Ladislav Musílek Ladislav Musílek (Gar.)	Z,ZK	4	2P+2C	L	PS

18ZPRO	Basics of Programming Maksym Dreval, Vladimír Jarý, Miroslav Virius, Jakub Klinkovský, Petr Pauš, František Vold ich, Jan Tomsa, Zuzana Pet í ková Miroslav Virius Miroslav Virius (Gar.)	Z	4	4C	Z	PS
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#### Characteristics of the courses of this group of Study Plan: Code=BSPJIJR1 Name=BS P\_JIB JR 1st year

D2ELMA	Electricity and Magnetism	Z,ZK	6
Electric charge, Cou	ulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors anddielectrics. Electric current and circuits, c	1 '	of the relativity
heory. Electrodynan	mic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, ac currents. Electromagnetic waves, Maxwell e	equations	-
01LAL	Linear Algebra 1	Z	2
1. Vector space. 2. L	inear dependence and independence. 3. Basis and dimension. 4. Subspaces of vector spaces. 5. Linear mappings. 6. Matrices	of linear mappings	. 7. Frobenius
heorem.			
01LALZ	Linear Algebra 1, exam	ZK	2
01LAL2	Linear Algebra 2	Z,ZK	4
Outline: 1. Inverse m	natrix and operator. 2. Permutation and determinant. 3. Spectral theory (eigenvalue, eigenvector, diagonalization). 4. Hermitian a	and quadratic forms	s. 5. Scalar
product and orthogo	onality. 6. Metric geometry. 7. Riesz theorem and adjoint operator. Outline of the exercises: 1. Methods for calculation of inverse i	matrices. 2. Method	ds of calculation
of determinants. 3. C	Calculation of eigenvalues and eigenvectors. 4. Hermitian and quadratic forms. Canonical form. 5. Scalar product and orthogona	ality. Calculation of	orthogonal
complements. 6. Ge	eometry – exercises and examples. 7. Adjoint operators.		
D1MAN	Calculus 1	Z	4
Basic calculus (real	analysis, functions of one real variable, differential calculus).		
D1MANZ	Calculus 1, exam	ZK	4
01MAN2	Calculus 2	Z,ZK	8
	ifferential calculus: Taylor´s Polynomials, Taylor´s formula 2. Infinite series: criteria of convergence, operations on series, absolut	e and conditional (	convergence 3.
<ol> <li>Continuation of di</li> </ol>	inerential calculus. Taylor 5 Folynomiais, Taylor 5 ionnula 2. Innine Senes. Cinena or convergence, operations on senes, absolu		
	power series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of i		-
Real and complex p			-
Real and complex p	ower series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of in		-
Real and complex po (Riemann definition) D2MECH	ower series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of i ), techniques of integration and application of integrals, Generalized Riemann integral	ntegrals: primitives	, definite integra
Real and complex p (Riemann definition) D2MECH htroduction to physic	ower series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of i ), techniques of integration and application of integrals, Generalized Riemann integral Mechanics	ntegrals: primitives	, definite integra 4 If motion, motion
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Real and complex pr (Riemann definition) D2MECH Introduction to physic In central force field, continuum mechanic D2MECHZ	ower series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of it ), techniques of integration and application of integrals, Generalized Riemann integral Mechanics cs, physical quantities and units. Particle kinematics, basic types of motion and theirsuperposition. Particle dynamics, one-dimer , forces innoninertial reference frames. Mechanics of system of free particles, two-body problem, collisions. Mechanics ofrigid bi ics, elasticity, hydrodynamics. Sound.	ntegrals: primitives Z sional equations c ody, rotation. Funda	, definite integra 4 of motion, motion amentals of
Real and complex pr (Riemann definition) D2MECH Introduction to physic In central force field, continuum mechanic D2MECHZ	bower series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of it ), techniques of integration and application of integrals, Generalized Riemann integral Mechanics cs, physical quantities and units. Particle kinematics, basic types of motion and theirsuperposition. Particle dynamics, one-dimer , forces innoninertial reference frames. Mechanics of system of free particles, two-body problem, collisions. Mechanics ofrigid bits, elasticity, hydrodynamics. Sound. Mechanics - Examination subject is the examination according to the plan of studies.	ntegrals: primitives Z sional equations c ody, rotation. Funda	, definite integra 4 of motion, motior amentals of
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Real and complex p (Riemann definition) D2MECH Introduction to physic n central force field, continuum mechanic D2MECHZ The content of the s DOPT D2TER Thermal expansion entropy; non-chemic 17UING This course provides and production, qua 16UJRF1	power series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of it         i, techniques of integration and application of integrals, Generalized Riemann integral         Mechanics         cs, physical quantities and units. Particle kinematics, basic types of motion and theirsuperposition. Particle dynamics, one-dimer         i, forces innoninertial reference frames. Mechanics of system of free particles, two-body problem, collisions. Mechanics ofrigid be         ics, elasticity, hydrodynamics. Sound.         Mechanics - Examination         subject is the examination according to the plan of studies.         Preparatory Week         Heat and Molecular Physics         of materials, heat transfer; stationary and non-stationary heat conduction, heat transfer and penetration; 1st and 2nd thermodyr         cal systems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials; kinetic theory: Maxwell's velocity         Introduction to Engineering         ts introduction to engineering skills. Students should gain general engineering skills at basic level (e.g. material properties and bality assurance, environmental impacts,). In addition, the introduction to scientific work and technical drawing will be included.         Introductory Nuclear and Radiation Physics 1	Z         nsional equations cody, rotation. Fundation         ZK         Z,ZK         namic principle, idegration, equip         KZ         y distribution, equip         KZ         ehavior, basics of the state of the stat	, definite integra 4 of motion, motion amentals of 2 2 4 eal and real gas artition theorem 3 manufacturing 4
Real and complex p (Riemann definition) D2MECH Introduction to physic n central force field, continuum mechanic D2MECHZ The content of the s D0PT D2TER Thermal expansion entropy; non-chemic 17UING This course provides and production, qua 16UJRF1 The aim of the cours	wower series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of it         i, techniques of integration and application of integrals, Generalized Riemann integral         Mechanics         cs, physical quantities and units. Particle kinematics, basic types of motion and theirsuperposition. Particle dynamics, one-dimer         , forces innoninertial reference frames. Mechanics of system of free particles, two-body problem, collisions. Mechanics ofrigid bits, elasticity, hydrodynamics. Sound.         Mechanics - Examination         subject is the examination according to the plan of studies.         Preparatory Week         Heat and Molecular Physics         of materials, heat transfer; stationary and non-stationary heat conduction, heat transfer and penetration; 1st and 2nd thermodyr         cal systems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials; kinetic theory: Maxwell's velocity         Introduction to Engineering         si introduction to engineering skills. Students should gain general engineering skills at basic level (e.g. material properties and bality assurance, environmental impacts,). In addition, the introduction to scientific work and technical drawing will be included.	ntegrals: primitives          Z         nsional equations cody, rotation. Fund-         ZK         Z,ZK         namic principle, ide         y distribution,equip         KZ         ehavior, basics of         Z,ZK         d lectures. The sub	, definite integra 4 of motion, motion amentals of 2 2 4 eal and real gas artition theorem 3 manufacturing 4 ject summarize
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### Code of the group: BSPJIJR2

Name of the group: BS P\_JIB JR 2nd year

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 11 courses Credits in the group: 0

Note on the group:

Předmět 02TEF1 lze absolvovat až po absolvování předmětu 02MECHZ

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
01ANB3	Calculus B 3 Miroslav Kolá , Milan Krbálek Miroslav Kolá Milan Krbálek (Gar.)	Z,ZK	8	4P+4C		PS
01ANB4	<b>Calculus B 4</b> Ji í Mikyška, Miroslav Kolá , Milan Krbálek <b>Milan Krbálek</b> Milan Krbálek (Gar.)	Z,ZK	6	2P+4C		PS
17NFYZ	Neutron physics Milan Štefánik Milan Štefánik (Gar.)	ΚZ	3	2P+1C		PS
12NME1	Numerical Methods 1 Pavel Váchal Pavel Váchal (Gar.)	Z,ZK	4	2+2	L	PS
15CH1	General Chemistry 1 Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z	3	2+1	Z	PS
17RFYZ	Reactor physics Jan Frýbort, Lenka Frýbortová Jan Frýbort (Gar.)	Z,ZK	4	2P+2C		PS

02TEF1	Theoretical Physics 1 Petr Novotný Petr Novotný Igor Jex (Gar.)	Z,ZK	4	2+2	Z	PS
17TEMT	Thermodynamics and fluid mechanics of nuclear power plants Dušan Kobylka Dušan Kobylka (Gar.)	Z,ZK	4	4P		PS
02TSFA	Thermodynamics and Statistical Physics Jaroslav Novotný, Igor Jex Antonín Hoskovec Igor Jex (Gar.)	Z,ZK	4	2+2	L	PS
02VOAF	Waves, Optics and Atomic Physics Josef Schmidt, Petr Novotný Jan Vysoký Ji í Tolar (Gar.)	Z,ZK	6	4+2	Z	PS
16ZDOZ1	Fundamentals of Radiation Dosimetry 1 Tomáš Trojek Tomáš Trojek Tomáš Trojek (Gar.)	Z,ZK	4	2+2		PS
	e courses of this group of Study Plan: Code=BSPJIJR2 Name=B	S P_JIB JR	2nd yea			
1	alculus B 3				Z,ZK	8
	nd series - convergence range, criteria of uniform convergence, continuity, limit, differentia	-			-	
	m. 2. Ordinary differential equations - equations of first order (method of integration factor	-	-			-
	n) and equations of higher order (fundamental system, reduction of order, variation of para	-			-	-
	ation). 3. Metric spaces - metric, norm, scalar product, neighborhood, interior and exterior					
	ce, Hilbert spaces. Orthogonal polynomials. Complete orthogonal systems. 4. Fourier serie	-			-	
-	ce. 5. Differential calculus of functions of several variables - limit, continuity, partial and di		ive, gradien	t, total deriva	atives and tai	ngent plane
laylor series, elementary te	erms of vector analysis, Jacobi matrix. 6. Functions defined implicitly by one or several ec	juations.				
01ANB4 C	alculus B 4			Z	Z,ZK	6
1] Diferenciální po et funk	cí více prom nných a funkcionálních vektor . [2] Funkce zadané implicitn . [3] Taylorovy	ady funkce více	e prom nný	ch. [4] Regu	lární zobraze	ní, zám na
prom nných, nekartézské :	soustavy sou adnic. [5] Lokální, vázané a globální extrémy funkce více prom nných. [6] 2	Základy teorie m	íry a obrys	konstrukce L	ebesgueovy	míry. [7]
Integrální po et funkce více	e prom nných - Riemann v a Lebesgue v integrál, základní vlastnosti, Fubiniova v ta, v	ta o substituci.	Leviho a Le	besgueova	v ta. Limita, s	spojitost a
derivace integrálu podle pa	rametru. [8] Integrály po k ivkách a plochách. Integrální v ty.					
17NFYZ N	eutron physics				KZ	3
1	cs" introduces students to the basics of neutron physics and its applications. The lectures s	tart with the des	cription of th	1	1	orld struct
	otons and neutrons. After that a description of radioactivity and nuclear reactions follows.		-			
	of realization of particular nuclear reactions expressed by the effective cross-section vers		-			
	eractions, and issues of differential cross sections and neutron slowing down process are					
	rs. Students will get familiar with the conditions for realization of fission chain reaction. Fi					
liscussed.		nuny, the most n	npontant ap		neutron phy.	
	umarical Mathada 1					1
12NME1 N	umerical Methods 1		and tashna	Z	Z,ZK	4
12NME1 N There are explained the ba	sic principles of numerical mathematics important for numerical solving of problems impo			logy. Method	ds for solution	n of tasks ve
12NME1 N There are explained the ba mportant for physicists (or	sic principles of numerical mathematics important for numerical solving of problems impo dinary differential equations, random numbers) are included in addition to the basic nume			logy. Method	ds for solution	n of tasks v
12NME1     N       There are explained the ba       important for physicists (or       used as a principle program	sic principles of numerical mathematics important for numerical solving of problems impo dinary differential equations, random numbers) are included in addition to the basic nume nming language as a demonstration tool. The seminars are held in computer laboratory.			logy. Method	ds for solution I environmen	n of tasks v t MATLAB
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Image: Normal State	sic principles of numerical mathematics important for numerical solving of problems important differential equations, random numbers) are included in addition to the basic numering language as a demonstration tool. The seminars are held in computer laboratory. eneral Chemistry 1 ots, quantities and units used in chemistry are introduced in the course General Chemistry eactor physics cs" helps Bachelor's degree students to get acquainted with fundamentals of reactor phys of neutron balance in a nuclear reactor and definition of multiplication factor. The students energy spectrum and group theory. Students will get knowledge of Fick's law and diffusio us multiplying and non-multiplying media. The same theory is also utilized for large-scale subsequently compared to heterogeneous reactors. Lecture on fundamentals of nuclear heoretical Physics 1 on to analytical mechanics. The students acquire knowledge of the basic concepts of the L (Newton's, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these r	y I. Their signific ics. The students fission, and kine s will learn theor n theory for bas calculations of n rector kinetics an agrange and Ha nethods is illustr	ance and p ance and p s will get bro tic energy o y of neutror ic analytical uclear reac nd dynamic miltonian fo ated on ele	Z Dogy. Method computationa ractical use ractical use Z pad knowledg f released no n slowing dor calculations tor cores. Co s is also incl Z rmalism as v mentary exa	s for solution l environmen Z   are illustrated Z,ZK   ge of fission of eutrons. Such wn and funda s of neutrons' onclusions ob uded. Z,ZK   well as diferent mples like th	a of tasks v t MATLAB 3 d by examp 4 chain reaction a knowled amental spatial tained for 4 nt approach e two-body
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Code of the group: BSPJIJR3 Name of the group: BS P\_JIB JR 3rd year Requirement credits in the group: Requirement courses in the group: In this group you have to complete at least 14 courses Credits in the group: 0 Zkoušku z předmětu 01RMAF lze skládat až po složení všech zkoušek z Matematické analýzy a Lineární algebry.

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
17BPJI1	Bachelor Thesis 1 Dušan Kobylka, Jan Rataj Jan Rataj (Gar.)	Z	5	5ZP		PS
17BPJI2	Bachelor Thesis 2 Dušan Kobylka, Jan Rataj Jan Rataj (Gar.)	Z	10	10ZP		PS
17BPROV	Safe operation of nuclear facilities Lenka Frýbortová, ubomír Sklenka Lenka Frýbortová (Gar.)	KZ	2	2P		PS
17DEZA	Detection of Ionizing Radiation Martin Cesnek, Marcel Miglierini, Miloš Tichý Marcel Miglierini (Gar.)	KZ	3	2P+1L	z	PS
17EXE	Excursion Evžen Losa Evžen Losa (Gar.)	Z	2	1XT	Z	PS
17ENEF	Experimental Neutron Physics Jan Rataj Jan Rataj (Gar.)	KZ	3	1P+2L	L	PS
17IJR	Instrumentation of Nuclear Reactors Martin Kropík Martin Kropík (Gar.)	Z	3	3P		PS
17JARE	Nuclear Reactors Tomáš Bílý Tomáš Bílý (Gar.)	ZK	2	2	L	PS
17KOJE	Design and Equipment of Nuclear Power Plants Jan Rataj, Pavel Zácha Jan Rataj (Gar.)	ZK	3	3P	L	PS
17PALC	Nuclear Fuel Cycle ubomír Sklenka, Evžen Losa, Radovan Starý ubomír Sklenka (Gar.)	ZK	2	2P	L	PS
01PRST	Probability and Statistics Tomáš Hobza Tomáš Hobza (Gar.)	Z,ZK	4	3+1	Z	PS
01RMAF	Equations of Mathematical Physics Václav Klika Václav Klika (Gar.)	Z,ZK	7	4P+2C		PS
17STJE	Heat Transfer in Nuclear Power Plants Dušan Kobylka, Martin Ševe ek, Sebastian Nývlt Martin Ševe ek (Gar.)	Z,ZK	4	2P+2C		PS
01STME	Statistical Methods with Applications Tomáš Hobza Tomáš Hobza (Gar.)	ZK	2	2P+0C		PS
Characteristics of the	courses of this group of Study Plan: Code=BSPJIJR3 Name	=BS P_JIB JR	3rd year			
17BPJI1 Bac	chelor Thesis 1				Z	5
	s assignment and under leading of a supervisor individually processes given topic	during 2 semesters.	The subjec	t is given by	y self-reliant wo	ork on give
topic. The work is continuous						
	chelor Thesis 2				Z	10
	s assignment and under leading of a supervisor individually processes given topic	during 2 semesters.	The subjec	t is given by	y self-reliant wo	ork on give
topic. The work is continuous						
	e operation of nuclear facilities amiliarize students with basic principles of nuclear safety.				KZ	2
· · ·					KZ	3
I	ection of Ionizing Radiation formation about sources and methods of detection of ionizing radiation and spectro	scopy with special	omphasis or	 noutron d		Ũ
	hysical principles of detection, but introduces detection technology to the extent ap		-			
, , ,	in groups of up to three students. It also includes writing a measurement report, w			,	,	
17EXE Exc	cursion				Z	2
	amiliarize students with institutions and industry connected with the nuclear energy	production in the C	zech Repub	lic. The sub	1	
according to the possibilities	of the participating companies, but it always covers basic fields: (i) research, develo	opment and enginee	ring (e.g. Ú.	JV a.s., CV	ež s.r.o., ÚJF	AV R,
	e (e.g. UJP PRAHA a.s., SÚRAO, EZ a.s.), (iii) electricity and heat production (	Z a.s.), (iv) radiatior	n protection	and oversig	ght (SÚJB, SÚF	RO). The
	hich are uniformly spread among semester and examination period.					
17ENEF Exp	perimental Neutron Physics				KZ	3
	erimental methods and experiments in the field of neutron physics, mainly using ra	dionuclide neutron s	ources. The	lectures ar	e devoted to the	e theoreti
bases necessary for preparat	ion and realization of the laboratory exercises and to the methods of experimental da	ata processing and e	valuation. Sp	pecifically, t	he lectures prov	vide detai
description of neutron proper-	ties and their utilization, the characteristics of neutron sources, properties of prompt	and delayed neutron	ns, selected	methods of	f neutron detect	tion, neutr
	ties and their utilization, the characteristics of neutron sources, properties of prompt uction, formation and modification of neutron fields and neutron beams. The lecture					

detection, measurement of delayed neutrons, study of neutron transport in various substances, experiments with various neutron sources (252Cf, AmBe, D-D neutron generator), preparation and detection of photo-neutron source, calibration of the radionuclide neutron source. The experiments are realized at the VR-1 training reactor and its laboratories.

17IJR Instrumentation of Nuclear Reactors

Lectures are concentrated on the instrumentation of nuclear reactors. The introduction is devoted to requirements on the safe operation of nuclear power plants and categorization of nuclear power plant systems with a respect to the nuclear safety according to IAEA, IEC and IEEE standards. Next, the attention is oriented to sensors of nuclear instrumentation – netron detectors, their pulse, DC current and Campbell operation, thermocouples, thermoresistors, pressure and flow meters. Next part is directed to the incore and excore instrumentation of nuclear power plants Dukovany and Temelin, to the evaluation of their states and power measurement. Next are presented safety functions of nuclear power plants, their actication and systems that carries out safety actions. Attention is also given to the qualification of nuclear power plants systems. There are also presented examples of foreign nuclear power plants instrumentation. The conclusion of the lectures is oriented to requirements of research nuclear facilities instrumentation. The instrumentation of the VR-1 training reactor is presented in a detail, then instrumentations of LVR15, LR0, TRIGA Mark II and SUR100 reactors is also given.

Ζ

ZK

3

2

#### 17JARE Nuclear Reactors

Introduction. World power issue. Previous evolution of power reactor. Nuclear fission reactors, fuel assemblies, active core, control systems, safety systems, containment. Classification of reactors into IV generations. Standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Pressurized water reactors (PWR). Western-type PWR (Westinghouse, KWU, Framatom). VVER-type reactors, Temelín nuclear power plant. Boiling water reactors. Heavy water reactors, fast breeder reactors, high-temperature gas cooled reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF and INPRO initiatives. Evaluation and selection of proposed systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in long-term outlook

17KOJE	Design and Equipment of Nuclear Power Plants		1	ZK	3			
Main components of nuclear units. Basic designs of cooling circuits. Design of main parts of units with pressurized wa-ter reactors. Selected components of different nuclear power								
plant units. Components of next technological systems ( (accumulator tanks, boric acid systems, systems for coolant purification and coolant inventory control, hermetic space etc.). Requirements on electrical equipment and power output systems from nuclear power plant, examples of NPP wir-ing diagrams including electrical equipment's parameters.								
17PALC	Nuclear Fuel Cycle			ZK	2			
The course deal with inti	oduction to the nuclear fuel cycle of nuclear power plants, particularly PWR which are in operation in the Cze	ch Republic o	or are under	consideratio	n for operation			
in future in the Czech R	public. The first part of the course is focused on front-end of the nuclear fuel cycle, the second part is focu	ised on fuel u	itilisation in	the reactor co	ore and the			
· · ·	s focused on back-end of the nuclear fuel cycle.							
01PRST	Probability and Statistics			Z,ZK	4			
	obability theory and mathematical statistics. The probability theory is build gradually beginning with the cla			•	•			
	s random variable, distribution function of random variable and characteristics of random variable are treat ry the basic methods of mathematical statistics such as estimation of distribution parameters and hypothe				and proved.			
01RMAF	Equations of Mathematical Physics	sis testing an		Z,ZK	7			
-	e is solving integral equations, theory of generalized functions, classification of partial differential equation	s. theory of ir			-			
-	ons (boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).	-, · · · <b>,</b> ·						
17STJE	Heat Transfer in Nuclear Power Plants		Z	Z,ZK	4			
The course titled Heat T	ansfer in Nuclear Power Plants presents to the students the fundamental principles of heat transfer with a	focus on nuc	lear power-i	related applic	ations. Most			
	ere introduced in the course 02TER which is a predecessor of this course. The course 17STJE elaborates				Ū.			
	areas related to the heat transfer in nuclear cores. An overview lecture of the basic principles will be give	•	0					
	er mechanism will be discussed during the next weeks. It will start with conduction followed by convection netics related to nuclear reactors and equipment related to nuclear power plants and spent nuclear fuel. For							
1	onvection is divided according the nature of the flow into laminar and turbulent. The concept of radiative h							
	ions and models used by industry will be presented here. The course includes also fundamentals of heat t				•			
to boiling.				•	ů.			
01STME	Statistical Methods with Applications			ZK	2			
	elected methods of statistical data analysis such as: linear regression and correlation, analysis of variance	-		-	y tables, and			
their application. The air	n is to illustrate the use of statistical procedures on examples. Solutions of concrete examples by use of st	atistical softw	are are also	included.				
Name of the bl	ock: Compulsory elective courses							
Minimal number	er of credits of the block: 0							
The role of the	block. B/							
Codo of the ar								
-	oup: BSSPOLVEDY							
-	oup: BSSPOLVEDY oup: BS - Social Sciences							
Name of the g	oup: BS - Social Sciences							
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Name of the gr Requirement of Credits in the gr Note on the gr Code 00EKOT 00ETV 00RET 00UPRA	oup: BS - Social Sciences         redits in the group:         ourses in the group: In this group you have to complete at lease         oup:       Only one of these courses is oblig         oup:       Only one of these courses is oblig         Name of the course / Name of the group of courses       Completion         (in case of groups of courses the list of codes of their members)       Completion         Tutors, authors and guarantors (gar.)       Z         Economy in Technology       Z         Jana Ková ová       Z         Rhetoric       Z         Jana Ková ová Jana Ková ová       Z         Introduction to Law       Z         Martin ech Jana Ková ová       Z	Credits       1       1       1       1       1       1       1	Scope 2+0 0+2 0+2 0+2		PV PV PV PV			
Name of the gr Requirement of Credits in the gr Note on the gr OOEKOT OOETV OORET	oup: BS - Social Sciences         redits in the group:         ourses in the group: In this group you have to complete at lease         proup: Only one of these courses is oblig         oup: Only one of these courses is oblig         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.)         Economy in Technology         Jana Ková ová         Rhetoric         Jana Ková ová Jana Ková ová         Introduction to Law	Credits       1       1       1       1       1	Scope 2+0 0+2 0+2		PV PV PV			
Name of the gr Requirement of Credits in the gr Note on the gr Code 00EKOT 00ETV 00RET 00UPRA 00UPSY	oup: BS - Social Sciencesredits in the group:ourses in the group: In this group you have to complete at leaseproup: 0oup: Only one of these courses is obligName 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.)Economy in Technology Jana Ková ováZEthics of Science and Technology Jakub Hají ek Jana Ková ováIntroduction to Law Martin ech Jana Ková ováIntroduction to Psychology Jakub Hají ek Jana Ková ová	A Credits Credits 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Scope 2+0 0+2 0+2 0+2 0+2		PV PV PV PV			
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Name of the gr Requirement of Requirement of Credits in the gr Note on the gr Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of 00EKOT The course introduces t	oup: BS - Social Sciences         redits in the group:         ourses in the group: In this group you have to complete at lease         group: Only one of these courses is oblig         Name of the course / Name of the group of courses         ( <i>in case of groups of courses the list of codes of their members</i> )         Tutors, authors and guarantors (gar.)         Economy in Technology         Jana Ková ová         Rhetoric         Jana Ková ová Jana Ková ová         Introduction to Law         Martin ech Jana Ková ová         Introduction to Psychology         Jakub Hají ek Jana Ková ová         Z         Economy in Technology         Jana Ková ová Jana Ková ová	A Credits Credits 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Scope 2+0 0+2 0+2 0+2 0+2	L 2	PV           PV           PV           PV           PV           1			
Name of the gr Requirement of Requirement of Credits in the gr Note on the gr Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of 00EKOT The course introduces t 00ETV	oup: BS - Social Sciences         redits in the group:         ourses in the group: In this group you have to complete at lease         proup:       Only one of these courses is oblig         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         Economy in Technology       Z         Jana Ková ová       Z         Introduction to Law       Z         Martin ech Jana Ková ová       Z         Introduction to Psychology       Z         Jakub Hají ek Jana Ková ová       Z         Ethics of this group of Study Plan: Code=BSSPOLVEDY Name=BS - So         Economy in Technology       E         Jakub Hají ek Jana Ková ová       Z	A Credits Credits 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Scope 2+0 0+2 0+2 0+2 0+2	L Z Z	PV PV PV PV PV 1			
Name of the gr Requirement of Requirement of Credits in the gr Note on the gr OOEKOT OOETV OORET OOUPRA OOUPSY Characteristics of OOEKOT The course introduces t OOETV OORET	oup: BS - Social Sciences         redits in the group:         ourses in the group: In this group you have to complete at lease         proup:       Only one of these courses is oblig         oup:       Only one of these courses is oblig         Name of the course / Name of the group of courses       Completion         (in case of groups of courses the list of codes of their       Completion         members)       Tutors, authors and guarantors (gar.)       Completion         Economy in Technology       Z       Z         Jana Ková ová       Z       Z         Rhetoric       Z       Z         Jana Ková ová Jana Ková ová       Z       Z         Introduction to Law       Z       Z         Martin ech Jana Ková ová       Z       Z         the courses of this group of Study Plan: Code=BSSPOLVEDY Name=BS - So       Economy in Technology         Jakub Hají ek Jana Ková ová       Z       Economy in Technology         Jakub Hají ek Jana Ková ová       Z       Z         Economy in Technology       Z       Z         Jakub Hají ek Jana Ková ová       Z       Z         Economy in Technology       Z       Z         Economy in Technology       Economy in Technology       Z         Economy	Credits Credits 1 1 1 1 1 1 cial Scien	Scope 2+0 0+2 0+2 0+2 0+2 0+2	L Z Z Z	PV PV PV PV PV 1 1 1			
Name of the gr Requirement of Requirement of Credits in the gr Note on the gr Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of 00EKOT The course introduces t 00ETV 00RET The course is focused of	oup: BS - Social Sciences         redits in the group:         ourses in the group: In this group you have to complete at lease         proup: O         oup: Only one of these courses is oblig         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.)         Economy in Technology         Jana Ková ová         Rhetoric         Jana Ková ová         Introduction to Law         Martin ech Jana Ková ová         Introduction to Psychology         Jakub Hají ek Jana Ková ová         Z         Economy in Technology         Jana Ková ová         Retoric         Jana Ková ová         Introduction to Law         Martin ech Jana Ková ová         Z         Economy in Technology         Jakub Hají ek Jana Ková ová         Z         Introduction to Psychology         Jakub Hají ek Jana Ková ová         Z         Economy in Technology         Basics of micro- and macroeconomics.         Ethics of Science and Technology         Rhetoric         The basics of micro- and macroeconomics.	also devoted	Scope 2+0 0+2 0+2 0+2 0+2 0+2 10+2	Z Z Z z z	PV PV PV PV PV 1 1 1 blic speech			
Name of the gr Requirement of Requirement of Credits in the gr Note on the gr Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of 00EKOT The course introduces t 00ETV 00RET The course is focused of as well as to its nonverti	oup: BS - Social Sciences         redits in the group:         ourses in the group: In this group you have to complete at lease         group: 0         oup: 0         Only one of these courses is oblig         (in case of groups of courses the list of codes of their members)         Tutors, authors and guarantors (gar.)         Ethics of Science and Technology         Jana Ková ová         Z         Rhetoric         Jana Ková ová Jana Ková ová         Z         Introduction to Law         Martin ech Jana Ková ová         Z         Introduction to Psychology	also devoted	Scope 2+0 0+2 0+2 0+2 0+2 0+2 10+2	Z Z z position of pu al part of the	PV PV PV PV PV PV			
Name of the gr Requirement of Requirement of Credits in the gr Note on the gr Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of 00EKOT The course introduces t 00ETV 00RET The course is focused of	oup: BS - Social Sciences         redits in the group:         ourses in the group: In this group you have to complete at lease         proup: O         oup: Only one of these courses is oblig         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.)         Economy in Technology         Jana Ková ová         Rhetoric         Jana Ková ová         Introduction to Law         Martin ech Jana Ková ová         Introduction to Psychology         Jakub Hají ek Jana Ková ová         Z         Economy in Technology         Jana Ková ová         Retoric         Jana Ková ová         Introduction to Law         Martin ech Jana Ková ová         Z         Economy in Technology         Jakub Hají ek Jana Ková ová         Z         Introduction to Psychology         Jakub Hají ek Jana Ková ová         Z         Economy in Technology         Basics of micro- and macroeconomics.         Ethics of Science and Technology         Rhetoric         The basics of micro- and macroeconomics.	also devoted	Scope 2+0 0+2 0+2 0+2 0+2 0+2 10+2	Z Z Z z z	PV PV PV PV PV 1 1 1 blic speech			

Code of the group: BSPJAZYKYZK Name of the group: BS P 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
04XAMZK	English for Intermediate Students Examination	ZK	4		Z	PV
04XAPZK	English for Advanced Students Examination	ZK	4		Z	PV
04XCESZZK	Czech for Foreigners – Beginners - Examination Jana Ková ová, Slav na Brownová	ZK	4		Z	PV
04XCESMZK	Czech for Intermediate Students Examination Jana Ková ová Jana Ková ová Jana Ková ová (Gar.)	ZK	4		Z	PV
04XCESPZK	Czech for Foreign Students - Advanced Examination Jana Ková ová Jana Ková ová (Gar.)	ZK	4		Z	PV
04XFMZK	French for Intermediate Students Examination	ZK	4		Z	PV
04XFPZK	French for Advanced Students Examination	ZK	4		Z	PV
04XFZZK	French for Beginners Examination V ra Šlechtová	ZK	3		L	PV
04XNMZK	German for Intermediate Students Examination	ZK	4		Z	PV
04XNPZK	German for Advanced Students Examination	ZK	4		Z	PV
04XRMZK	Russian for Intermediate Students Examination	ZK	4		Z	PV
04XRPZK	Russian for Advanced Students Examination	ZK	4		Z	PV
04XRZZK	Russian for Beginners Examination V ra Šlechtová	ZK	3		L	PV
04XSMZK	Spanish for Intermediate Students Examination	ZK	4		Z	PV
04XSPZK	Spanish for Advanced Students Examination	ZK	4		Z	PV
04XSZZK	Spanish for Beginners Examination V ra Šlechtová	ZK	3		L	PV

#### Characteristics of the courses of this group of Study Plan: Code=BSPJAZYKYZK Name=BS P languages

04XAMZK English for Intermediate Students Examination	ZK	4
The course content is the examination as given by the study plan. The examination covers the AM1, AM2, and AM3 courses and consists of two par		•
(20-30 min). The student is expected to master the AM syllabus and demonstrate the ability to apply their knowledge gained in the three English cou		ini) and ordi
04XAPZK English for Advanced Students Examination	ZK	4
The course content is the examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability	1	wledge obtained
in the three AP courses. The examination consists of 2 parts - written (110 min) and oral (30 min) and includes also oral presentation of a topic from		
04XCESZZK Czech for Foreigners – Beginners - Examination	ZK	4
The course content is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 0	4XCESZ1,2,3 cou	rses and can
only be taken after successful completion of all three courses. Detailed information is to be obtained from the teacher.		
04XCESMZK Czech for Intermediate Students Examination	ZK	4
The course content is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the C	ESM1,2,3 course	s and can only
be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.		
04XCESPZK Czech for Foreign Students - Advanced Examination	ZK	4
The course content is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the C	ESP1,2,3 courses	and can only
be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.		
04XFMZK 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 FM1-FM3. The	e examination
consists of a written and oral part and is organized according to Examination Instructions, a document available on the web.		
04XFPZK French for Advanced Students Examination	ZK	4
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 pa	rt and is organized	d according to
Examination Instructions, a document available on the web. Assessment of the presentation is included into the examination grading.		
04XFZZK French for Beginners Examination	ZK	3
The content is the examination as given by the study plan. The course is terminated with an examination consisting of oral and written part. The examination consisting of oral and written part.	mination is ruled b	by the document
Instruction for examination. Its content covers the levels FZ1 - FZ5.		
04XNMZK German for Intermediate Students Examination	ZK	4
The course content is the examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examinati	on consisting of tw	vo parts - written
and oral, which cover the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assess	sment. More detai	led information
is to be obtained from the teacher.		
04XNPZK German for Advanced Students Examination	ZK	4
The course content is the examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination	n consisting of tw	o parts - written
and oral, which cover the courses NP1 - NP3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungrade	ed assessment. M	ore detailed
information is to be obtained from the teacher.		
04XRMZK Russian for Intermediate Students Examination	ZK	4
The course content is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	•	
- RM3. Students are eligible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given instruct	-	
04XRPZK Russian for Advanced Students Examination	ZK	4
The course content is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	-	-
- RP3. Students are eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruction	ons by the teache	r.

	ussian for Beginners Examination xamination as given by the study plan. The course is completed by taking a written and	oral overnination	tooting the			3 rod in P71
	for the oral examination only after a prior pass in RZ5 and a successful written examin-		-	-		
	panish for Intermediate Students Examination		0		ZK	4
	camination as given by the study plan. SMZK examination consists of two parts - written a	and oral; to be elig	ible for the v	written part,	students will ha	ve obtained
	course SM3.Oral examination follows the written part.				ZK	4
	panish for Advanced Students Examination xamination as given by the study plan. Examination SPZK consists of two parts, namely	oral and written. T	The prerequi	1	1	•
	mination content is based on syllabi of courses SP1, SP2, and SP3 or on an individual				•	0
1 1	panish for Beginners Examination			1	ZK	3
The course content is the e passed the written examina	xamination as given by the study plan. Examination consists of two parts - written and o tion test	oral. Student can	register for o	oral examina	ation only if he/s	she has
Name of the bloo	ck: Elective courses					
Minimal number	of credits of the block: 0					
The role of the b	lock: V					
Code of the grou	ID: BSPJIJRV					
-	up: BS P_JIB JR Optional courses					
-	dits in the group:					
•	urses in the group:					
Credits in the gro						
Note on the grou	•					
	µ. │Name of the course / Name of the group of courses			1		
Code	(in case of groups of courses the list of codes of their	Completion	Credite	Scone	Semester	Role
Code	members)	completion	oreans	ocope	Gemester	Noie
000554	Tutors, authors and guarantors (gar.) History of Physics 1		0	0.0		
02DEF1	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
17ENER	Energy	ZK	2	2P	L	V
	Miloš Tichý <b>Miloš Tichý</b> Miloš Tichý (Gar.)	21	2	21	L	v
02EXF	<b>Experimental Physics</b> Barbara Antonina Trzeciak, Jaroslav Adam, Jaroslava Óbertová, Katarína K ížková Gajdošová <b>Jaroslava Óbertová</b> Katarína K ížková Gajdošová (Gar.)	ZK	2	2P+0C	Z	V
02PRA1	<b>Experimental Laboratory 1</b> Barbara Antonina Trzeciak, Katarína K ížková Gajdošová, Libor Škoda, Jaroslav Biel ík <b>Jaroslav Biel ík</b> Jaroslav Biel ík (Gar.)	КZ	6	0+4	Z	V
02PRA2	Experimental Laboratory 2 Libor Škoda, Jaroslav Biel ík Jaroslav Biel ík Jaroslav Biel ík (Gar.)	КZ	6	0+4	L	V
02FYS1	Physical Seminar 1	Z	2	0+2	Z	V
	Vojt ch Svoboda (Gar.) English Conversation					
04AKS	Jana Ková ová Jana Ková ová (Gar.)	Z	1	0+2	L	V
00MAM1	Essentials of High School Course 1 David B e	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
17NRE	Experiment Design and Control		3	2+1	Z	V
TINKE	Martin Kropík <b>Dušan Kobylka</b> Martin Kropík (Gar.)	Z,ZK				
15CH2	Artin Kropík Dušan Kobylka Martin Kropík (Gar.)         General Chemistry 2         Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z,ZK Z,ZK	3	2+1	L	V
	Martin Kropík <b>Dušan Kobylka</b> Martin Kropík (Gar.) General Chemistry 2		3 4	2+1 2+2	L Z	V V
15CH2	Martin Kropík Dušan Kobylka Martin Kropík (Gar.)         General Chemistry 2         Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)         Programming in C++ 1	Z,ZK	_			
15CH2 18PRC1	Martin Kropík Dušan Kobylka Martin Kropík (Gar.)         General Chemistry 2         Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)         Programming in C++ 1         Vladimír Jarý, Miroslav Virius Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav	Z,ZK Z	4	2+2	Z	V
15CH2 18PRC1 18PRC2	Martin Kropík Dušan Kobylka Martin Kropík (Gar.)         General Chemistry 2         Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)         Programming in C++ 1         Vladimír Jarý, Miroslav Virius Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius Miroslav         Virius (Gar.)         Programming in MATLAB	Z,ZK Z KZ	4	2+2 2+2	Z	V V
15CH2 18PRC1 18PRC2 18PMTL 17TEXT	Martin Kropík Dušan Kobylka Martin Kropík (Gar.)         General Chemistry 2         Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)         Programming in C++ 1         Vladimír Jarý, Miroslav Virius Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)         Programming in MATLAB         Quang Van Tran, Jaromír Kukal Quang Van Tran Jaromír Kukal (Gar.)         Writing and presenting academic text	Z,ZK Z KZ KZ	4 4 4 4	2+2 2+2 4C	Z L Z	V V V
15CH2 18PRC1 18PRC2 18PMTL	Martin Kropík Dušan Kobylka Martin Kropík (Gar.)         General Chemistry 2         Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)         Programming in C++ 1         Vladimír Jarý, Miroslav Virius Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)         Programming in MATLAB         Quang Van Tran, Jaromír Kukal Quang Van Tran Jaromír Kukal (Gar.)         Writing and presenting academic text         ubomír Sklenka	Z,ZK Z KZ KZ KZ	4 4 4 2	2+2 2+2 4C	Z L Z Z	V V V V
15CH2 18PRC1 18PRC2 18PMTL 17TEXT TV-1	Martin Kropík Dušan Kobylka Martin Kropík (Gar.)         General Chemistry 2         Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)         Programming in C++ 1         Vladimír Jarý, Miroslav Virius Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)         Programming in MATLAB         Quang Van Tran, Jaromír Kukal Quang Van Tran Jaromír Kukal (Gar.)         Writing and presenting academic text         ubomír Sklenka         Physical Education	Z,ZK Z KZ KZ KZ Z	4 4 4 2 1	2+2 2+2 4C	Z L Z Z Z	V V V V V
15CH2 18PRC1 18PRC2 18PMTL 17TEXT TV-1 TV-2	Martin Kropík Dušan Kobylka Martin Kropík (Gar.)         General Chemistry 2         Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)         Programming in C++ 1         Vladimír Jarý, Miroslav Virius Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)         Programming in C++ 2         Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)         Programming in MATLAB         Quang Van Tran, Jaromír Kukal Quang Van Tran Jaromír Kukal (Gar.)         Writing and presenting academic text         ubomír Sklenka         Physical Education	Z,ZK Z KZ KZ KZ Z Z	4 4 4 2 1 1	2+2 2+2 4C 1P+1C	Z L Z Z Z L	V V V V V V V

16ZIVB	Introduction to Ecology Hana Pr šová 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				
18ZALG	Basics of Algorithmization Vladimír Jarý, Miroslav Virius, Petr Pauš, František Vold ich, Zuzana Pet í ková, František Gašpar Vladimír Jarý Miroslav Virius (Gar.)	Z,ZK	4	2+2	L	v				
17ZEL	Basics of Electronics Martin Kropík Martin Kropík (Gar.)	KZ	3	2+2	Z	V				
02ZM1	Foundations of Physical Measurements 1 Libor Škoda, Solangel Rojas Torres, Petr Chaloupka Petr Chaloupka (Gar.)	ZK	2	2P+0C	Z	V				
02ZM2	Foundations of Physical Measurements 2 Petr Chaloupka Petr Chaloupka (Gar.)	KZ	4	0P+4L	L	V				
02DEF1         His           Physics and its place in the s           Helenistic period, Archimed.           as experimental science. New           02DEF2	Characteristics of the courses of this group of Study Plan: Code=BSPJIJRV Name=BS P_JIB JR Optional courses         02DEF1       History of Physics 1         Physics and its place in the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural philosophers, Aristotle. Physics in Helenistic period, Archimed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galileo, Huygens. The birth of physics as experimental science. Newton and his work.									
and relativistic physics, Plane	ck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherfor t of Nature and Universe of today.		-							
The course provides students and global resources, transpo- legal and institutional basis, a state of EU energy integration roles in general and specifica electricity generation coverin environmental impact, includ	ergy s with basic information about energy industry as a branch of economy. It has five co-re ort and consumption. • Energy industry of the Czech Republic, including history with an a description of the main Czech energy industry components and the State Energy Str h, including important processes, documents and legal instruments. • Institutions of energi ally in the EU and the Czech Republic. Attention is also paid to energy modelling. • Tec g a basic technical description of fossil, nuclear, water, wind and solar power plants, in ing phenomena such as greenhouse effect and climate change. Attention is also paid s of current energy industry and student presentations on the chosen topic.	emphasis on rece rategy. • Energy in gy systems descri chnical ground of e ncluding a discuss	nt developn ndustry in th bing the bas energy prod	ncluding basi nent, includir e EU; the de sic models of luction/transi advantages	ng privatizatio evelopment a energy syste formation foc and disadvar	n, the current nd current ems operation used on ntages and				
02EXF Exp	perimental Physics introduce the students the principles of physics measurements, their techniques, meth	ode and instrume	nte that are			2				
analysis of measured data.										
Lecture is intended especially attended by students interester of the measurement (acquire	Derimental Laboratory 1 y for students who intend to study some of the physical specializations of FNSPE(brar ed in the otherspecializations. In Experimental laboratory students learn how to prepare for of different experimental procedures and routines), willteach writing the records of me dge gained in lectures on physics.	or experiments (in	cluding wor	clear Engine k with thelite	rature), the in	plementation				
Lecture is intended especially attended by students interested of the measurement (acquire practically extendthe knowled	perimental Laboratory 2 y for students who intend to study some of the physical specializations of FNSPE(brar ed in the otherspecializations. In Experimental laboratory students learn how to prepare for of different experimental procedures and routines), willteach writing the records of me dge gained in lectures on physics.	or experiments (in	cluding wor	clear Engine k with thelite	rature), the im f results. At th	plementation ne same time				
The seminar is devoted to de	ysical Seminar 1 etailed study of interesting physical problems. It should help students to deeper unders e chosen, studied and presented by the students themselves, with the possibility to us	-	-			2 ourse of				
The course will develop the s their vocabulary for various c	glish Conversation student's communication skills acquired throughout their previous studies. It aims to im communication situations and will master their communication strategy. They will also p vill be trained to express their ideas clearly and according to current English usage, an	practise their lister	ning skills in	order to bet		•				
	sentials of High School Course 1				Z Z	1				
Review of basics of high scho										
Lecture deals with design an computers for control of expe disadvantages. Next, lectures	Deriment Design and Control d operation of systems for control of experiments, acquisition and evaluation of experi erimental systems (COM, USB, Firewire, LAN, GPIB), further about measuring system s deal with programming of measuring systems - special dedicated software, problems ent tools (Agilent VEE and LabView); data acquisition and evaluation. Finally, students pr	s with VME, VXI as of use of high pr	and LXI inte ogramming	nation about rfaces, discu languages a	uss their adva	ntages and y use of				
The subject is the continuation	neral Chemistry 2 on of the course General chemistry I. The main attention is paid to general principles g s is not restricted only to chemical processes is documented. The significance and pra	-	-	. Using vario	-					
	ogramming in C++ 1 e C programming language and non-object oriented features of the C++ language.				Z	4				
18PRC2 Pro	bogramming in C++ 2 t oriented programming and othesr advanced constructs in the C+;+ programming lan	guage and the Sta	andard Tem	1	KZ	4				
18PMTL Pro	ogramming in MATLAB ent as efficient tool for computation in complex arrays and symbolic variables, namely				KZ	4 prithmization				

17TEXT	Writing and presenting academic text	KZ	2
The course focuses	s on examples development of soft skills - how to write and present academic text. The first part of the course is dedicated to i	introducing and class	sifying various
academic texts, ess	sential rules for writing an academic text, and creating an appropriate structure of the written text. Follows lectures related to b	asic typographic rule	es for graphical
arrangement of a w	rritten text; rules how to write and create tables, graphs, figures; differences between new text and plagiarism; and how to man	age references and	citations in
academic texts in n	uclear engineering. In this part, students are familiarised with widely used software for the writing of the academic text. The fir	st part of the course	is dedicated to
presenting academi	ic text, mainly to introduction to verbal and non-verbal aspects of presentation; to all stages of presentation building; and widely u	sed software for pres	enting academi
	follow theoretical lectures give a chance to students to apply theory into practice with the primary aim to give the first experier	nces to students before	ore they start
• •	ing their bachelor thesis.		
TV-1	Physical Education	Z	1
TV-2	Physical Education	Z	1
TV-3	Physical education	Z	1
TV-4	Physical education	Z	1
14TED	Creating Electronic Documents	Z	2
Basic skills for creat	ting and presenting student theses. Individual exercises focus on creating and formatting texts, equations, charts, tables, pres	entations and entire	documents in a
office suite.			
16ZIVB	Introduction to Ecology	KZ	2
	Introduction to Ecology about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the	1	. –
•		1	
The subject inform a	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the	1	
The subject inform a ndicators and susta	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development.	e environment and ev	valuate economi
The subject inform a ndicators and susta	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics	e environment and ev	valuate economi
The subject inform a ndicators and susta D2UFEC The course provide 18ZALG	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subje	e environment and ev	raluate economi
The subject inform a ndicators and susta D2UFEC The course provide 18ZALG This course is devo	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subje Basics of Algorithmization	e environment and ev	raluate economi
The subject inform a ndicators and susta D2UFEC The course provides 18ZALG This course is devoi 17ZEL	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjectives of Algorithmization to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of	e environment and events and even	aluate economi
The subject inform a ndicators and susta D2UFEC The course provides 18ZALG This course is devoi 17ZEL Lectures provide ba	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjectives of Algorithmization ted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of Basics of Electronics	e environment and events and solution of elect and solution and s	aluate economi 2 4 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
The subject inform a ndicators and susta D2UFEC The course provide 18ZALG This course is devoi 17ZEL Lectures provide ba hem. Next, lectures	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjectives Basics of Algorithmization ted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors is asic information of electronics.	e environment and events with more events with with wore events with wo	aluate economi 2 4 blexity. 3 rical circuits with layers (thyristor
The subject inform a ndicators and susta D2UFEC The course provide 18ZALG This course is devoi 17ZEL Lectures provide ba hem. Next, lectures and triacs). Lectures	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjective selected algorithmization ted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors is continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analoc ctronic laboratory exercises.	e environment and events with more events with with wore events with wo	aluate economi 2 2 2 2 2 2 2 3 2 2 3 2 2 2 2 2 2 2 2
The subject inform a ndicators and sustant O2UFEC The course provides 18ZALG This course is devol 17ZEL .ectures provide bathem. Next, lectures and triacs). Lectures completed with elector	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjectives of Algorithmization ted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors or is continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analog and a	e environment and events with more events with with wore events with wo	aluate economi 2 2 2 2 2 2 2 3 2 2 3 2 2 2 2 2 2 2 2
The subject inform a ndicators and sustant O2UFEC The course provides 18ZALG This course is devol 17ZEL 	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjective selected algorithmization ted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors is continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analoc ctronic laboratory exercises.	e environment and ev Z ect are presented. Z,ZK of the algorithm com KZ and solution of elect mponents with more pg/digital converters. ZK	2 2 2 2 2 2 2 2 2 2 2
The subject inform a ndicators and sustant O2UFEC The course provides 18ZALG This course is devoid 17ZEL Lectures provide batherm. Next, lectures and triacs). Lectures completed with elector O2ZM1 The lecture is design ther branches. The	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjective selected algorithmization ted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors is continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analoc ctronic laboratory exercises. Foundations of Physical Measurements 1 gned for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), hower e goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquire	e environment and ev Z ect are presented. Z,ZK of the algorithm com KZ and solution of elect mponents with more pg/digital converters. ZK ver, it can be attended	2       2       4       2       3       ical circuits with       layers (thyristor       Lectures are       2       2       add by students of
The subject inform a ndicators and sustant O2UFEC The course provides 18ZALG This course is devol 17ZEL Lectures provide batherm. Next, lectures and triacs). Lectures completed with elector O2ZM1 The lecture is design ther branches. The pasic habits of work	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjective selected algorithmization ted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors is continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analoc ctronic laboratory exercises. Foundations of Physical Measurements 1 gned for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), hower e goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquire k in a physics lab.	Z         ect are presented.         Z,ZK         of the algorithm com         KZ         and solution of elect         mponents with more         og/digital converters.         ZK         ver, it can be attended         ad data on a PC. Student	2       2       4       2       3       ical circuits with       layers (thyristor       Lectures are       2       2       ad by students c
The subject inform a ndicators and sustant O2UFEC The course provides 18ZALG This course is devol 17ZEL Lectures provide bathern. Next, lectures and triacs). Lectures completed with elector O2ZM1 The lecture is desig	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjective selected algorithmization ted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors is continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analoc ctronic laboratory exercises. Foundations of Physical Measurements 1 gned for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), hower e goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquire	e environment and ev Z ect are presented. Z,ZK of the algorithm com KZ and solution of elect mponents with more pg/digital converters. ZK ver, it can be attended	aluate economi       2       4       olexity.       3       rical circuits with       layers (thyristor       Lectures are       2       2       ed by students of
The subject inform a ndicators and sustant O2UFEC The course provides 18ZALG This course is devoid 17ZEL Lectures provide bather. Next, lectures and triacs). Lectures completed with elector O2ZM1 The lecture is design other branches. The pastic habits of work O2ZM2 The lecture is design	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjer Basics of Algorithmization ted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors is a deal with semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor cor is continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analoc ctronic laboratory exercises. Foundations of Physical Measurements 1 pred for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), hower is goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquire k in a physics lab. Foundations of Physical Measurements 2 gned for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), hower	A environment and ex Z Z,ZK of the algorithm com KZ and solution of elect mponents with more gg/digital converters. ZK ver, it can be attended data on a PC. Stur- KZ ver, it can be attended ver, it can be attended	2       2       4       2       3       1       3       1       3       1       3       1       3       1       2       4       2       2       2       2       2       2       2       2       2       2       2       2       2       2       2       2       2       2       2       3 <t< td=""></t<>
The subject inform a ndicators and sustant O2UFEC The course provides 18ZALG This course is devoid 17ZEL Lectures provide bather. Next, lectures and triacs). Lectures completed with elector O2ZM1 The lecture is design other branches. The pastic habits of work O2ZM2 The lecture is design	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the ainable development. Introduction to Elementary Particle Physics is an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjective basics of Algorithmization Basics of Algorithmization Basics of Electronics asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors is seen this semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor cor is continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analoc ctronic laboratory exercises. Foundations of Physical Measurements 1 pred for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), hower e goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquire k in a physics lab. Foundations of Physical Measurements 2 gned for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), hower e goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquire k in a physics lab.	A environment and ex Z Z,ZK of the algorithm com KZ and solution of elect mponents with more gg/digital converters. ZK ver, it can be attended data on a PC. Stur- KZ ver, it can be attended ver, it can be attended	2       2       4       2       3       1       3       1       3       1       3       1       3       1       2       4       2       2       2       2       2       2       2       2       2       2       2       2       2       2       2       2       2       2       2       3 <t< td=""></t<>

# Code of the group: BSPJAZYKYZAP Name of the group: BS P jazyky zap 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
04XAM1	English for Intermediate Students M1	Z	2	0+2	Z	V
04XAM2	English for Intermediate Students M2 V ra Šlechtová	Z	2	0+2	L	V
04XAM3	English for Intermediate Students M3 V ra Šlechtová	Z	2	0+2	Z	V
04XAP1	English for Advanced Students P1 V ra Šlechtová	Z	2	0+2	Z	V
04XAP2	English for Advanced Students P2 V ra Šlechtová	Z	2	0+2	L	V
04XAP3	English for Advanced Students P3 V ra Šlechtová	Z	2	0+2	Z	V
04XCESZ1	Czech for Foreigners - Beginners 1 Jana Ková ová Jana Ková ová (Gar.)	Z	2	0+2	Z	V
04XCESZ2	Czech for Foreigners - Beginners 2 Jana Ková ová Jana Ková ová (Gar.)	Z	2	0+2	L	V
04XCESZ3	Czech for Foreigners - Beginners 3 Jana Ková ová (Gar.)	Z	2	2S	Z	V
04XCESM1	Czech for Foreigners - Intermediate 1	Z	2	0+2	Z	V
04XCESM2	Czech for Foreigners - Intermediate 2 Jana Ková ová Jana Ková ová (Gar.)	Z	2	0+2	L	V
04XCESM3	Czech for Foreigners - Intermediate 3 V ra Šlechtová Jana Ková ová (Gar.)	Z	2	0+2	Z	V

	Creah far Farsian Studente Advanced 1		1			
04XCESP1	Czech for Foreign Students - Advanced 1 Jana Ková ová Jana Ková ová (Gar.)	Z	2	0+2	Z	V
04XCESP2	Czech for Foreigners - Advanced 2 Jana Ková ová Jana Ková ová (Gar.)	Z	2	0+2	L	V
04XCESP3	Czech for Foreigners - Advanced 3 V ra Šlechtová Jana Ková ová (Gar.)	Z	2	0+2	Z	V
04XFM1	French for Intermediate Students M1 V ra Šlechtová V ra Šlechtová (Gar.)	Z	2	0+2	Z	V
04XFM2	French for Intermediate Students M2 V ra Šlechtová V ra Šlechtová (Gar.)	Z	2	0+2	L	V
04XFM3	French for Intermediate Students M3	Z	2	0+2	Z	V
04XFP1	French for Advanced Students P1 V ra Šlechtová V ra Šlechtová (Gar.)	Z	2	0+2	Z	V
04XFP2	French for Advanced Students P2 V ra Šlechtová V ra Šlechtová (Gar.)	Z	2	0+2	L	V
04XFP3	French for Advanded Students P3	Z	2	0+2	Z	V
04XFZ1	French for Beginners Z1	Z	2	0+4	L	v
04XFZ2	V ra Šlechtová V ra Šlechtová (Gar.) French for Beginners Z2	Z	2	0+4	Z	v
04XFZ3	V ra Šlechtová V ra Šlechtová (Gar.) French for Beginners Z3	Z	2	0+4		v
0	V ra Šlechtová V ra Šlechtová (Gar.) French for Beginners Z4					
04XFZ4	V ra Šlechtová French for Beginners Z5	Z	2	0+4	Z	V
04XFZ5	V ra Šlechtová	Z	2	0+4	L	V
04XNM2	German for Intermediate Students M2 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	L	V
04XNM1	German for Intermediate Students M1 V ra Šlechtová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XNM3	German for Intermediate Students M3 V ra Šlechtová	Z	2	0+2	Z	V
04XNP1	German for Advanced Students P1 V ra Šlechtová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XNP2	German for Advanced Students P2 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	L	V
04XNP3	German for Advanced Students P3 V ra Šlechtová	Z	2	0+2	Z	V
04XRM1	Russian for Intermediate Students M1 V ra Šlechtová Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRM2	Russian for Intermediate Students M2 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	L	V
04XRM3	Russian for Intermediate Students M3	Z	2	0+2	Z	V
04XRP1	V ra Ślechtová Russian for Advanced Students P1	Z	2	0+2	Z	v
04XRP2	V ra Ślechtová Zhanna Isaeva (Gar.) Russian for Advanced Students P2	Z	2	0+2	L	v
04XRP3	Zhanna Isaeva Zhanna Isaeva (Gar.) Russian for Advanced Students P3	Z	2	0+2	z	v
04XRZ1	V ra Šlechtová Russian for Beginners Z1	Z	2	0+2	L	-
	Zhanna Isaeva Zhanna Isaeva (Gar.) Russian for Beginners Z2			_		V
04XRZ2	V ra Šlechtová Zhanna Isaeva (Gar.)	Z	2	0+4	Z	V
04XRZ3	Russian for Beginners Z3 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	L	V
04XRZ4	Russian for Beginners Z4 V ra Šlechtová	Z	2	0+4	Z	V
04XRZ5	Russian for Beginners Z5 V ra Šlechtová	Z	2	0+4	L	V
04XSM1	Spanish for Intermediate Students M1 Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSM2	Spanish for Intermediate Students M3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	L	V
04XSM3	Spanish for Intermediate Students M3 V ra Šlechtová	Z	2	0+2	Z	V
04XSP1	Spanish for Advanced Students P1 V ra Šlechtová Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSP2	Spanish for Advanced Students P2	Z	2	0+2	L	V
04XSP3	Beatriz Vadillo Gonzalo         Beatriz Vadillo Gonzalo (Gar.)           Spanish for Advanced Students P3         Variation (Gar.)	Z	2	0+2	Z	V
04XSZ1	V ra Šlechtová Spanish for Beginners Z1	Z	2	0+4	L	v

04XSZ2	Spanish for Beginners Students Z2 V ra Šlechtová Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	Z	V
04XSZ3	Spanish for Beginners Z3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	L	v
04XSZ4	Spanish for Beginners Z4 V ra Šlechtová	Z	2	0+4	Z	v
04XSZ5	Spanish for Beginners Z5 V ra Šlechtová	Z	2	0+4	L	V
Characteristics of the	courses of this group of Study Plan: Code=BSPJAZYKYZAP I	Name=BS P j	azyky za	р		
04XAM1 En	glish for Intermediate Students M1				Z	2
0	udents who have successfully completed the full secondary school English language					
of Reference for Languages	(CEFR). It provides an introduction into English for Specific and Academic Purposes (	ESP, EAP), i.e., ir	nto fundame	ntals of voc	abulary and s	tyle typical of
	communication situations. Thus it covers topics related to the student's life and needs	as well as topics	of subtechr	ical interes	. Attention is	also paid to
	grammar issues used in EAP.					
	glish for Intermediate Students M2				Z	2
	student to have completed the AM1 course. It develops their skills for work with subte		0			
	P and EAP (e.g., definition, existence and classification of phenomena, object description	ions). Part of the c	ourse is also	o guided wri	ting. If necess	ary, grammar
revision is included.					7	
	glish for Intermediate Students M3				Z	2
	s that enable students to cope with features typical of professional style. Increasing atte		1 0			
	It texts. Great emphasis is placed on distinguishing different levels of formal and inform					
student's field.	includes studying abstracts and rules for writing them as well as basic rules for prepar	ning and giving a s	snort preser	itation on a	chosen topic	related to the
	glish for Advanced Students P1				Z	2
		course (et leget th	no P1 lovel (	 	- 1	
-	tudents who have successfully completed the full secondary school English language - CEFR). It provides an introduction into English for Specific and Academic Purposes					
00	professional oral and written communication situations (fundamentals of terms in mat	· · · · ·				,
	vritten communication on topics related to the undergraduate 's life and needs. It develop			, <b>0</b> 1	. ,	,
	revision of selected grammar topics is included.				gu ov, iouor (	application,
· · ·	glish for Advanced Students P2				Z	2
	AP1, thus extending the student's skills for working with subtechnical texts, and even	with professional	texts of cho	 sen branch	- 1	_
	ntrates on chosen grammar topics, but mainly intends to develop understanding of syr					-
	le, a case study). Increasing emphasis is placed on the undergraduate's independent					
	ent's subtechnical vocabulary, and includes fundamental notions of chosen branches of					•
	cohesion and coherence in texts.					
· · · ·	glish for Advanced Students P3				7	2
	AP2 and expects the student to work without any guidance with authentic professional	materials and to ir	nterpret the t	ext. It includ		_
	ctions (e.g., expressing an opinion, agreement, and objections; taking part in discussi		-		-	
	given or chosen topic and presenting it. The course places emphasis on distinguishin	-	-	-	-	-
communication.						
04XCESZ1 Cz	ech for Foreigners - Beginners 1				Z	2
	udents on the English programme. Students will become acquainted with the main cha	aracteristics of Cz	ech (phonet	ic and gram	mar features)	and they will
acquire basic language and	speaking skills. The course focuses on pronounciation exercises, simple social phrase	s, and oral and w	ritten comm	unication in	the most com	nmon
communicative situations. Th	e course covers roughly lessons 1-5 in "Chcete mluvit esky" by H. Remediosová and	E. echová. At the	e end of the	course, the	students will I	nave reached
A1 (CEFR) approximately.						
04XCESZ2 Cz	ech for Foreigners - Beginners 2				Z	2
The language and communic	ation competences acquired in CESZ1 are further developed. Students extend their kn	nowledge of Czec	h declensio	n and conju	gation system	and practise
	ppics. The course covers roughly lessons 6-10 in "Chcete mluvit esky" by H. Remedic	sová and E. ech	nová. At the	end of the c	ourse, the stu	udents will
have reached A2 (CEFR) ap	· · · · · · · · · · · · · · · · · · ·					
	ech for Foreigners - Beginners 3				Z	2
	the language and communication competences acquired in the XCESZ1 and XCESZ2					
	ning grammar, including grammar practice, and introducing Czech culture. Students a					
	e understanding texts in terms of main ideas or looking for specific details in texts. The	e course covers r	oughly lesso	ons 5-7 in "		
1	ech for Foreigners - Intermediate 1				Z	2
	ect pronunciation, important morphological phenomena, prepositional phrases, and ve	rb forms as well a	s on extendi	ng the stude	ent's vocabula	ry for various
social situations.					-	
	ech for Foreigners - Intermediate 2			.	Z	2
	ics covered in CESM1 and is then focused on more difficult grammar phenomena. It p	ractices writing, s	peaking, an	d reading si	kills and trains	s the student
	breviations, abbreviated words, and mathematical terms and formulas.				Z	
	ech for Foreigners - Intermediate 3 shological topics covered earlier and extends the student's knowledge of more difficult		mono Itio o	 nnonially for	_	2 ation and
lexicology and on developing		language phenoi	nena. It is e	specially loo	Sused on Styli	Sucs and
	-				Z	2
	ech for Foreign Students - Advanced 1 e is very good knowledge of the Czech language, i.e., communicative competences at l	loast at loval B2 o	f the Comm		1	
	n of standard language structures, but mainly on practising more complex grammatica					
	ngineering and professional communication, both in spoken and written form. The top					•
	teachers and faculty administrators.		, etaaloo			
	ech for Foreigners - Advanced 2				Z	2
	ent's knowledge acquired in CESP1 and focuses on difficult language phenomena. It	practises working	with techni	l cal and sne	1	
emphasis on individual work		- action working				
· · · · · · · · · · · · · · · · · · ·	ech for Foreigners - Advanced 3				Z	2
	dent's knowledge from CESP2. It includes working with authentic specialist materials,	their interpretation	and press	htation and	1	
	Is necessary for professional communication are trained.				,,, prose	

04XFM1 French for Intermediate Students M1	Z	2
French - intermediate FM The objective of this three-semester course is to improve and further develop communication in the French language in be will be able to communicate in social interaction and in academic, scientific and professional environment. They will be able to use the language to t		
information and to solve problems. FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises, s	•	
skills gained in previous study. The following topics are covered: University studies in our country and in France, writing of transactional letters, CV, pe	-	
to an advert, French culture and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts, work	based on these to	exts.
04XFM2 French for Intermediate Students M2	Z	2
Course FM2 builds on FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science and expanded in previous study are systemized and expanded. Reading popular science acquired in previous study are systemized and expanded. Reading popular science acquired in previous study are systemized and expanded. Reading popular science acquired in previous study are systemized and expanded. Reading popular science acquired in previous study are systemized and expanded. Reading popular science acquired in previous study are systemized and expanded. Reading popular science acquired in previous study are systemized and expanded. Reading popular science acquired in previous study are systemized and expanded.		
and scientific language (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.	lence and technoic	igy, French
04XFM3 French for Intermediate Students M3	Z	2
The course is focused on improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures	(subordinate and ir	nfinitive clauses,
participle structures, compound tenses). Text summaryStudents prepare a written paper which will be delivered in form of an oral presentation in-		
field of students' future specialisation or to their interest and generally covers a technical /applied science topic. It is not a translation but a creative v	-	French articles
and one's own knowledge/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesion and 04XFP1 French for Advanced Students P1	Z	2
FP advanced course The objective of this three-semester course is to improve and further develop communication in the French language in both w	1 – 1	_
be able to communicate in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit gen		
to solve problems. FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topics are r		
passé composé-imparfait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of transaction		
request, answer to an advert, environmental issues, success of French science and technology, chosen topics from French regional culture, Paris. Top internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation.	bics of specializatio	n: mathematics,
04XFP2 French for Advanced Students P2	7	2
With the link to P1 contents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication of	· – ·	_
technical and scientific communication are stressed (passive voice, nominalization, word formation).		
04XFP3 French for Advanded Students P3	Z	2
The course is focused on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in		
skill - translation of shorter texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally co topic. It is a creative work compiled from 3 French sources. Preparation of several set topics for oral examination.	vers a technical /a	ppiled science
04XFZ1 French for Beginners Z1	7	2
French for beginners 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	I – I	_
The course includes French for specific / technical communication and reading of popular science and scientific texts. FZ1 The objective is to be able	e to communicate	at elementary
level, actively using the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Pravd		-
(Francouzština pro za áte ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4 : introductions giving the directions, simple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronuncia	-	-
04XFZ2 French for Beginners Z2		2
The course is linking up with FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of	I – I	
French for Beginners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreem		
	nent - disagreemer	it, apology,
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm	-	
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral common How does the machine work? A few expressions concerning the study. Name of University and Faculty.	nunication. Specific	topics covered:
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral common How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3	nunication. Specific	topics covered:
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral common How does the machine work? A few expressions concerning the study. Name of University and Faculty.	nunication. Specific Z Pravdová: French f	topics covered: 2 or Beginners.
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral common How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I	nunication. Specific Z Pravdová: French f	topics covered: 2 or Beginners.
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral common How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for it	nunication. Specific Z Pravdová: French f	topics covered: 2 or Beginners.
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for is         pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The	Pravdová: French f nformation and lou Z Z contents is roughly	2 or Beginners. d as part of 2 covered with
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for is         pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the le	Pravdová: French f nformation and lou Z Contents is roughly cture notes French	2 or Beginners. d as part of 2 v covered with for Engineering
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for is         pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lestudents of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, show	Pravdová: French f nformation and lou Z Contents is roughly cture notes French	2 or Beginners. d as part of 2 v covered with for Engineering
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for is         pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the le	Pravdová: French f nformation and lou Z Contents is roughly cture notes French	2 or Beginners. d as part of 2 v covered with for Engineering
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for is         pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the le Students of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sho country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.	Pravdová: French f nformation and Iou Z contents is roughly cture notes French opping, weather, ur	2 or Beginners. d as part of 2 covered with for Engineering niversity in our 2
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for it pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the le Students of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sho country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.         04XFZ5       French for Beginners Z5         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 general contents is covered by lessons 24 - 26 of the textbook: Pravdova, French for Beginners, and is complemented from other materials.	Pravdová: French f nformation and Iou Z contents is roughly cture notes French opping, weather, ur Z ay present it orally Topics: on physics	2 or Beginners. d as part of 2 r covered with for Engineering hiversity in our 2 in the class. The from lecture
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for it         pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The elessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lestodents of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shore country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.         04XFZ5       French for Beginners Z5         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 general contents is covered by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other materials. notes, success of Fre	Pravdová: French f nformation and Iou Z contents is roughly cture notes French opping, weather, ur Z ay present it orally Topics: on physics	2 or Beginners. d as part of 2 r covered with for Engineering hiversity in our 2 in the class. The from lecture
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for it         pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the le         Students of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sho country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.         04XFZ5       French for Beginners Z5         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 general contents is covered by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other	Pravdová: French f nformation and Iou Z contents is roughly cture notes French opping, weather, ur Z ay present it orally Topics: on physics lauses, typical con	2 or Beginners. d as part of 2 r covered with for Engineering niversity in our 2 in the class. The from lecture junctions,
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for is         pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the le         Students of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sho country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.         04XFZ5       French for Beginners Z5         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 general contents is covered by lessons 24 - 26 of the textbook: Pravdova, French for Beginners, and is complemented from other materia	Pravdová: French f nformation and lou Z contents is roughly cture notes French opping, weather, ur Z sy present it orally Topics: on physics lauses, typical con	2 or Beginners. d as part of 2 covered with for Engineering niversity in our 2 in the class. The from lecture junctions, 2
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - I         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for it         pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the le         Students of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sho country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.         04XFZ5       French for Beginners Z5         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 general contents is covered by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other	Z       Pravdová: French f       nformation and lou       Z       contents is roughly       cure notes French       pping, weather, ur       Z       ay present it orally       Topics: on physics       lauses, typical con       Z       n between technol	2 or Beginners. d as part of 2 covered with for Engineering niversity in our 2 in the class. The from lecture junctions, 2 ogy and society,
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty.         04XFZ3       French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - 1         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for is         pronunciation practice.       Reaching covers short adapted texts of general interest first, and later popular science texts.         04XFZ4       French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The elessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lesto of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sho country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.         04XFZ5       French for Beginners Z5         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 general contents is covered by lessons 24 - 26 of the textbook. Pravda-Pravdova, French for Beginners, and is complemented from other materials. notes, succe	Z       Pravdová: French f       nformation and lou       Z       contents is roughly       cure notes French       pping, weather, ur       Z       ay present it orally       Topics: on physics       lauses, typical con       Z       on between technol       d car technology ef	2 or Beginners. d as part of 2 covered with for Engineering niversity in our 2 in the class. The from lecture junctions, 2 ogy and society, tc. Students
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty. <b>04XFZ3</b> French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - 1         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for it pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts. <b>04XFZ4</b> French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lest country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet. <b>04XFZ5</b> French for Beginners Z5         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 general contents is covered by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented with syntax (subordinate c subjuctive clauses, gerund, passive. <b>04XFZ5</b> German for Intermediate Students M2 <b>04XMM2</b> German fo	Z       Pravdová: French f       nformation and lou       Z       contents is roughly       cture notes French       pping, weather, ur       Z       gy present it orally       Topics: on physics       lauses, typical con       Z       on between technol       d car technology ef       matically revises ot	2 or Beginners. d as part of 2 r covered with for Engineering niversity in our 2 in the class. The from lecture junctions, 2 ogy and society, tc. Students her grammatical
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm         How does the machine work? A few expressions concerning the study. Name of University and Faculty. <b>04XFZ3</b> French for Beginners Z3         The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - 1         Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for is pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts. <b>04XFZ4</b> French for Beginners Z4         The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lestudents of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, she country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet. <b>04XFZ5</b> French for Beginners Z5         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 general contents is covered by lessons 24 - 26 of the textbook: Pravada-Pravdova, French for Beginners, and is complemented from other materials.         outskills acquire	Z       Pravdová: French f       nformation and lou       Z       contents is roughly       contents is roughly       cure notes French       pping, weather, ur       Z       gy present it orally       Topics: on physics       lauses, typical con       Z       on between technol       d car technology el       matically revises ot	2 or Beginners. d as part of 2 covered with for Engineering hiversity in our 2 in the class. The from lecture junctions, 2 ogy and society, tc. Students her grammatical 2
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04XNP2	German for Advanced Students P2	Z	2
The course develops the	e students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while exten	ding their general	and subtechnical
vocabulary range. It intro	oduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding an	d practising formal	communication,
both written and oral (C	V, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indirect speech).		
04XNP3	German for Advanced Students P3	Z	2
The course consists of	, 3 main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a v	ariety of less com	mon situations
	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		
		-	
	rocess 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	ludes translation
practice to and from Ge	rman.	1	
04XRM1	Russian for Intermediate Students M1	Z	2
The course is designed	for students with previous knowledge of Russian from secondary schools. Students are supposed to know the Russian alpha	bet (both printed a	nd handwritten),
basic vocabulary for cor	nmunication in everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday need, ask	ing the way and g	iving directions),
they can use basic gran	nmar structures (verbal and nominal forms, irregular verbs, pronouns). The initial knowledge corresponds to the achievemen	t level of the RZ2	course. The
, ,	he course correspond approximately to the RZ3 course, but for half of the time allotted in the timetable.		
		7	0
04XRM2	Russian for Intermediate Students M2	Z	2
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 timetable.		
04XRM3	Russian for Intermediate Students M3	Z	2
The course develops the	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.		,	
	Duration for Advanced Chudente D4	7	2
04XRP1	Russian for Advanced Students P1	Z	2
	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
structures, understandir	ng the fundamentals of technical language and training writing skills.		
04XRP2	Russian for Advanced Students P2	Z	2
	RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives,	verb aspects spe	_
		verb aspecto, spe	Some Syntabile
	t on independent oral and written communication.		
04XRP3	Russian for Advanced Students P3	Z	2
The course is based on	RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraphra	sing, translation).	The RP1 - RP3
courses require good pr	evious knowledge of general language at secondary level (listening, reading, correct communication in everyday situations)	The courses deve	elop and expand
these skills. Further stud	dy is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and	written interpreta	tion). Students
	al vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write	-	
technical topics.		acculatory and m	
		7	-
04XRZ1	Russian for Beginners Z1	Z	2
The course represents t	he 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
the Russian alphabet (for	or both reading and writing skills) and fundamentals of grammar necessary for everyday communication (listening and speal	king). Students wil	be able to read
a short text with marked	I stress, understand its contents and summarize it.		
		7	2
04XRZ2	Russian for Beginners Z2	Z	2 Students will be
04XRZ2 The second semester o	Russian for Beginners Z2 f the programme is designed to teach skills for basic communication in everyday situations and for reading easy and short s	ubtechnical texts.	Students will be
04XRZ2 The second semester o able to communicate us	Russian for Beginners Z2 f the programme is designed to teach skills for basic communication in everyday situations and for reading easy and short s ing short sentences and appropriate structures, and read aloud with confidence a short text without marked stress. They will	ubtechnical texts.	Students will be
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04XSP3	Spanish for Advanced Students P3	Z	2
Course SP3 is the final	part of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is	focused on writter	communication
based on what students	s will need in their career.		
04XSZ1	Spanish for Beginners Z1	Z	2
Course SZ1 is the first s	stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundar	nental grammar st	ructures and will
be able to communicate	e at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Spanish a	nd will develop it.	
04XSZ2	Spanish for Beginners Students Z2	Z	2
Course SZ2 is based or	n course SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structures and le	exis will be choser	n so as to enable
them to understand sho	ort adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries and ot	hers such as the	Czech Republic.
Realia of Spanish-spea	king countries are also included.		
04XSZ3	Spanish for Beginners Z3	Z	2
The course is based on	course SZ2, and develops the student's vocabulary and grammar structure. The course covers realia (history and culture) of	f the Spanish-spe	aking countries,
mainly of Spain. It pays	attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative	e). It includes writ	ten and oral
communication on a give	ren general topic, for which the student is trained by reading texts or listening to them.		
04XSZ4	Spanish for Beginners Z4	Z	2
The course is based on	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
Spain. It pays attention	to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of f	the imperative, an	d subjunctive),
to written and oral com	munication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them.		
04XSZ5	Spanish for Beginners Z5	Z	2
The course books are s	upplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanis	h for specific purp	oses. In its final
part, the general Spanis	sh course based on the course book will end with presentations and, finally, a written and oral examination.		

# List of courses of this pass:

	Name of the course	Completion	Credits
00EKOT	Economy in Technology	Z	1
	The course introduces the basics of micro- and macroeconomics.		·
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	Z	1
l l l l l l l l l l l l l l l l l l l	Review of basics of high school mathematics.	1	I
00PT	Preparatory Week	Z	2
00RET	Rhetoric	Z	1
The course is focu	used on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the	composition of put	blic speech
as well as to its	nonverbal aspects. Stylistics exercises, strategies for coping with stage-fright and a short excursion into the history of rhetoric are ar	n integral part of the	e course.
00UPRA	Introduction to Law	Z	1
00UPSY	Introduction to Psychology	Z	1
01ANB3	Calculus B 3	Z,ZK	8
1. Functional sec	uences and series - convergence range, criteria of uniform convergence, continuity, limit, differentiation and integration of functional	series, power serie	es, Series
Expansion, Taylo	r's theorem. 2. Ordinary differential equations - equations of first order (method of integration factor, equation of Bernoulli, separation	n of variables, hom	ogeneous
equation and exact	equation) and equations of higher order (fundamental system, reduction of order, variation of parameters, equations with constant coefficients of the system	efficients and specia	al right-hand
side Euler differen	tial equation). 3. Metric spaces - metric, norm, scalar product, neighborhood, interior and exterior points, boundary point, isolated an	d non-isolated poin	t boundary
	s of space, Hilbert spaces. Orthogonal polynomials. Complete orthogonal systems. 4. Fourier series - expansion of functions into Fouri		
•			
series and their co	onvergence. 5. Differential calculus of functions of several variables - limit, continuity, partial and directional derivative, gradient, total		gent plane,
	Taylor series, elementary terms of vector analysis, Jacobi matrix. 6. Functions defined implicitly by one or several equation	S	
01ANB4	Calculus B 4	Z,ZK	6
[1] Diferenciální po	o et funkcí více prom nných a funkcionálních vektor . [2] Funkce zadané implicitn . [3] Taylorovy ady funkce více prom nných. [4]	Z,ZK Regulární zobrazer	ní, zám na
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[1] Diferenciální po prom nných, nel	o et funkcí více prom nných a funkcionálních vektor . [2] Funkce zadané implicitn . [3] Taylorovy ady funkce více prom nných. [4] kartézské soustavy sou adnic. [5] Lokální, vázané a globální extrémy funkce více prom nných. [6] Základy teorie míry a obrys konst	Z,ZK Regulární zobrazer rukce Lebesgueovy	ní, zám na y míry. [7]
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<ul> <li>[1] Diferenciální prom nných, nel Integrální po et fr</li> <li>01LAL</li> <li>1. Vector space. 2</li> <li>01LAL2</li> <li>Outline: 1. Invers</li> </ul>	o et funkcí více prom nných a funkcionálních vektor . [2] Funkce zadané implicitn . [3] Taylorovy ady funkce více prom nných. [4] kartézské soustavy sou adnic. [5] Lokální, vázané a globální extrémy funkce více prom nných. [6] Základy teorie míry a obrys konst unkce více prom nných - Riemann v a Lebesgue v integrál, základní vlastnosti, Fubiniova v ta, v ta o substituci. Leviho a Lebesgu derivace integrálu podle parametru. [8] Integrály po k ivkách a plochách. Integrální v ty. Linear Algebra 1 . Linear dependence and independence. 3. Basis and dimension. 4. Subspaces of vector spaces. 5. Linear mappings. 6. Matrices of theorem. Linear Algebra 2	Z,ZK Regulární zobrazer rukce Lebesgueovy ieova v ta. Limita, s Z linear mappings. 7. Z,ZK nd quadratic forms.	ní, zám na y míry. [7] spojitost a Probenius 4 5. Scalar
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01PRST	Probability and Statistics	Z,ZK	4
	e of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition and	-	-
	ons as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit the		and proved.
	e basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testi		7
01RMAF	Equations of Mathematical Physics course is solving integral equations, theory of generalized functions, classification of partial differential equations, theory of integral t	Z,ZK	1
	partial differential equations (boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).	ansionnations, an	
01STME	Statistical Methods with Applications	ZK	2
	ts of selected methods of statistical data analysis such as: linear regression and correlation, analysis of variance, nonparametric met	1	1
	cation. The aim is to illustrate the use of statistical procedures on examples. Solutions of concrete examples by use of statistical softv		
02DEF1	History of Physics 1	Z	2
Physics and its pla	ace in the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural phile	sophers, Aristotle.	. Physics in
Helenistic period,	Archimed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galileo,	Huygens. The birth	of physics
	as experimental science. Newton and his work.	1	1
02DEF2	History of Physics 2	Z	2
	f classical mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. I		
-	vanism, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzmann.		-
and relativistic p	hysics, Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclear e	nergy, Elementary	particles,
	standard model. The concept of Nature and Universe of today.	7 71/	<u> </u>
02ELMA	Electricity and Magnetism bulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors anddielectrics. Electric current and circuits, conc	Z,ZK	6
-	Lieutovisia field, Gaussiaw. Electric dipole, polarization. Conductors and lieutovis. Electric current and circuits, conductors and lieutovis. Electromagnetic market in a circuits, conductors and lieutovis. Electromagnetic waves.		ine relativity
02EXF	Experimental Physics	ZK	2
	ject is to introduce the students the principles of physics measurements, their techniques, methods and instruments that are used for	1	1
The gear of the ear	analysis of measured data.		
02FYS1	Physical Seminar 1	Z	2
	levoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of physic	-	1
	anics. The problems are chosen, studied and presented by the students themselves, with the possibility to use PC and physical labor	•	
02MECH	Mechanics	Z	4
ntroduction to phys	ics, physical quantities and units. Particle kinematics, basic types of motion and theirsuperposition. Particle dynamics, one-dimensior	al equations of mo	tion, motion
in central force fi	eld, forces innoninertial reference frames. Mechanics of system of free particles, two-body problem, collisions. Mechanics ofrigid bod	ly, rotation. Fundar	mentals of
	continuum mechanics, elasticity, hydrodynamics. Sound.		
02MECHZ	Mechanics - Examination	ZK	2
	The content of the subject is the examination according to the plan of studies.		
02PRA1	Experimental Laboratory 1	KZ	6
			0
	d especially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear E	ngineering). But it	can be also
attended by student	d especially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear E ts interested in the otherspecializations. In Experimental laboratory students learn how to prepare for experiments (including work with th	ngineering). But it eliterature), the imp	can be also
attended by student	d especially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear E ts interested in the otherspecializations. In Experimental laboratory students learn how to prepare for experiments (including work with th nt (acquire of different experimental procedures and routines), willteach writing the records of measurement, processing and evaluati	ngineering). But it eliterature), the imp	can be also
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	English Conversation	Z	1
their vocabulary fo	velop the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral communication	ation. The student v	will develop
	r various communication situations and will master their communication strategy. They will also practise their listening skills in order t	o better follow and	participate
in d	iscussions. The student will be trained to express their ideas clearly and according to current English usage, and become a more cor	fident speaker.	
04XAM1	English for Intermediate Students M1	Z	2
	gned for students who have successfully completed the full secondary school English language course at least at the A2 level of the C		
	inguages (CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into fundamentals of		
professional oral a	ind 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. Attention is a	also pald to
04XAM2	English for Intermediate Students M2	Z	2
-	expects the student to have completed the AM1 course. It develops their skills for work with subtechnical texts, focusing also more on	-	
	pical of ESP and EAP (e.g., definition, existence and classification of phenomena, object descriptions). Part of the course is also guided		
	revision is included.	5	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
04XAM3	English for Intermediate Students M3	Z	2
	is the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtechnic	، al vocabulary and i	ndependent
understanding of	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 o	n a chosen topic re	elated to the
	student's field.		
04XAMZK	English for Intermediate Students Examination	ZK	4
	ent is the examination as given by the study plan. The examination covers the AM1, AM2, and AM3 courses and consists of two parts	-	) and oral
	30 min). The student is expected to master the AM syllabus and demonstrate the ability to apply their knowledge gained in the three B	<u> </u>	
04XAP1	English for Advanced Students P1	Z	2
	gned 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 fundamental of approximation of a purple	=	
	e typical of professional oral and written communication situations (fundamentals of terms in mathematics and physics, definitions, g oral and written communication on topics related to the undergraduate's life and needs. It develops skills for free professional writing (w		
	polite request). If necessary, revision of selected grammar topics is included.	nung a Cv, letter of	application,
04XAP2	English for Advanced Students P2	Z	2
-	based on AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of chosen brai	1	I I
	s it concentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typical rhetorica		-
	d, if possible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading of linguistical		
	s the student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focused on formal writ	-	-
	paragraph structure, linking, cohesion and coherence in texts.	0 0	
04XAP3	English for Advanced Students P3	Z	2
The AP3 course is	based on AP2 and expects the student to work without any guidance with authentic professional materials and to interpret the text. It in	' cludes training ora	and written
communication sk	ills and functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summarizing, writing	g an abstract) and,	if possible,
also preparing a	project on a given or chosen topic and presenting it. The course places emphasis on distinguishing levels of formal and informal lang	uage both in oral a	ind written
	communication.		
	English for Advanced Students Examination		
04XAPZK		ZK	4
The course conten	is the examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability to a	apply their knowled	ge obtained
The course conten in the three AP	is the examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability to a courses. The examination consists of 2 parts - written (110 min) and oral (30 min) and includes also oral presentation of a topic from	apply their knowled the student's field	ge obtained of study.
The course content in the three AP 04XCESM1	t is the examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability to a courses. The examination consists of 2 parts - written (110 min) and oral (30 min) and includes also oral presentation of a topic from Czech for Foreigners - Intermediate 1	apply their knowled the student's field Z	ge obtained of study. 2
The course content in the three AP 04XCESM1	is the examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability to a courses. The examination consists of 2 parts - written (110 min) and oral (30 min) and includes also oral presentation of a topic from Czech for Foreigners - Intermediate 1 red on correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending the s	apply their knowled the student's field Z	ge obtained of study. 2
The course conten- in the three AP 04XCESM1 The course is focus	t is the examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability to a courses. The examination consists of 2 parts - written (110 min) and oral (30 min) and includes also oral presentation of a topic from Czech for Foreigners - Intermediate 1 eed on correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending the s social situations.	apply their knowled the student's field Z tudent's vocabular	ge obtained of study. 2 y for various
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04XCESZ2	Czech for Foreigners - Beginners 2	Z	2
	communication competences acquired in CESZ1 are further developed. Students extend their knowledge of Czech declension and co		
communication of	f frequent topics. The course covers roughly lessons 6-10 in "Chcete mluvit esky" by H. Remediosová and E. echová. At the end o	f the course, the st	udents will
	have reached A2 (CEFR) approximately.		-
04XCESZ3	Czech for Foreigners - Beginners 3	Z	2
	r develops the language and communication competences acquired in the XCESZ1 and XCESZ2 courses. The teaching focuses on	• •	
	ion, deepening grammar, including grammar practice, and introducing Czech culture. Students are asked to produce simple texts an ey also practise understanding texts in terms of main ideas or looking for specific details in texts. The course covers roughly lessons		
04XCESZZK	Czech for Foreigners – Beginners - Examination	ZK	4
	nt is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04		-
	only be taken after successful completion of all three courses. Detailed information is to be obtained from the teacher.	, ,	
04XFM1	French for Intermediate Students M1	Z	2
French - intermedia	ate FM The objective of this three-semester course is to improve and further develop communication in the French language in both	written and oral for	m. Students
	mmunicate in social interaction and in academic, scientific and professional environment. They will be able to use the language to tra	•	
	solve problems. FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises, syst		
	rious 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, we	Z	1
04XFM2	French for Intermediate Students M2 on FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science tex	. –	2
	guage (passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French scie		
	scientists, artists and architects. Description of an object, device, shapes, dimensions, material.		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
04XFM3	French for Intermediate Students M3	Z	2
	ed on improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures (sub	ordinate and infini	tive clauses,
participle structur	es, compound tenses). Text summaryStudents prepare a written paper which will be delivered in form of an oral presentation in-cla	ass. The paper is lir	nked to the
	ture specialisation or to their interest and generally covers a technical /applied science topic. It is not a translation but a creative work		
	e's own knowledge/experience Longer monologues on topics /situations set for the examination are prepared. Text structure, cohes		•
04XFMZK	French for Intermediate Students Examination	ZK	4
The content is the	e examination as given by the study programme. The whole French programme is ended with an examination covering the contents of		xamination
	consists of a written and oral part and is organized according to Examination Instructions, a document available on the we	1	0
04XFP1	French for Advanced Students P1 se The objective of this three-semester course is to improve and further develop communication in the French language in both writt	Z	2
	icate in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit genera		
	FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topics are repe		
passé composé-im	parfait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of transactional le	etters, CV, persona	l statement,
request, answer to	an advert, environmental issues, success of French science and technology, chosen topics from French regional culture, Paris. Topics	of enocialization: m	
		or specialization. If	nathematics,
	internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretatio	n.	
04XFP2	internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretatio French for Advanced Students P2	n. Z	2
04XFP2	internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretatio French for Advanced Students P2 contents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication on g	n. Z	2
04XFP2 With the link to P1	internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation French for Advanced Students P2 contents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication on or technical and scientific communication are stressed (passive voice, nominalization, word formation).	n. Z jiven topics. Featur	2 es typical of
04XFP2 With the link to P1 04XFP3	internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation French for Advanced Students P2 contents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication on generation and scientific communication are stressed (passive voice, nominalization, word formation). French for Advanded Students P3	n. Z jiven topics. Featur	2 es typical of 2
04XFP2 With the link to P1 04XFP3 The course is focus	internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation French for Advanced Students P2 contents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication on generating and scientific communication are stressed (passive voice, nominalization, word formation). French for Advanded Students P3 red on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in en-	n. Z jiven topics. Featur Z gineering environm	2 es typical of 2 nent. Special
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04XFP2 With the link to P1 04XFP3 The course is focus skill - translation o	internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation French for Advanced Students P2 contents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication on generating technical and scientific communication are stressed (passive voice, nominalization, word formation). French for Advanded Students P3 ied on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in en f shorter texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally coverted topic. It is a creative work compiled from 3 French sources. Preparation of several set topics for oral examination.	n. Z jiven topics. Featur Z gineering environm rs a technical /appl	2 es typical of 2 nent. Special
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04XFZZK	French for Beginners Examination	ZK	3
	examination as given by the study plan. The course is terminated with an examination consisting of oral and written part. The examination	ation is ruled by the	
	Instruction for examination. Its content covers the levels FZ1 - FZ5.		
04XNM1	German for Intermediate Students M1	Z	2
The objective of th	e course is to level off the students' skills in the German language. The course focuses on revision of more difficult phenomena and str	ructures (e.g. the pa	assive) and
word formation	n processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Repu	blic and Germany,	current
environmental is	sues together with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physicists,		tals of IT
	terminology. It develops communication on related topics and is aimed at correct pronunciation, grammatical correctness and unders	tandability.	
04XNM2	German for Intermediate Students M2	Z	2
	ces other more complex grammatical structures and their application in communication based on technical texts, such as the relation be		
	beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and c		
practise reading for	information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systematic	cally revises other g	rammatical
	phenomena important for professional discourse (participles, relative clauses).	r	
04XNM3	German for Intermediate Students M3	Z	2
	ces other more complex grammatical structures and their application in communication based on technical texts, such as the relation be		
	beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and c		
practise reading for	information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systematic	cally revises other g	rammatical
	phenomena important for professional discourse (participles, relative clauses).		
04XNMZK	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 c		
and oral, which co	wer the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme	ent. More detailed in	nformation
0.00154	is to be obtained from the teacher.		
04XNP1	German for Advanced Students P1	Z	2
	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	,	
more difficult grami	nar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on practice telephoning	tical everyday comi	munication,
	i.e., telephoning.	7	
04XNP2	German for Advanced Students P2	their general and a	2
	os the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending t introduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and pra	-	
	oth written and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indir	-	nunication,
04XNP3	German for Advanced Students P3	<u>ک</u>	2
	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		
	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		
Students are traine	practice to and from German.	buise also includes	liansiauon
04XNPZK	German for Advanced Students Examination	ZK	4
	t is the examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination of		-
	cover the courses NP1 - NP3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungraded		
	information is to be obtained from the teacher.		uotanou
04XRM1	Russian for Intermediate Students M1	7	2
-	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 t		
-	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		
04XRM2	Russian for Intermediate Students M2	Z	2
	The course is based on the RM1 course, its contents and scope correspond roughly to RZ4, however, for half of the time allotted in th		_
04XRM3	Russian for Intermediate Students M3	Z	2
	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	I I	
	in the timetable.	-,	
04XRMZK	Russian for Intermediate Students Examination	ZK	4
	t is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled	I I I	
	lents are eligible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given instr		
04XRP1	Russian for Advanced Students P1	Z	2
-	jurement for the course is to achieve the B1 CEFR level. The objective of the course is revision of standard language structures, practive of the course is revision of standard language structures.		
	structures, understanding the fundamentals of technical language and training writing skills.	lioning more dimount	grammar
04XRP2	Russian for Advanced Students P2	Z	2
	sed on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives, ve		
	structures). Stress is put on independent oral and written communication.		, oyntaotio
04XRP3	Russian for Advanced Students P3	Z	2
	ed on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraphrasing		
	od previous knowledge of general language at secondary level (listening, reading, correct communication in everyday situations). The	-	
	er study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and wr	-	
	echnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write accu	• •	
	technical topics.	,	
04XRPZK	Russian for Advanced Students Examination	ZK	4
	ts the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled		
	lents are eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instr		

04XRZ1	Russian for Beginners Z1	Z	2		
The course represe	ents the first stage of the five-semester programme, its final aim being reading and understanding professional texts written in Russian	. Thus it begins wit	h mastering		
the Russian alphabet (for both reading and writing skills) and fundamentals of grammar necessary for everyday communication (listening and speaking). Students will be able to read					
	a short text with marked stress, understand its contents and summarize it.				
04XRZ2	Russian for Beginners Z2	Z	2		
	ster of the programme is designed to teach skills for basic communication in everyday situations and for reading easy and short subte te using short sentences and appropriate structures, and read aloud with confidence a short text without marked stress. They will also				
	master further grammatical structures. They will have mastered with confidence the Russian alphabet and will be able to use it in		abulaly allu		
04XRZ3	Russian for Beginners Z3	Z	2		
	d on RZ2 and includes further everyday topics, develops understanding of short compact texts on new subtechnical topics (for training	1 – 1	_		
	d 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.				
04XRZ4	Russian for Beginners Z4	Z	2		
	d on RZ3. It improves and expands the knowledge of general language in all four skills (reading and understanding longer texts with a c				
	nunication in everyday situations, writing longer texts). Students are trained to use grammar structures effectively (e.g., irregular verbs		-		
	dality, imperatives, conditionals). They practice and develop communication skills for everyday situations (food, travelling, free time), a	-			
	n more specific topics (environment, addictions, the green movement). They become acquainted with various geographical data (e.g. forms, look up the information from the timetable, learn about Russian holidays and typical meals.	., Sibena), leann no			
04XRZ5	Russian for Beginners Z5	Z	2		
	s the student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understanding	1 – 1	_		
	specialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Comr		-		
everyday topics. S	Studying grammar is based on professional and technical texts and only includes items typically used in professional communication (	(verbal adjectives, p	participles,		
passiv	ve voice). Students develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, po	olite request, etc.)			
04XRZZK	Russian for Beginners Examination	ZK	3		
	t is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled				
	lents are eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instr	uctions by the teac			
_04XSM1	Spanish for Intermediate Students M1	Z	2		
	signed for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-semest				
	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				
04XSM2	Spanish for Intermediate Students M3	7	2		
	pps the students' knowledge from the previous course (SM1). Students are gradually acquainted with fundamentals of Spanish for sp	ecific purposes in (			
	able to work with specialized texts on the Internet.				
04XSM3	Spanish for Intermediate Students M3	Z	2		
The course books a	are supplemented with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of academi	ic style. They will be	e 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	I I			
04XSMZK	Spanish for Intermediate Students Examination	ZK	4		
The course content	t is the examination as given by the study plan. SMZK examination consists of two parts - written and oral; to be eligible for the written part for source SM2 Oral examination follows the written part	art, students will ha	ve obtained		
04XSP1	non-graded assessment for course SM3.Oral examination follows the written part. Spanish for Advanced Students P1	Z	2		
	spanish for Auvanceu Students Filles on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communication.		_		
	of CEFR.	eedice prorequier			
04XSP2	Spanish for Advanced Students P2	Z	2		
	second part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and synta	x and focuses on ir			
	written communication.				
04XSP3	Spanish for Advanced Students P3	Z	2		
Course SP3 is the	inal part of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is focu	used on written corr	nmunication		
	based on what students will need in their career.	,			
04XSPZK	Spanish for Advanced Students Examination	ZK	4		
The course conten	t is the examination as given by the study plan. Examination SPZK consists of two parts, namely oral and written. The prerequisite for a	-	art is having		
04XSZ1	passed the written test. Examination content is based on syllabi of courses SP1, SP2, and SP3 or on an individual study plan of the Spanish for Beginners Z1	I I	2		
	Spanish for beginners 21 first stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundament	Z	2 Ires and will		
	communicate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Span	-			
04XSZ2	Spanish for Beginners Students Z2	Z	2		
	ed on course SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structures and lexis				
	d short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries and other				
	Realia of Spanish-speaking countries are also included.				
04XSZ3	Spanish for Beginners Z3	Z	2		
	d on course SZ2, and develops the student's vocabulary and grammar structure. The course covers realia (history and culture) of the		-		
mainly of Spain.	It pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative	). It includes writter	n and oral		
0.41/074	communication on a given general topic, for which the student is trained by reading texts or listening to them.	-	0		
04XSZ4	Spanish for Beginners Z4	Z	2 mainly of		
	ed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish ntion to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the	· -	-		
	to written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listeni	-			
04XSZ5	Spanish for Beginners Z5	Z	2		
	are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish fo	1			
	part, the general Spanish course based on the course book will end with presentations and, finally, a written and oral examina				

04XSZZK	Spanish for Beginners Examination	ZK	3
The course content	is the examination as given by the study plan. Examination consists of two parts - written and oral. Student can register for oral ex	amination only if h	e/she has
	passed the written examination test.		
12NME1	Numerical Methods 1	Z,ZK	4
	he basic principles of numerical mathematics important for numerical solving of problems important for physics and technology. Met		-
important for physicis	sts (ordinary differential equations, random numbers) are included in addition to the basic numerical methods. Integrated computation	ional environment	MATLAB is
	used as a principle programming language as a demonstration tool. The seminars are held in computer laboratory.		
14TED	Creating Electronic Documents	Z	2
Basic skills for creatin	g and presenting student theses. Individual exercises focus on creating and formatting texts, equations, charts, tables, presentation	ns and entire docu	iments in an
450114	office suite.		•
15CH1	General Chemistry 1	Z	3
The most important co	oncepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practical u solved in exercises.	ise are illustrated b	by examples
15CH2		774	3
	General Chemistry 2 ntinuation of the course General chemistry I. The main attention is paid to general principles governing chemical processes. Using	Z,ZK	-
	rinciples is not restricted only to chemical processes is documented. The significance and practical use of explained principles are		
	in exercises.		
16UJRF1	Introductory Nuclear and Radiation Physics 1	Z,ZK	4
	is to provide students with basic knowledge about atomic nucleus and radiation physics, which is followed by other specialized lect		summarizes
thematic areas: devel	lopment of opinions on micro-wave and radiation physics, basic characteristics of the atom and nucleus, binding energy, measurer	ment of mass and (	dimensions
of the nuclei, the most	t important nuclear models. General characteristics of the interaction of ionizing radiation with the matter, interaction of alpha, beta,	gamma and neutro	on radiation,
	passage of radiation beams through the matter, radiation effects in matter.		
16ZDOZ1	Fundamentals of Radiation Dosimetry 1	Z,ZK	4
History, developme	ent, and objectives of dosimetry. Quantities and units used for description of sources, fields, interactions of ionizing radiation, ionization, ioni	ations, energy tran	sfer and
	absorption. Fundamentals of the effects of ionizing radiation.		
16ZIVB	Introduction to Ecology	KZ	2
The subject inform ab	out basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the enviro	inment and evaluat	te economic
	indicators and sustainable development.		
17BPJI1	Bachelor Thesis 1		5
Student on the basis	of theses assignment and under leading of a supervisor individually processes given topic during 2 semesters. The subject is given topic. The work is continuously check by a supervisor.	n by self-reliant wo	ork on given
	Bachelor Thesis 2	7	10
17BPJI2	of theses assignment and under leading of a supervisor individually processes given topic during 2 semesters. The subject is given	. – .	
	topic. The work is continuously check by a supervisor.	If by Self-reliant wo	ik on given
17BPROV	Safe operation of nuclear facilities	KZ	2
	The aim of the subject is to familiarize students with basic principles of nuclear safety.		
17DEZA	The aim of the subject is to familiarize students with basic principles of nuclear safety.	K7	3
17DEZA	Detection of Ionizing Radiation	KZ	3
The course provides	Detection of Ionizing Radiation basic information about sources and methods of detection of ionizing radiation and spectroscopy, with special emphasis on neutro	on detection and sp	ectrometry.
The course provides I The subject focuses	Detection of Ionizing Radiation	n detection and sp tory practice, wher	ectrometry.
The course provides I The subject focuses	Detection of Ionizing Radiation basic information about sources and methods of detection of ionizing radiation and spectroscopy, with special emphasis on neutro on the physical principles of detection, but introduces detection technology to the extent appropriate. An important part is a labora	n detection and sp tory practice, wher	ectrometry.
The course provides I The subject focuses indivi 17ENEF The course is focused	Detection of Ionizing Radiation basic information about sources and methods of detection of ionizing radiation and spectroscopy, with special emphasis on neutro on the physical principles of detection, but introduces detection technology to the extent appropriate. An important part is a labora idually solve seven tasks in groups of up to three students. It also includes writing a measurement report, which teaches to write so Experimental Neutron Physics d on experimental methods and experiments in the field of neutron physics, mainly using radionuclide neutron sources. The lectures	n detection and sp itory practice, wher cientific work. KZ s are devoted to the	re students
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The course provides I The subject focuses individent <b>17ENEF</b> The course is focused bases necessary for p description of neutron	Detection of Ionizing Radiation basic information about sources and methods of detection of ionizing radiation and spectroscopy, with special emphasis on neutro on the physical principles of detection, but introduces detection technology to the extent appropriate. An important part is a labora idually solve seven tasks in groups of up to three students. It also includes writing a measurement report, which teaches to write so Experimental Neutron Physics d on experimental methods and experiments in the field of neutron physics, mainly using radionuclide neutron sources. The lectures reparation and realization of the laboratory exercises and to the methods of experimental data processing and evaluation. Specificall properties and their utilization, the characteristics of neutron sources, properties of prompt and delayed neutrons, selected methods	n detection and sp tory practice, wher cientific work. KZ s are devoted to the ly, the lectures prov s of neutron detect	ectrometry. re students 3 e theoretical vide detailed ion, neutron
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The course provides I The subject focuses indivi- 17ENEF The course is focused bases necessary for p description of neutron transport in substance detection, measurer preparation and de 17ENER The course provides s and global resources, legal and institution state of EU energy inte roles in general and electricity generation	Detection of Ionizing Radiation basic information about sources and methods of detection of ionizing radiation and spectroscopy, with special emphasis on neutro on the physical principles of detection, but introduces detection technology to the extent appropriate. An important part is a labora idually solve seven tasks in groups of up to three students. It also includes writing a measurement report, which teaches to write s Experimental Neutron Physics d on experimental methods and experiments in the field of neutron physics, mainly using radionuclide neutron sources. The lectures reparation and realization of the laboratory exercises and to the methods of experimental data processing and evaluation. Specificall properties and their utilization, the characteristics of neutron sources, properties of prompt and delayed neutrons, selected methods as, production, formation and modification of neutron fields and neutron beams. The lectures are complemented by the laboratory e ment of delayed neutrons, study of neutron transport in various substances, experiments with various neutron sources (252Cf, Am etection of photo-neutron source, calibration of the radionuclide neutron source. The experiments are realized at the VR-1 training r Energy students with basic information about energy industry as a branch of economy. It has five co-related parts: • World energy, including I transport and consumption. • Energy industry of the Czech Republic, including history with an emphasis on recent development, incl al basis, a description of the main Czech energy industry components and the State Energy Strategy. • Energy industry in the EU; t egration, including important processes, documents and legal instruments. • Institutions of energy systems describing the basic mode d specifically in the EU and the Czech Republic. Attention is also paid to energy networks. The conclusior n covering a basic technical description of fossil, nuclear, water, wind and solar power plants, including a discussion of their advant act, including ph	n detection and sp atory practice, wher cientific work. KZ s are devoted to the ly, the lectures prov s of neutron detect exercises in the field Be, D-D neutron g reactor and its labor ZK basic concepts, en luding privatization the development a els of energy system n/transformation for tages and disadvar	ectrometry. re students a theoretical vide detailed ion, neutron d of neutron enerator), paratories. 2 ergy history the current ns operation cused on htages and
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Western-type PWR (Westinghouse, KWU, Framatom). VVER-type reactors, Temelín nuclear power plant. Boiling water reactors. Heavy water reactors, fast breeder reactors, high-temperature gas cooled reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF and INPRO initiatives. Evaluation

and selection of proposed systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in long-term outlook			
17KOJE	Design and Equipment of Nuclear Power Plants	ZK	3
-	of nuclear units. Basic designs of cooling circuits. Design of main parts of units with pressurized wa-ter reactors. Selected components		
	nents of next technological systems ( (accumulator tanks, boric acid systems, systems for coolant purification and coolant inventory		
17NFYZ	on electrical equipment and power output systems from nuclear power plant, examples of NPP wir-ing diagrams including electrical	KZ	3
1	Neutron physics Physics" introduces students to the basics of neutron physics and its applications. The lectures start with the description of the fundar	I I	-
	rons, protons and neutrons. After that a description of radioactivity and nuclear reactions follows. Great attention is paid to the reacti		
	bability of realization of particular nuclear reactions expressed by the effective cross-section versus neutron energy is described. Th		
mechanisms of ne	utron interactions, and issues of differential cross sections and neutron slowing down process are discussed in detail. Fission of hea	avy nuclei is the ba	sis for the
operation of nucle	ear reactors. Students will get familiar with the conditions for realization of fission chain reaction. Finally, the most important applicat	ions of neutron phy	/sics are
	discussed.	7 71/	
17NRE	Experiment Design and Control	Z,ZK	3
	design and operation of systems for control of experiments, acquisition and evaluation of experimental data. It provides information of of experimental systems (COM, USB, Firewire, LAN, GPIB), further about measuring systems with VME, VXI and LXI interfaces,		
	ext, lectures deal with programming of measuring systems - special dedicated software, problems of use of high programming langu		°
-	evelopment tools (Agilent VEE and LabView); data acquisition and evaluation. Finally, students prepare individual software project for d		-
17PALC	Nuclear Fuel Cycle	ZK	2
The course deal with	introduction to the nuclear fuel cycle of nuclear power plants, particularly PWR which are in operation in the Czech Republic or are un	der consideration f	or operation
in future in the Cze	ch Republic. The first part of the course is focused on front-end of the nuclear fuel cycle, the second part is focused on fuel utilisation	on in the reactor co	re and the
(	third part of the course is focused on back-end of the nuclear fuel cycle.		
17RFYZ	Reactor physics	Z,ZK	4
	r physics" helps Bachelor's degree students to get acquainted with fundamentals of reactor physics. The students will get broad know re important for nuclear reactors: fission products, yield of fission neutrons, energy release from fission, and kinetic energy of release	-	
	r analysis of neutron balance in a nuclear reactor and definition of multiplication factor. The students will learn theory of neutron slow		Ŭ I
	of neutron energy spectrum and group theory. Students will get knowledge of Fick's law and diffusion theory for basic analytical calcu	0	
distribution in hom	nogeneous multiplying and non-multiplying media. The same theory is also utilized for large-scale calculations of nuclear reactor com	es. Conclusions ob	tained for
homogen	eous reactor are subsequently compared to heterogeneous reactors. Lecture on fundamentals of nuclear rector kinetics and dynam	ics is also included	l.
17STJE	Heat Transfer in Nuclear Power Plants	Z,ZK	4
	eat Transfer in Nuclear Power Plants presents to the students the fundamental principles of heat transfer with a focus on nuclear power plants are students to the students the fundamental principles of heat transfer with a focus on nuclear power plants are students and the students the fundamental principles of heat transfer with a focus on nuclear power plants are students are		
	is were introduced in the course 02TER which is a predecessor of this course. The course 17STJE elaborates the principles in deta Iy in the areas related to the heat transfer in nuclear cores. An overview lecture of the basic principles will be given at the beginning		<u> </u>
	ansfer mechanism will be discussed during the next weeks. It will start with conduction followed by convection and radiation at the e		
	nokinetics related to nuclear reactors and equipment related to nuclear power plants and spent nuclear fuel. For that reason, condu-		
discussed into detai	ils. Convection is divided according the nature of the flow into laminar and turbulent. The concept of radiative heat transfer was theorem	retically introduced	in previous
courses and the app	plications and models used by industry will be presented here. The course includes also fundamentals of heat transfer with phase ch		
	meanons and models used by modeling will be presented here. The course includes also fundamentals of meat transier with phase th	anges main empha	asis is given
	to boiling.		
17TEMT	to boiling. Thermodynamics and fluid mechanics of nuclear power plants	Z,ZK	4
17TEMT The course gives su	to boiling. Thermodynamics and fluid mechanics of nuclear power plants mmary of basic knowledge of the two theoretical fields which are important for the nuclear reactors and nuclear power plants design a	Z,ZK	4 nodynamics
17TEMT The course gives su	to boiling. Thermodynamics and fluid mechanics of nuclear power plants mmary of basic knowledge of the two theoretical fields which are important for the nuclear reactors and nuclear power plants design a id mechanics. Both fields are lectured with hand-on approach, so that students obtain elementary view on issue, they will be able to	Z,ZK	4 nodynamics
17TEMT The course gives su	to boiling. Thermodynamics and fluid mechanics of nuclear power plants mmary of basic knowledge of the two theoretical fields which are important for the nuclear reactors and nuclear power plants design a id mechanics. Both fields are lectured with hand-on approach, so that students obtain elementary view on issue, they will be able to tasks and they will be able to study this issues in more details in next continuing special courses.	Z,ZK	4 nodynamics
17TEMT The course gives sur engineering and flui 17TEXT	to boiling. Thermodynamics and fluid mechanics of nuclear power plants mmary of basic knowledge of the two theoretical fields which are important for the nuclear reactors and nuclear power plants design a id mechanics. Both fields are lectured with hand-on approach, so that students obtain elementary view on issue, they will be able to	Z,ZK nd operation: therm calculate basic and KZ	4 nodynamics d simplified 2
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TV-2	Physical Education	Z	1
TV-3	Physical education	Z	1
TV-4	Physical education	Z	1

For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 2024-05-19, time 20:32.