Study plan

Name of study plan: Jaderná chemie

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Nuclear Chemistry 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: Compulsory courses in the program

Minimal number of credits of the block: 0

The role of the block: P

Code of the group: BSPJCH1

Name of the group: BS P_JCHB 1st year

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 15 courses

Credits in the group: 0

Vykonání zkoušky 15ANCH1 je podmíněno úspěšným absolvováním předmětů 15LABT. Vykonání Note on the group:

zkoušky 15ANCH2 je podmíněno úspěšným absolvováním předmětů 15ANCH1 a 15ANP. Vstup

	do praktika je podmíněn úspěšným absolvováním	preametu 1	5LAB I.	1		
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
15ANCH1	Michaela Fridrichová, Václav Tyrpekl, Jan Kotek Václav Tyrpekl Jan Kotek (Gar.)	Z,ZK	5	3+2	Z	Р
15ANCH2	Inorganic Chemistry 2 Michaela Fridrichová, Václav Tyrpekl, Jan Kotek, Petr Št pni ka Václav Tyrpekl Jan Kotek (Gar.)	Z,ZK	5	3+2	L	Р
15ANP	Practical Training in Inorganic Chemistry Václav Tyrpekl, Vojt ch Kubí ek Václav Tyrpekl Václav Tyrpekl (Gar.)	Z	4	9 dní	L	Р
02ELMA	Electricity and Magnetism Iskender Yalcinkaya, Goce Chadzitaskos, Josef Schmidt, Jan Vysoký Jan Vysoký Goce Chadzitaskos (Gar.)	Z,ZK	6	4+2	L	Р
15LABT	Practical Training in Laboratory Technique Michaela Fridrichová, Michaela Fridrichová Michaela Fridrichová (Gar.) Michaela Fridrichová (Gar.)	Z	3	0+4	Z	Р
01MATZ1	Mathematics, Examination 1 Radek Fu ik Radek Fu ik Radek Fu ik (Gar.)	ZK	2	-	Z	Р
01MATZ2	Mathematics, Examination 2 Radek Fu ík, Mat j Tušek Mat j Tušek Radek Fu ík (Gar.)	ZK	2	-	L	Р
01MAT1	Mathematics 1 Radek Fu ik Radek Fu ik Radek Fu ik (Gar.)	Z	4	3P+3C	Z	Р
01MAT2	Mathematics 2 Radek Fu ik Radek Fu ik Radek Fu ik (Gar.)	Z	4	3P+3C	L	Р
02MECH	Mechanics Iskender Yalcinkaya, David Be Michal Jex David Be (Gar.)	Z	4	4+2	Z	Р
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	Р
15OCH	General Chemistry Petr Distler, Ond ej Holas Petr Distler Petr Distler (Gar.)	Z,ZK	6	5+2	Z	Р
15ORCA1	Organic chemistry 1 Martin Palušák, Michal Sakmár, Ján Kozempel, Stanislav Smr ek, Martin Vlk Stanislav Smr ek Ján Kozempel (Gar.)	Z	2	2P+2C	L	Р
00PT	Preparatory Week Petr Ambrož, Milan Krbálek Petr Ambrož Petr Ambrož (Gar.)	Z	2	týden	Z	Р

15TOXA	Toxicology Ján Kozempel, Martin VIk Martin VIk Ján Kozempel (Gar.)	ZK	2	2P	L	Р
Characteristics	of the courses of this group of Study Plan: Code=BSPJCH1 Name=	BS P_JCHB	1st year			
15ANCH1				Z	Z,ZK	5
15ANCH2	Inorganic Chemistry 2			Z	',ZK	5
The first part of cou	rse is devoted to systematical chemistry of elements. The properties of representative elemen	ts, transition elem	ents and ch	emistry of co	ordination	compounds a
characterised. Selec	cted chapters in the second part of course deal with catalysis, organometallic compounds and c	hemistry of solid s	state. The role	of metal ion	s in biologic	cal environme
is discussed at the	end of course.					
15ANP	Practical Training in Inorganic Chemistry				Z	4
Basic practical cour	se dealing with synthesis and characterization of inorganic compounds. Students get practical	training in synthe	eses of inorg	anic compou	ınds by acid	d- base and
oxidation-reduction	reactions, complex formation reactions and reactions in melt.					
02ELMA	Electricity and Magnetism			Z	Z,ZK	6
Electric charge, Cou	ulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors anddielect	rics. Electric curre	ent and circui	ts, conductiv	ity. Basics	of the relativit
theory. Electrodynar	mic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, ac currents.	Electromagnetic	waves,Maxw	ell equations	;	
15LABT	Practical Training in Laboratory Technique				Z	3
This course covers I	basic laboratory training and is designed for students of "Chemistry in Science", "Teaching of	Chemistry", and "I	Biology". The	course puts	the labora	tory experien
of the students gain	ed at secondary school to an equal level and gets them ready for all following laboratory training	ngs. After absolvi	ng of the cou	urse, the stud	dents have	the basic skil
including handling th	he most frequently used laboratory equipments (pH-meter, UV-Vis spectrophotometer, vacuum	n rotary evaporato	or) and have	the necessa	ry informati	on about safe
rules as well as abo	out writing laboratory diaries. The training is organized in blocks of four hours a week. The stud	ents work in grou	ps of two ac	cording to a	firm schedu	ıle so that ea
group absolve the c	complete set of (all) 10 exercises during semester. In the exercises, measurements of properties	s of unknown sar	mples, basic	synthetic an	d purification	on operations
and basic methods	of analyses are involved.					
01MATZ1	Mathematics, Examination 1				ZK	2
01MATZ2	Mathematics, Examination 2				ZK	2
01MAT1	Mathematics 1				Z	4
	ed to the study of the basics of calculus of one variable. It includes an introduction to differenti	ial and integral ca	Iculus with r	 particular em	_	•
practical problems.	ou to the study of the business of calculate of one variable. It morauses all introduction to amoralis	ar and intograr oa	iouiuo, wiiii p	artioular offi	pridolo ori c	application i
01MAT2	Mathematics 2				7	4
	s the continuation of Mathematics 1, is devoted to the integration techniques, improper Riema	nn integral introd	luction to nar	 ametric curv	_	•
	is the continuation of Mathematics 1, is devoted to the integration techniques, improper Riemans is its squences and infinite series, and finally to the Taylor and power series and their applications.	=	luction to pai	ametric curv	es (especie	ally III polai
02MECH	Mechanics	outions.			Z	4
-	cs, physical quantities and units. Particle kinematics, basic types of motion and theirsuperposi	tion Particle dyna	mice one di	 monsional o		•
	, forces innoninertial reference frames. Mechanics of system of free particles, two-body proble	•			•	
	cs, elasticity, hydrodynamics. Sound.	III, COIIISIOIIS. IVIEC	onanics onig	a body, rota	ion. i unuai	memais or
02MECHZ					ZK	2
	Mechanics - Examination				ZN	2
	subject is the examination according to the plan of studies.				71/	
15OCH	General Chemistry	1.1.2			Z,ZK	6
=	classification of substances, concentrations, chemical reactions and equations, stoichiometric					
	ermodynamics, first law of thermodynamics, thermochemistry, second law of thermodynamics, e	ntropy, Gibbs ene	rgy, pnase ar	id chemical e	el aquilibria, el	ectrocnemis
•	s, kinetic equation, Arrhenius' equation.					
15ORCA1	Organic chemistry 1				Z	2
•	compounds, properties of covalent bond, reactions on covalent bonds. Nomenclature of orga			• •	•	,
•	f organic compounds, double bond isomers, chirality, enantiomers and diastereomeric compou	-				
•	dity, hard and soft acids and bases. Resonance, aromaticity, classification of substituents, reac					
	electronic structure. Basic overview on alkanes and cycloalkanes, alkenes, arenes, halogend	envalives, organic	metallic con	ipourius, aic	onois and e	iners, organi
	r, nitrogen, phosphorus, silicon, other elements and carbonyl compounds chemistry.					
00PT	Preparatory Week				Z	2
15TOXA	Toxicology				ZK	2
	oxicology, containing general and special toxicology, toxicological data, legislation and basic as	•	-	-	-	
=	sm, biodistribution and elimination has been described, as well as toxicological effects, evaluate	-		-	-	
	rganic compounds, inorganic compounds, natural compounds and warfare were described fro	m toxicity behavio	our. In legisla	tion part RE	ACH, intern	ational and
national regulation i	s described.					
Code of the	group: PCD ICU2					
	group: BSPJCH2					
Name of the	group: BS P_JCHB 2nd year					
	• •					
	t credits in the group:					
Requiremen	it courses in the group: In this group you have to compl	ete at leas	st 13 co	urses		

Requirement courses in the group: In this group you have to complete at least 13 courses

Credits in the group: 0

Note on the group:

Vykonání zkoušky 15ORCA2 je podmíněno splněním povinností z předmětu 15ORCA1. Vykonání zkoušky15ANALY2 je podmíněno splněním povinností z předmětů 15ANAL1, 15APLA.Zápis

předmětu 15POCHÁ je podmíněn absolvováním předmětu 15ORCA2.

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members)	Completion			Semester	Role
15ANAL1	Tutors, authors and guarantors (gar.) Analytical Chemistry 1 Vlastimil Vysko il, Anna Kubí ková Vlastimil Vysko il Vlastimil Vysko il (Gar.)	Z	5	3+2	L	Р
15ANALY2	Analytical Chemistry 2 Vlastimil Vysko il Vlastimil Vysko il (Gar.)	Z,ZK	5	3P+2C	L	Р

15FCHN1	Physical Chemistry 1 Viliam Mú ka, Jan Bárta Jan Bárta Viliam Mú ka (Gar.)	Z,ZK	5	3+2	Z	Р
15FCHN2	Physical Chemistry 2 Barbora Drtinová, Václav uba, Marta Burešová Barbora Drtinová Václav uba (Gar.)	Z,ZK	5	3+2	Z	Р
15JACH1	Nuclear Chemistry 1 Václav uba, Xenie Popovi , Jan John Václav uba Jan John (Gar.)	Z,ZK	3	2+1	L	Р
17JARE	Nuclear Reactors Tomáš Bílý Tomáš Bílý Tomáš Bílý (Gar.)	ZK	2	2	L	Р
01MAT3	Mathematics 3 David Krej i ík, Severin Pošta David Krej i ík David Krej i ík (Gar.)	Z,ZK	4	2+2	Z	Р
01MAT4	Mathematics 4 Mat j Tušek Mat j Tušek (Gar.)	Z,ZK	4	2+2	L	Р
15ORCA2	Organic chemistry 2 Martin Palušák, Michal Sakmár, Ján Kozempel, Stanislav Smr ek, Martin Vlk Stanislav Smr ek Ján Kozempel (Gar.)	Z,ZK	6	2P+2C	Z	Р
15APLA	Laboratory Training in Analytical Chemistry Jakub Hraní ek Jakub Hraní ek (Gar.)	Z	4	4L	L	Р
15POCHA	Organic Chemistry Practical Miroslav Lorenc Miroslav Lorenc Miroslav Lorenc (Gar.)	Z	4	4L	L	Р
15POLE	Theory of Electromagnetic Field and Waves Aleš Vetešník Aleš Vetešník (Gar.)	Z,ZK	4	4+1	L	Р
15ZBCHA	Fundamentals of Biochemistry Tomáš Je men, Radek Indra Radek Indra Tomáš Je men (Gar.)	ZK	2	2P+0C	Z	Р

Characteristics of the courses of this group of Study Plan: Code=BSPJCH2 Name=BS P_JCHB 2nd year

The state of the s	Analytical Chemistry 1	Z	5
	analytical chemistry, scheme of analytical procedures. Sampling and preparation of Hample. Precipitation reactions, solubil		
	istical evaluation of results. Precipitation titrations, titration curve, endpoint indication. Complex-formation reactions, stability	•	•
	elatometric titrations, titration curve, endpoint indication. Qualitative analysis of cations and anions, application of precipitation	•	
•	cation of ions. Acid-base reactions, acids, basis, acidity function, salts, hydrolysis of salts, buffers, acid-base indicators. Aci	id-base titrations,	titration curves
detrmination of strong and	d weak acids, bases and salts. Acid-base reactions in nonaqueous solvents.		
15ANALY2	Analytical Chemistry 2	Z,ZK	5
Analytická chemie 2 nava	zuje na p edm t Analytická chemie 1. Kurz je zam en na instrumentální metody analytické chemie a zpracování výsledk	analýzy.	
15FCHN1 F	Physical Chemistry 1	Z,ZK	5
The introductive part is de	voted to the recapitulation of the thermodynamic systems and thermodynamic properties of ideal and real gases. Next chapt	ters are devoted to	the first, secor
and third law of thermodyr	namics and their applications. Last but not least, attention is devoted also to the thermodynamic, phase and chemical equilib	briums as well as	to the elementa
of nonequilibrium thermod	dynamics.		
15FCHN2 F	Physical Chemistry 2	Z,ZK	5
	istry 2 focuses on thermodynamics of solutions, particularly on electolytes. Basics of colloidal chemistry extend the theory o	1 '	end of the lectur
	Nuclear Chemistry 1	Z.ZK	3
	clear chemistry and radiochemistry, nuclear entities, nuclear reactions, natural and artificial radioactivity. Kinetics of nuclear	1 '	1
	ear reactions, mass and energy balance of nuclei and energy of alpha, beta decay, gamma deexcitation in nuclear reaction		
	Nuclear Reactors	ZK	2
	issue. Previous evolution of power reactor. Nuclear fission reactors, fuel assemblies, active core, control systems, safety sy	1	I
•			
of reactors into IV generat	ione. Standard types of nuclear nower reactors: concept, description, layout, previous evolution, world share, perspectives, F	Draccurizad watai	
•	ions. Standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. F		•
Western-type PWR (West	tinghouse, KWU, Framatom). VVER-type reactors , Temelín nuclear power plant. Boiling water reactors. Heavy water reactor	ors, fast breeder i	reactors,
Western-type PWR (West high-temperature gas coo	tinghouse, KWU, Framatom). VVER-type reactors, Temelin nuclear power plant. Boiling water reactors. Heavy water reactors led reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF a	ors, fast breeder r and INPRO initiati	reactors,
Western-type PWR (West high-temperature gas coo and selection of proposed	tinghouse, KWU, Framatom). VVER-type reactors, Temelin nuclear power plant. Boiling water reactors. Heavy water reactor led reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF at systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in long-term out	ors, fast breeder i and INPRO initiati utlook	reactors, ves. Evaluation
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Western-type PWR (West high-temperature gas coo and selection of proposed 01MAT3 N	tinghouse, KWU, Framatom). VVER-type reactors, Temelin nuclear power plant. Boiling water reactors. Heavy water reactors led reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF at systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in long-term out the matter at the most important notions and theorems related to the study of finite-dimensional vector spaces.	ors, fast breeder rand INPRO initiativutlook	reactors, ves. Evaluation
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Western-type PWR (West high-temperature gas coo and selection of proposed 01MAT3 Name Name Name Name Name Name Name Name	tinghouse, KWU, Framatom). VVER-type reactors, Temelin nuclear power plant. Boiling water reactors. Heavy water reactor bled reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF a systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in long-term out wathematics 3 the most important notions and theorems related to the study of finite-dimensional vector spaces. Wathematics 4 erential equations of the first order. Linear differential equations of higher order with constant coefficients. Multivariable calculations of the study of the first order.	ors, fast breeder rand INPRO initiativutlook Z,ZK Z,ZK culus and its appli	ves. Evaluation 4 4 cations.
Western-type PWR (West high-temperature gas coo and selection of proposed 01MAT3 Nhe subject summarises to 01MAT4 Nhear and non-linear differ 15ORCA2	tinghouse, KWU, Framatom). VVER-type reactors, Temelin nuclear power plant. Boiling water reactors. Heavy water reactor pled reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF a systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in long-term out that matrics 3 with the most important notions and theorems related to the study of finite-dimensional vector spaces. Mathematics 4 when the first order. Linear differential equations of higher order with constant coefficients. Multivariable calcondations of the first order. Linear differential equations of higher order with constant coefficients.	ors, fast breeder rand INPRO initiativatiook Z,ZK Z,ZK Louius and its appli	reactors, ves. Evaluation 4 4 cations.
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Western-type PWR (Western-type	tinghouse, KWU, Framatom). VVER-type reactors, Temelin nuclear power plant. Boiling water reactors. Heavy water reactors ded reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF at systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in long-term out of mathematics 3. The most important notions and theorems related to the study of finite-dimensional vector spaces. Mathematics 4. The rential equations of the first order. Linear differential equations of higher order with constant coefficients. Multivariable calculations of organic compounds, carboxylic acids and their derivatives, heterocyclic compounds, important natural compound dustrial and natural. Introduction to the metods of structural analysis. Laboratory Training in Analytical Chemistry ercises is oriented to qualitative analysis of cations and anions using wet chemistry procedures. Quantitative determinations. In the last part of exercises students become acquainted with basic instrumental methods of chemical analysis. Drganic Chemistry Practical	ors, fast breeder in and INPRO initiativatiook Z,ZK Z,ZK culus and its appli Z,ZK ds, industrial orgation of analyte based Z c laboratory. Synt	reactors, ves. Evaluation 4 4 dications. 6 anic compound: 4 d upon various 4 hetic tasks are
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Western-type PWR (West high-temperature gas coo and selection of proposed 01MAT3 National Nat	tinghouse, KWU, Framatom). VVER-type reactors, Temelin nuclear power plant. Boiling water reactors. Heavy water reactor led reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF at systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in long-term out of mathematics 3. The most important notions and theorems related to the study of finite-dimensional vector spaces. Mathematics 4. The present of the first order. Linear differential equations of higher order with constant coefficients. Multivariable calculations of organic compounds, carboxylic acids and their derivatives, heterocyclic compounds, important natural compound dustrial and natural. Introduction to the metods of structural analysis. Laboratory Training in Analytical Chemistry ercises is oriented to qualitative analysis of cations and anions using wet chemistry procedures. Quantitative determinations. In the last part of exercises students become acquainted with basic instrumental methods of chemical analysis. Drganic Chemistry Practical panic chemistry have the task to teach students the basics of laboratory techniques and methodology of work in the organic are acquainted with basic chemical operations, and to obtain information on the preparation and properties of organic call knowledge from the lectures of organic chemistry. Theory of Electromagnetic Field and Waves the electromagnetic field, the second part is dedicated the categories.	ors, fast breeder rand INPRO initiativatiook Z,ZK Lulus and its application of analyte based and analyte based compounds. Students of the wave motion of the state of t	reactors, ves. Evaluation 4 4 4 ications. 6 anic compounds 4 d upon various 4 hetic tasks are ents thus have the on and the optice 2

Code of the group: BSPJCH3

Name of the group: BS P_JCHB 3rd year

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 15 courses Credits in the group: 0

Note on the group:

Zápis předmětu 15JACH2 je podmíněn absolvováním předmětu 15JACH1. Zápis předmětu 15RATEC je podmíněn absolvováním předmětu 15JACH1. Zápis předmětu 15PINS je podmíněn současným zápisem nebo absolvováním předmětu 15INSN1. Zápis předmětu 15DEIZ je podmíněn současným zápisem nebo absolvování předmětu 15DIZ.

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
15BPCH1	Bachelor Thesis 1 Petr Distler, Martin Vlk, Jan Bárta, Václav uba, Xenie Popovi , Aleš Vetešník, Kate ina ubová, Mojmír N mec, Pavel Bartl, Václav uba Václav uba (Gar.)	Z	5	0+5	Z	Р
15BPCH2	Bachelor Thesis 2 Petr Distler, Martin Vlk, Jan Bárta, Václav uba, Xenie Popovi , Aleš Vetešník, Kate ina ubová, Mojmír N mec, Pavel Bartl, Petr Distler Václav uba (Gar.)	Z	10	0+10	L	Р
17BPROV	Safe operation of nuclear facilities Lenka Frýbortová, ubomír Sklenka Lenka Frýbortová (Gar.)	KZ	2	2P		Р
15DIZ	Detection of Ionizing Radiation Jan John, Martin Da o Jan John Jan John (Gar.)	ZK	2	2+0	L	Р
15EXK1	Excursion 1 Barbora Drtinová, Alena Zavadilová Alena Zavadilová Barbora Drtinová (Gar.)	Z	1	5 dn	L	Р
15INSN1	Instrumental Methods 1 Martin VIk, Alena Zavadilová Martin VIk Martin VIk (Gar.)	ZK	3	3+0	L	Р
15JACH2	Nuclear Chemistry 2 Václav uba, Xenie Popovi , Jan John Václav uba Václav uba (Gar.)	Z,ZK	4	2+2	Z	Р
15MZD	Measurement and Data Handling Aleš Vetešník, Lucie Baborová, Dušan Vopálka Aleš Vetešník Aleš Vetešník (Gar.)	Z,ZK	3	2+1	Z	Р
12NMEA	Numerical Methods for Scientists and Engineers Alena Zavadilová, Pavel Váchal Pavel Váchal (Gar.)	KZ	3	2+2	L	Р
15DEIZ	Practical Exercises in Detection of Ionizing Radiation Mojmír N mec, Pavel Bartl, Miroslava Semelová Miroslava Semelová Mojmír N mec (Gar.)	KZ	3	0+3	L	Р
15PRFCH	Practical Exercises in Physical Chemistry Kate ina Ušelová Kate ina Ušelová	Z	5	0P+4C	Z	Р
15PINS	Laboratory Practice in Instrumental Methods Martin Vlk, Alena Zavadilová Martin Vlk Alena Zavadilová (Gar.)	KZ	2	0+3	L	Р
15RATEC	Practical Exercises in Radiochemical Techniques Kate ina ubová, Mojmír N mec, Pavel Bartl, Miroslava Semelová Miroslava Semelová Mojmír N mec (Gar.)	KZ	2	0+2	Z	Р
15SBP	Bachelor Thesis Seminar Barbora Drtinová, Alena Zavadilová Alena Zavadilová (Gar.)	Z	1	0+1	Z	Р
16ZDOZ1	Fundamentals of Radiation Dosimetry 1 Tomáš Trojek Tomáš Trojek Tomáš Trojek (Gar.)	Z,ZK	4	2+2		Р

15SBP	Barbora Drtinová, Alena Zavadilová Alena Zavadilová (Gar.)	Z	1	0+1	Z	Р
16ZDOZ1	Fundamentals of Radiation Dosimetry 1 Tomáš Trojek Tomáš Trojek Tomáš Trojek (Gar.)	Z,ZK	4	2+2		Р
Characteristics	of the courses of this group of Study Plan: Code=BSPJCH3 Name=I	BS P_JCHB	3rd year			
15BPCH1	Bachelor Thesis 1				Z	5
Background researc	h and results of research					
15BPCH2	Bachelor Thesis 2				Z	10
Background researc	h and results of research				·	
17BPROV	Safe operation of nuclear facilities				KZ	2
The aim of the subje	ect is to familiarize students with basic principles of nuclear safety.					
15DIZ	Detection of Ionizing Radiation				ZK	2
The first part of the	course deals with the definitions, properties, and application of the detectors of ionising radiation	on (IR). In the sec	cond part, a	detailed ove	rview of the	gas detectors,
scintillation detectors	s, detectors for high energy IR, semiconductor detectors, and integrating solid state detectors	is given. The last	part of the	course reviev	vs the princip	oles of the
statistical treatment	of data, and limits of detection.					
15EXK1	Excursion 1				Z	1
The excursion aims	at mediating the students the acquaintance with various radiochemical and radiation methods	used in practice.		,	·	
15INSN1	Instrumental Methods 1				ZK	3
Overview of selected	d modern instrumental methods of research and analysis, theoretical fundamentals, instrumen	tal technique, uti	lization and	application.	'	
15JACH2	Nuclear Chemistry 2			Z	',ZK	4
The following topics	are discussed in detail in the course: Nuclear reactions yield, reaction cross section, excitation	function. Fission	reaction, s	pontaneous f	ission. Chem	nistry of atoms
formed in a nuclear	reaction, local temperature, atomic recoil and recoil energy, recoil of atom bound in a molecule	e, hot atom chem	istry, retenti	on, Szilard C	halmers read	ction.
15MZD	Measurement and Data Handling			Z	',ZK	3
Characteristics of st	atistical distribution functions (one-dimensional data), hypotesis testing, analysis of variance (A	ANOVA), correlati	ion analysis	, regression,	statistical an	alysis of
multidimensional da	ta; chemometrics; testing of analytical methods; numerical methods and computers in data pro	cessing				
12NMEA	Numerical Methods for Scientists and Engineers				KZ	3
There are explained	the basic principles of numerical mathematics important for numerical solving of problems imp	ortant for physics	s and techno	ology. Method	ls for solutio	n of tasks very
important for physici	sts (ordinary differential equations, random numbers) are included in addition to the basic num	nerical methods.	Integrated c	omputational	environmen	it MATLAB is
used as a demonstra	ation tool. The seminars are held in computer laboratory and PASCAL is used as a principle pr	ogramming lang	uage and M	ATLAB is als	o used.	

15DEIZ	Practical Exercises in Detection of Ionizing Radiation	KZ	3
This laboratory exerc	ise is a practical introduction to fundamental principles of detection of ionizing radiation (IR), interaction of IR with matter, and fun	ctionality and setti	ngs of particular
types of detectors an	d detection systems.		
15PRFCH	Practical Exercises in Physical Chemistry	Z	5
Principles of fundame	ental physico-chemical phenomena are demonstrated in ten exercises. Basic thermodynamic, kinetic and electrochemical charac	teristics, as equilib	orium constants
rate constant, buffer of	capacity etc., are determinated. Required data are obtained by means of chemical analysis (e.g. titration, extraction) and by comn	non instrumental m	nethods (UV-VIS
spectrophotometry, p	olarography, potentiometry, conductometry, electrolysis, viscosimetry). Emphasis is given on appropriate interpretation of meas	ured data and the	ir mathematical
and statistical evalua	tion.		
15PINS	Laboratory Practice in Instrumental Methods	KZ	2
Practical training of s	tudents in the use of selected modern instrumental methods and techniques for determination of required parameters	'	
15RATEC	Practical Exercises in Radiochemical Techniques	KZ	2
The exercise is orien	ted on the training of students in laboratory praxis and work with open radioactive sources through basic lab operations such a	s pipetting, extract	ion and
chromatography tech	iniques. Training is also focused on decontamination of surfaces and clean-up of the accident, work behind shielding and in a gl	ove box.	
15SBP	Bachelor Thesis Seminar	Z	1
The aim is to prepare	e students to write and defend bachelor thesis, including work with information sources and to acquire basic presentation skills.	'	
16ZDOZ1	Fundamentals of Radiation Dosimetry 1	Z,ZK	4
History, development	, and objectives of dosimetry. Quantities and units used for description of sources, fields, interactions of ionizing radiation, ioniz	ations, energy trar	nsfer and
absorption. Fundame	entals of the effects of ionizing radiation.		

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 0

The role of the block: PV

Code of the group: BSSPOLVEDY

Name of the group: BS - Social Sciences

Requirement credits in the group:

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

Credits in the group: 0

Note on the group:

Only one of these courses is obligatory.

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
00EKOT	Economy in Technology Jana Ková ová	Z	1	2+0		PV
00ETV	Ethics of Science and Technology Jakub Hají ek Jana Ková ová	Z	1	0+2	L	PV
00RET	Rhetoric Jana Ková ová Jana Ková ová	Z	1	0+2		PV
00UPRA	Introduction to Law Martin ech Jana Ková ová	Z	1	0+2		PV
00UPSY	Introduction to Psychology Jakub Hají ek Jana Ková ová	Z	1	0+2		PV

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

00EKOT	Economy in Technology	Z	1
The course introduce	s the basics of micro- and macroeconomics.	•	'
00ETV	Ethics of Science and Technology	Z	1
00RET	Rhetoric	Z	1
	d on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the orbal aspects. Stylistics exercises, strategies for coping with stage-fright and a short excursion into the history of rhetoric are are	•	
00UPRA	Introduction to Law	Z	1
00UPSY	Introduction to Psychology	Z	1

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 English for Intermediate Students Examination 7K 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 parts - written (100 min) and oral (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 courses. 04XAPZK English for Advanced Students Examination ZK 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 to apply their knowledge 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 the student's field of study. Czech for Foreigners - Beginners - Examination 04XCFSZZK 7K 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 04XCESZ1,2,3 courses 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 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 CESM1.2.3 courses and can only be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher. ZK Czech for Foreign Students - Advanced Examination 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 CESP1,2,3 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 7K 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 examination consists of a written and oral part and is organized according to Examination Instructions, a document available on the web. ZK 4 04XFP7K French for Advanced Students Examination The whole French program is ended with an examination covering the contents of FP1-FP3. The examination consists of a written and/or an oral part and is organized according to Examination Instructions, a document available on the web. Assessment of the presentation is included into the examination grading. French for Beginners Examination 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 is ruled by the document Instruction for examination. Its content covers the levels FZ1 - FZ5. German for Intermediate Students Examination 7K 04XNMZK The course content is the examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examination consisting of two 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 assessment. More detailed information is to be obtained from the teacher. 04XNPZK 7K German for Advanced Students Examination The course content is the examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination consisting of two 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 ungraded assessment. More detailed information is to be obtained from the teacher. 04XRMZK Russian for Intermediate Students Examination ZK. 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 knowledge and skills acquired in RM1 - RM3. Students are eligible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given instructions by the teacher. 04XRPZK Russian for Advanced Students Examination 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 knowledge and skills acquired in RP1 - RP3. Students are eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instructions by the teacher. Russian for Beginners Examination 3 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 knowledge and skills acquired in RZ1 - RZ5. Students are eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instructions by the teacher. 04XSMZK Spanish for Intermediate Students Examination ZK The course content 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, students will have obtained non-graded assessment for course SM3. Oral examination follows the written part. Spanish for Advanced Students Examination The course content is the examination as given by the study plan. Examination SPZK consists of two parts, namely oral and written. The prerequisite for admission to oral part is having passed the written test. Examination content is based on syllabi of courses SP1, SP2, and SP3 or on an individual study plan of the student.

04XSZZK Spanish for Beginners Examination

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 examination only if he/she has passed the written examination test.

Name of the block: Elective courses Minimal number of credits of the block: 0

The role of the block: V

Code of the group: BSPJCHV

Name of the group: BS P_JCHB Optional courses

Requirement credits in the group: Requirement courses in the group:

Credits in the group: 0 Note on the group:

Note on the g	roup:					
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
15CHEM	Analytical Calculations and Chemometry Principals Ji í Zima Ji í Zima (Gar.)	ZK	2	2+0	Z	V
02DEF1	History of Physics 1 Igor Jex, Miroslav Myška Miroslav Myška Igor Jex (Gar.)	Z	2	2+0	Z	V
02DEF2	History of Physics 2 Igor Jex Miroslav Myška Igor Jex (Gar.)	Z	2	2+0	L	٧
16EPAM	Exact Methods in Research of Historic Monuments Ladislav Musílek Ladislav Musílek (Gar.)	ZK	2	2+0	Z	V
02PRAK	Experimental Laboratory Libor Škoda Libor Škoda (Gar.)	KZ	4	0+4	L	V
04AKS	English Conversation Jana Ková ová Jana Ková ová (Gar.)	Z	1	0+2	L	V
02KF	Quantum Physics Filip Petrásek Libor Šnobl (Gar.)	Z,ZK	3	2P+1C	Z	V
00MAM1	Essentials of High School Course 1 David Be	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
01PRSTB	Probability and Statistics B Tomáš Hobza Tomáš Hobza Tomáš Hobza (Gar.)	KZ	4	3+1	Z	V
TV-1	Physical Education	Z	1		Z	٧
TV-2	Physical Education	Z	1		L	٧
TV-3	Physical education	Z	1	0+2	Z	V
TV-4	Physical education	Z	1	0+2	L	V
14TED	Creating Electronic Documents Aleš Materna Aleš Materna (Gar.)	Z	2	26C		V
02UFEC	Introduction to Elementary Particle Physics Marek Matas, Jaroslav Biel ík Jaroslav Biel ík (Gar.)	Z	2	2+0	Z	V
18ZALG	Basics of Algorithmization Petr Pauš, Vladimír Jarý, František Vold ich, Miroslav Virius, František Gašpar, Zuzana Pet í ková Vladimír Jarý Miroslav Virius (Gar.)	Z,ZK	4	2+2	L	V
16ZBAF1	Fundamentals of Human Biology, Anatomy and Physiology 1 Alena Doubková, Šimon Vaculín, Zde ka Polívková, Josef Stingl Alena Doubková Alena Doubková (Gar.)	Z,ZK	4	2+2	Z	V
16ZBAF2	Fundamentals of Human Biology, Anatomy and Physiology 2 Alena Doubková, Šimon Vaculín, Josef Stingl Alena Doubková Alena Doubková (Gar.)	Z,ZK	4	2+2	L	V
02ZJFY	Fundamentals of Nuclear Physics Vladimír Wagner Vladimír Wagner (Gar.)	Z,ZK	5	3P+2C	Z	V
18ZPRO	Basics of Programming Maksym Dreval, Petr Pauš, Vladimír Jarý, František Vold ich, Miroslav Virius, Zuzana Pet í ková, Jakub Klinkovský, Jan Tomsa Miroslav Virius Miroslav Virius (Gar.)	Z	4	4C	Z	V

Characteristics of the courses of this group of Study Plan: Code=BSPJCHV Name=BS P_JCHB Optional courses

15CHEM Analytical Calculations and Chemometry Principals ZK 2
Lecture deals with basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basic data distributions, one- and two-tailed significance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, seminar part consists of equation solving, titration stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in potentiometry, coulometry, spectrophotometry and separation methods, solving of complex forming equilibria.

000554	Turk (DL) : 4		
02DEF1	History of Physics 1	Z	2
1 -	in the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural philadel Assa Reprise ones in Alidela	-	· ·
	himed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galilonce. Newton and his work.	eo, nuygens. The bir	in or physics
02DEF2	History of Physics 2	7	2
	1 9 - 9	Z	
	ical mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. ism, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzma		
_	s, Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclear		· ·
1 -	concept of Nature and Universe of today.	chergy, Elementary	particios,
16EPAM	Exact Methods in Research of Historic Monuments	ZK	2
-	nistoric monument investigations, methods of age determination (radiocarbon, thermoluminescence and related methods, further ratio	1 1	_
1	analytical methods for determination of origin and production technologies of artefacts (activation analysis, X-ray fluorescence	,	0,,
photogrammetry.			,,,
02PRAK	Experimental Laboratory	KZ	4
_	rimarily for students who study branch Nuclear Chemistry engineering, or practically oriented bachelor's specializations of bra	1 1	ering. But it can
-	dents interested in the other specializations. During Experimental laboratory, students learn how to prepare for experiments (in	-	-
	the measurement (acquire of different experimental procedures and routines), will teach writing the records of measurement, p	•	· ·
At the same time pra-	ctically extend the knowledge gained in lectures on physics.		
04AKS	English Conversation	Z	1
-	op the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral commu	inication. The studen	t will develop
	arious communication situations and will master their communication strategy. They will also practise their listening skills in ord		
in discussions. The st	udent will be trained to express their ideas clearly and according to current English usage, and become a more confident spe	aker.	
02KF	Quantum Physics	Z,ZK	3
State description, wa	ve function, postulates of quantum mechanics, Born s statistical interpretation, expectation values, Schrödinger equation, He	isenberg uncertainty	principle,
quantization of angul	ar momentum, solution of simple systems, hydrogen atom.		
00MAM1	Essentials of High School Course 1	Z	1
00MAM2	Essentials of High School Math Course 2	Z	1
Review of basics of h	igh school mathematics.	, ,	
01PRSTB	Probability and Statistics B	KZ	4
It is a basic course of	probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition a	and continuing till the	Kolmogorov
definition. The notions	s as random variable, distribution function of random variable and characteristics of random variable are treated and basic limits	it theorems are state	d and proved.
	neory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testing are expenses.	kplained.	
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
	ng and presenting student theses. Individual exercises focus on creating and formatting texts, equations, charts, tables, preser		_
office suite.			
02UFEC	Introduction to Elementary Particle Physics	Z	2
The course provides	an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subjec	t are presented.	
18ZALG	Basics of Algorithmization	Z,ZK	4
	d to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of		exity.
16ZBAF1	Fundamentals of Human Biology, Anatomy and Physiology 1	Z,ZK	4
	systems, non-cellular and cellular organisms, prokaryotic and eukaryotic cell. Molecular and cell biology. Biopolymers. Molecular	1 1	
	eral human anatomy. Basics of medical terminology. Overview of tissues. Skeleton. Muscle anatomy in general. Digestive syste		
system and physiolog	y of respiration. Excretory and genital tract.		
16ZBAF2	Fundamentals of Human Biology, Anatomy and Physiology 2	Z,ZK	4
Heart and physiology	of cardiac activity. General anatomy of blood vessels, main arteries of the body, overview of veins and physiology of blood, bl	1 1	w of nerves.
CNS. Visual system a	and physiology of the visual system. Auditory and vestibular system and physiology of hearing and balance. Skin, endocrine gl	ands.	
02ZJFY	Fundamentals of Nuclear Physics	Z,ZK	5
This scientific field pr	esents formidable challenges both experimentally and theoretically, simply because we are dealing with the submicroscopic d	omain, where much	of our classical
intuition regarding the	e behaviour of objects fails us. The lecture is a basic introduction to very interesting regions of subatomic physics.		
18ZPRO	Basics of Programming	Z	4
This course is intended	ed mainly for students with little or no experience in programming. It familiarizes the students with the basic concepts in program	amming and with the	Python
programming language	ge.		

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	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
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 V ra Šlechtová	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 V ra Šlechtová	Z	2	0+2	Z	V
04XFZ1	French for Beginners Z1 V ra Šlechtová V ra Šlechtová (Gar.)	Z	2	0+4	L	V
04XFZ2	French for Beginners Z2 V ra Šlechtová V ra Šlechtová (Gar.)	Z	2	0+4	Z	V
04XFZ3	French for Beginners Z3 V ra Šlechtová V ra Šlechtová (Gar.)	Z	2	0+4	L	V
04XFZ4	French for Beginners Z4 V ra Šlechtová	Z	2	0+4	Z	V
04XFZ5	French for Beginners Z5 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 V ra Šlechtová	Z	2	0+2	Z	V
04XRP1	Russian for Advanced Students P1 V ra Šlechtová Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRP2	Russian for Advanced Students P2	Z	2	0+2	L	V
	Zhanna Isaeva Zhanna Isaeva (Gar.)					
04XRP3	Russian for Advanced Students P3 V ra Šlechtová	Z	2	0+2	Z	V

04XRZ2	Russian for Beginners Z2 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 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	L	V
04XSP3	Spanish for Advanced Students P3 V ra Šlechtová	Z	2	0+2	Z	V
04XSZ1	Spanish for Beginners Z1 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	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 Name=BS P jazyky zap

04XAM1 English for Intermediate Students M1

Z

The course is designed for students who have successfully completed the full secondary school English language course at least at the A2 level of the Common European Framework of Reference for Languages (CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into fundamentals of vocabulary and style typical of professional oral and written communication situations. Thus it covers topics related to the student's life and needs as well as topics of subtechnical interest. Attention is also paid to extending the knowledge of grammar issues used in EAP.

04XAM2 English for Intermediate Students M2

The AM2 course expects the student to have completed the AM1 course. It develops their skills for work with subtechnical texts, focusing also more on specific grammar, functions, and lexical items typical of ESP and EAP (e.g., definition, existence and classification of phenomena, object descriptions). Part of the course is also guided writing. If necessary, grammar revision is included.

04XAM3 English for Intermediate Students M3

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2

2

The course develops the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtechnical vocabulary and independent understanding of professional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communication and their appropriate Czech equivalents. The course also includes studying abstracts and rules for writing them as well as basic rules for preparing and giving a short presentation on a chosen topic related to the student's field.

04XAP1 English for Advanced Students P1

The course is designed for students who have successfully completed the full secondary school English language course (at least the B1 level of the Common European Framework of Reference for Languages - CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into the fundamentals of vocabulary, functions, grammar, and style typical of professional oral and written communication situations (fundamentals of terms in mathematics and physics, definitions, graph descriptions, etc). It also covers professional oral and written communication on topics related to the undergraduate's life and needs. It develops skills for free professional writing (writing a CV, letter of application, polite request). If necessary, revision of selected grammar topics is included.

04XAP2 English for Advanced Students P2

7

2

The AP2 course is based on AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of chosen branches of science. According to the students' needs it concentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typical rhetorical functions (e.g., various types of descriptions, and, if possible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading of linguistically more demanding materials. The course extends the student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focused on formal writing including the sentence and paragraph structure, linking, cohesion and coherence in texts.

04XAP3 English for Advanced Students P3

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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 includes training oral and written communication skills and functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summarizing, writing 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 language both in oral and written communication

04XCESZ1 Czech for Foreigners - Beginners 1

The course is designed for students on the English programme. Students will become acquainted with the main characteristics of Czech (phonetic and grammar features) and they will acquire basic language and speaking skills. The course focuses on pronounciation exercises, simple social phrases, and oral and written communication in the most common communicative situations. The course covers roughly lessons 1-5 in "Chcete mluvit esky" by H. Remediosová and E. echová. At the end of the course, the students will have reached A1 (CEFR) approximately.

04XCESZ2 Czech for Foreigners - Beginners 2

The language and communication competences acquired in CESZ1 are further developed. Students extend their knowledge of Czech declension and conjugation system and practise communication of frequent topics. The course covers roughly lessons 6-10 in "Chcete mluvit esky" by H. Remediosová and E. echová. At the end of the course, the students will have reached A2 (CEFR) approximately.

04XCESZ3 Czech for Foreigners - Beginners 3	Z	2
The course further develops the language and communication competences acquired in the XCESZ1 and XCESZ2 courses. The teaching focuses	• .	
correct pronunciation, deepening grammar, including grammar practice, and introducing Czech culture. Students are asked to produce simple texts of dialogue. They also practise understanding texts in terms of main ideas or looking for specific details in texts. The course covers roughly lessons		
04XCESM1 Czech for Foreigners - Intermediate 1	Z	2
The course is focused on correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending	the student's vocal	_
social situations.		
04XCESM2 Czech for Foreigners - Intermediate 2	Z	2
The course develops the topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and r	eading skills and tra	ains the student
in understanding common abbreviations, abbreviated words, and mathematical terms and formulas. 04XCESM3 Czech for Foreigners - Intermediate 3	Z	2
The last course revises morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is esp		
lexicology and on developing the student's writing skills.		
04XCESP1 Czech for Foreign Students - Advanced 1	Z	2
The prerequisite of the course is very good knowledge of the Czech language, i.e., communicative competences at least at level B2 of the Common	•	
It is focused partly on revision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of basics of functional style of engineering and professional communication, both in spoken and written form. The topics include University Studies are		•
includes communication with teachers and faculty administrators.	ia Stadent Lile. Wil	tteri practice
04XCESP2	Z	2
This course extends the student's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with technical	and specialist texts	s placing greater
emphasis on individual work.		
04XCESP3 Czech for Foreigners - Advanced 3	Z	2
The course develops the student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presents	tion, and, finally, pre	esentation of the
student's project. Writing skills necessary for professional communication are trained. 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 I		
will be able to communicate in social interaction and in academic, scientific and professional environment. They will be able to use the language to		
information and to solve problems. FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises,	systemizes and exp	oands language
skills gained in previous study. The following topics are covered: University studies in our country and in France, writing of transactional letters, CV, p		
to an advert, French culture and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts, wo		
04XFM2 French for Intermediate Students M2 Course FM2 builds on FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science	Z Z	2 pical for technical
and scientific language (passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French s		
scientists, artists and architects. Description of an object, device, shapes, dimensions, material.		
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	·	
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		
and one's own knowledge/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesion and		Treneria di deces
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		
be able to communicate in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit ge		
to solve problems. FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topics are 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. To		
internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation.	,	,
04XFP2 French for Advanced Students P2	Z	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	on given topics. Fe	atures typical 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 skill - translation of shorter texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally of		-
topic. It is a creative work compiled from 3 French sources. Preparation of several set topics for oral examination.		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
04XFZ1 French for Beginners Z1	Z	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	=	•
The course includes French for specific / technical communication and reading of popular science and scientific texts. FZ1 The objective is to be all		- 1
level, actively using the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Prav (Francouzština pro za áte ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4: introduction		-
giving the directions, simple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronunc	• •	
04XFZ2 French for Beginners Z2	Z	2
The course is linking up with FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 c	f the textbook: Prav	rda - Pravdová :
French for Beginners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agree	=	
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral com How does the machine work? A few expressions concerning the study. Name of University and Faculty.	nunication. Specific	copies covered:
04XFZ3 French for Beginners Z3	Z	2
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		- 1
pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.		
04XFZ4 French for Beginners Z4	Z	2
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 l		
Students of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sh		
country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.	5,	,

04XFZ5	French for Beginners Z5	Z	2
•	FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topic. The red by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other materials.		
•	h science and technology, information about France. Grammar is systemized and complemented with syntax (subordinate cl		
subjunctive clauses, ger		, ,,	, ,
04XNM2	German for Intermediate Students M2	Z	2
The course introduces o	ther more complex grammatical structures and their application in communication based on technical texts, such as the relation	n between techno	logy and society,
-	ng of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and		
•	mation and reading aloud, and appropriate language for various purposes in oral and written communication. The course systen or professional discourse (participles, relative clauses).	natically revises of	her grammatical
04XNM1	German for Intermediate Students M1	Z	2
	rse is to level off the students' skills in the German language. The course focuses on revision of more difficult phenomena and	1	
-	es (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Reput		
environmental issues to	gether with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physicist	ts, and the fundan	nentals of IT
terminology. It develops	communication on related topics and is aimed at correct pronunciation, grammatical correctness and understandability.		
04XNM3	German for Intermediate Students M3	Z	2
	ther more complex grammatical structures and their application in communication based on technical texts, such as the relation		
•	ng of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and mation and reading aloud, and appropriate language for various purposes in oral and written communication. The course system	٠,	
•	or professional discourse (participles, relative clauses).	nationly revises of	anci grammaticai
04XNP1	German for Advanced Students P1	Z	2
This course requires go	od grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be le	velled off at the be	eginning of the
course. The course is th	en focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for	detail). It revises	and develops
-	ructures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on	practical everyday	communication,
i.e., telephoning.	Occurred for Advanced Ottobarte DO	7	
04XNP2	German for Advanced Students P2 students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extend	Z	2
•	duces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and	0 0	
· -	/, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indirect speech).	- p	,
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 var	ariety of less com	mon situations
	accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the visual state of the complaints of the complaints of the complaints.		
·	ng, the environment, computer science, and car technology, will also be extended. Only authentic professional texts are used rocess information gained from their reading of complex and difficult texts and present it to the class in a simplified oral form. The	-	
·		ne course also inc	iddes translation
bractice to and from Ge	rman.		
practice to and from Ge 04XRM1		Z	2
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04XRZ4 Russian for Beginners Z4 The course is based on RZ3. It improves and expands the knowledge of general language in all four skills (reading and understanding longer texts with a certain percentage of unfamiliar words, oral communication in everyday situations, writing longer texts). Students are trained to use grammar structures effectively (e.g., irregular verbs, differences in verb patterns from Czech, modality, imperatives, conditionals). They practice and develop communication skills for everyday situations (food, travelling, free time), and practice oral and written communication on more specific topics (environment, addictions, the green movement). They become acquainted with various geographical data (e.g., Siberia), learn how to fill in forms, look up the information from the timetable, learn about Russian holidays and typical meals. Russian for Beginners Z5 The course expects the student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understanding, extracting and summarizing information from a specialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Communication skills are trained on everyday topics. Studying grammar is based on professional and technical texts and only includes items typically used in professional communication (verbal adjectives, participles, passive voice). Students develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, polite request, etc.) 04XSM1 Spanish for Intermediate Students M1 The course is designed for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-semester course develops standard vocabulary and pays attention to further grammar topics (e.g., perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the imperative, and subjunctive), to written and oral communication on a given everyday or easy subtechnical topic, for which the students are trained by reading texts or listening to them. 04XSM2 Spanish for Intermediate Students M3 The course develops the students' knowledge from the previous course (SM1). Students are gradually acquainted with fundamentals of Spanish for specific purposes in order to be able to work with specialized texts on the Internet. 04XSM3 Spanish for Intermediate Students M3 The course books are supplemented with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of academic style. They will be competent enough to use the Internet in Spanish and search for information of their specialization or field of interest. Students will use the information to write short articles and summaries. The final part of the programme, general Spanish course based on course books, covers presentations and, finally, a written and oral examination. 04XSP1 Spanish for Advanced Students P1 Ζ 2 Course concentrates on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communication. Course prerequisites: level B2 of CEFR 04XSP2 Spanish for Advanced Students P2 Course SP2 is the second part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and syntax and focuses on independent written communication. 04XSP3 Spanish for Advanced Students P3 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 written communication based on what students will need in their career. 04XSZ1 Spanish for Beginners Z1 Ζ 2 Course SZ1 is the first stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundamental grammar structures and will be able to communicate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Spanish and will develop it. Spanish for Beginners Students Z2 04XSZ2 Course SZ2 is based on course SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structures and lexis will be chosen so as to enable them to understand short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries and others such as the Czech Republic. Realia of Spanish-speaking countries are also included. Spanish for Beginners Z3 The course is based on course SZ2, and develops the student's vocabulary and grammar structure. The course covers realia (history and culture) of the Spanish-speaking countries, mainly of Spain. It pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). It includes written and oral communication on a given general topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z4 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 Spanish speaking countries, mainly of Spain. It pays attention to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the imperative, and subjunctive), to written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them. Z 04XSZ5 Spanish for Beginners Z5 2

The course books are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish for specific purposes. In its final part, the general Spanish course based on the course book will end with presentations and, finally, a written and oral examination.

List of courses of this pass:

Code	Name of the course	Completion	Credits
00EKOT	Economy in Technology	Z	1
	The course introduces the basics of micro- and macroeconomics.	'	·
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
	Review of basics of high school mathematics.	'	
00PT	Preparatory Week	Z	2
00RET	Rhetoric	Z	1
The course is focu	sed on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the	composition of pub	olic 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 an	integral part of the	e course.
00UPRA	Introduction to Law	Z	1
00UPSY	Introduction to Psychology	Z	1

01MAT1	Mathematics 1	Z	4
The course is deve	ted to the study of the basics of calculus of one variable. It includes an introduction to differential and integral calculus, with particula	ir emphasis on app	olications in
01MAT2	practical problems. Mathematics 2	Z	4
	h is the continuation of Mathematics 1, is devoted to the integration techniques, improper Riemann integral, introduction to parametri	_	1
	coordinates), the basics of sequences and infinite series, and finally to the Taylor and power series and their applications.		Γ
01MAT3	Mathematics 3 The subject summarises the most important notions and theorems related to the study of finite-dimensional vector spaces	Z,ZK 	4
01MAT4	Mathematics 4 -linear differential equations of the first order. Linear differential equations of higher order with constant coefficients. Multivariable cal	Z,ZK	4
01MATZ1	Mathematics, Examination 1	ZK	2
01MATZ2	Mathematics, Examination 2	ZK	2
01PRSTB	Probability and Statistics B	KZ	4
	e of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition and one as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit the	-	_
	e basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testin		and proved.
02DEF1	History of Physics 1	Z	2
	ace in the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural philo	•	•
Helenistic period,	Archimed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galileo, I as experimental science. Newton and his work.	Huygens. The birth	of physics
02DEF2	History of Physics 2	Z	2
Development of	f classical mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. E	, ,	netism -
	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 er standard model. The concept of Nature and Universe of today.	lergy, Elementary	particles,
02ELMA	Electricity and Magnetism	Z,ZK	6
	bulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectrics. Electric current and circuits, conductors and dielectrics.	· · · · · · · · · · · · · · · · · · ·	he relativity
	Electrodynamic forces,magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, ac currents. Electromagnetic waves,N		
02KF State description	Quantum Physics , wave function, postulates of quantum mechanics, Born 's statistical interpretation, expectation values, Schrödinger equation, Heise	Z,ZK	nrinciple
Ciaio accompilo.	quantization of angular momentum, solution of simple systems, hydrogen atom.	moong uncontainty	po.p.o,
02MECH	Mechanics	Z	4
	ics, physical quantities and units. Particle kinematics, basic types of motion and theirsuperposition. Particle dynamics, one-dimension	•	
in central force fi	eld, forces innoninertial reference frames. Mechanics of system of free particles, two-body problem, collisions. Mechanics ofrigid bod continuum mechanics, elasticity, hydrodynamics. Sound.	y, rotation. Fundar	nentals of
02MECHZ	Mechanics - Examination	ZK	2
	The content of the subject is the examination according to the plan of studies.	1	1
02PRAK	Experimental Laboratory	KZ	4
	primarily for students who study branch Nuclear Chemistry engineering, or practically oriented bachelor's specializations of branch I students interested in the other specializations. During Experimental laboratory, students learn how to prepare for experiments (inclu	_	-
•	of the measurement (acquire of different experimental procedures and routines), will teach writing the records of measurement, process	•	**
•	At the same time practically extend the knowledge gained in lectures on physics.		
02UFEC	Introduction to Elementary Particle Physics	Z	_ 2
02ZJFY	se provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su		
	Fundamentals of Nuclear Physics presents formidable challenges both experimentally and theoretically, simply because we are dealing with the submicroscopic domai	Z,ZK n. where much of o	5 our classical
	intuition regarding the behaviour of objects fails us. The lecture is a basic introduction to very interesting regions of subatomic pl		
04AKS	English Conversation	Z	1
	velop the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral communica r various communication situations and will master their communication strategy. They will also practise their listening skills in order t		-
	r various communication stituations and with master their communication strategy. They will also practise their ilsterling skills in order to iscussions. The student will be trained to express their ideas clearly and according to current English usage, and become a more cor		participate
04XAM1	English for Intermediate Students M1	Z	2
_	aned 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 and written communication situations. Thus it covers topics related to the student's life and needs as well as topics of subtechnical int		
professional oral e	extending the knowledge of grammar issues used in EAP.	crest. Attention is t	also pala 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	· -	
and lexical items ty	oical of ESP and EAP (e.g., definition, existence and classification of phenomena, object descriptions). Part of the course is also guided revision is included.	i writing. if necessa	ry, grammar
04XAM3	English for Intermediate Students M3	Z	2
	s the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtechnic	-	-
_	professional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communication curse also includes studying abstracts and rules for writing them as well as basic rules for preparing and giving a short presentation o		
oquivalents. The CC	student's field.	п а оповен юрю н	Jacou to the
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 E		2
04XAP1 The course is desi	English for Advanced Students P1 gned for students who have successfully completed the full secondary school English language course (at least the B1 level of the C	Z ommon European	2 Framework
	Languages - CEER). It provides an introduction into English for Specific and Academic Purposes (ESP EAP), i.e., into the fundamen	•	

grammar, and style typical of professional oral and written communication situations (fundamentals of terms in mathematics and physics, definitions, graph descriptions, etc). It also covers professional oral and written communication on topics related to the undergraduate's life and needs. It develops skills for free professional writing (writing a CV, letter of application, polite request). If necessary, revision of selected grammar topics is included. 04XAP2 English for Advanced Students P2 The AP2 course is based on AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of chosen branches of science. According to the students' needs it concentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typical rhetorical functions (e.g., various types of descriptions, and, if possible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading of linguistically more demanding materials. The course extends the student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focused on formal writing including the sentence and paragraph structure, linking, cohesion and coherence in texts. 04XAP3 English for Advanced Students P3 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 includes training oral and written communication skills and functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summarizing, writing 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 language both in oral and written communication. 04XAPZK English for Advanced Students Examination 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 to apply their knowledge 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 the student's field of study. 04XCESM1 Czech for Foreigners - Intermediate 1 2 The course is focused on correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending the student's vocabulary for various social situations. 04XCESM2 Czech for Foreigners - Intermediate 2 Ζ 2 The course develops the topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and reading skills and trains the student in understanding common abbreviations, abbreviated words, and mathematical terms and formulas. 04XCESM3 Czech for Foreigners - Intermediate 3 Ζ 2 The last course revises morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is especially focused on stylistics and lexicology and on developing the student's writing skills. 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 CESM1,2,3 courses and can only be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher. 04XCESP1 Czech for Foreign Students - Advanced 1 The prerequisite of the course is very good knowledge of the Czech language, i.e., communicative competences at least at level B2 of the Common European Framework of Reference. It is focused partly on revision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of science. Students are taught the basics of functional style of engineering and professional communication, both in spoken and written form. The topics include University Studies and Student Life. Written practice includes communication with teachers and faculty administrators. 04XCESP2 Czech for Foreigners - Advanced 2 Ζ 2 This course extends the student's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with technical and specialist texts placing greater emphasis on individual work. 04XCESP3 Czech for Foreigners - Advanced 3 2 The course develops the student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation, and, finally, presentation of the student's project. Writing skills necessary for professional communication are trained. 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 CESP1,2,3 courses and can only be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher. Czech for Foreigners - Beginners 1 The course is designed for students on the English programme. Students will become acquainted with the main characteristics of Czech (phonetic and grammar features) and they will acquire basic language and speaking skills. The course focuses on pronounciation exercises, simple social phrases, and oral and written communication in the most common communicative situations. The course covers roughly lessons 1-5 in "Chcete mluvit esky" by H. Remediosová and E. echová. At the end of the course, the students will have reached A1 (CEFR) approximately. 04XCFS72 Czech for Foreigners - Beginners 2 The language and communication competences acquired in CESZ1 are further developed. Students extend their knowledge of Czech declension and conjugation system and practise communication of frequent topics. The course covers roughly lessons 6-10 in "Chcete mluvit esky" by H. Remediosová and E. echová. At the end of the course, the students will have reached A2 (CEFR) approximately. Czech for Foreigners - Beginners 3 04XCFS73 The course further develops the language and communication competences acquired in the XCESZ1 and XCESZ2 courses. The teaching focuses on building up basic vocabulary, correct pronunciation, deepening grammar, including grammar practice, and introducing Czech culture. Students are asked to produce simple texts and they practise frequent types of dialogue. They also practise understanding texts in terms of main ideas or looking for specific details in texts. The course covers roughly lessons 5-7 in " eština expres 1". 04XCESZZK Czech for Foreigners – Beginners - Examination 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 04XCESZ1,2,3 courses and can 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 7 2 French - intermediate FM The objective of this three-semester course is to improve and further develop communication in the French language in both written and oral form. Students will be able to communicate in social interaction and in academic, scientific and professional environment. They will be able to use the language to transmit general and technical information and to solve problems. FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises, systemizes and expands language skills gained in previous study. The following topics are covered: University studies in our country and in France, writing of transactional letters, CV, personal statement, request, answer to an advert, French culture and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts, work based on these texts. French for Intermediate Students M2 Course FM2 builds on FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science texts, features typical for technical and scientific language (passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French science and technology, French scientists, artists and architects. Description of an object, device, shapes, dimensions, material. French for Intermediate Students M3 The course is focused on improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures (subordinate and infinitive clauses, participle structures, compound tenses). Text summary. -Students prepare a written paper which will be delivered in form of an oral presentation in-class. The paper is linked to the

	uture 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/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesi	-	nch articles
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	f FM1-FM3. The ex	amination
	consists of a written and oral part and is organized according to Examination Instructions, a document available on the web	O.	
04XFP1	French for Advanced Students P1	Z	2
FP advanced cour	rse The objective of this three-semester course is to improve and further develop communication in the French language in both writte	en and oral form. Si	tudents will
be able to commur	nicate in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit general	and technical infor	mation and
· ·	FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topics are repeated	-	
-	nparfait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of transactional le		
request, answer to	an advert, environmental issues, success of French science and technology, chosen topics from French regional culture, Paris. Topics of the control of the c	-	athematics,
0.43/550	internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation). 	
04XFP2	French for Advanced Students P2		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 on gi	iven topics. Feature	es typical of
0.4)/ED0	technical and scientific communication are stressed (passive voice, nominalization, word formation).	-	
04XFP3	French for Advanded Students P3	Z	2
	sed on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in enc of shorter texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally covers	-	
Skiii - translation c	topic. It is a creative work compiled from 3 French sources. Preparation of several set topics for oral examination.	s a technical /appii	eu science
04XFPZK	French for Advanced Students Examination	ZK	4
	n program is ended with an examination covering the contents of FP1-FP3. The examination consists of a written and/or an oral part a		
THE WHOLE I TEHOL	Examination Instructions, a document available on the web. Assessment of the presentation is included into the examination gra	•	cording to
04XFZ1	French for Beginners Z1	Z	2
	reflection beginners 21 ers 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 soci		
_	les French for specific / technical communication and reading of popular science and scientific texts. FZ1 The objective is to be able to		
	using the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Pravd		- 1
=	za áte ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4: introductions, pe		- 1
giving the	directions, simple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronu	nciation and gramn	nar.
04XFZ2	French for Beginners Z2	Z	2
The course is linki	ng up with FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of the	textbook: Pravda -	Pravdová :
French for Begir	nners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreeme	ent - disagreement,	apology,
thanking, travelling	, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral communic	cation. Specific topi	cs covered:
	How does the machine work? A few expressions concerning the study. Name of University and Faculty.		
04XFZ3	French for Beginners Z3	Z	2
	upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda -		- 1
Topics, functions	s and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for info	ormation and loud	as part of
			ao part or
	pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.		
04XFZ4	French for Beginners Z4	Z	2
The course builds	French for Beginners Z4 sup on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The con	Z tents is roughly co	2 vered with
The course builds lessons 19 - 23 of t	French for Beginners Z4 sup on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The conthe textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lecture	Z ntents is roughly co e notes French for E	2 vered with Engineering
The course builds lessons 19 - 23 of t	French for Beginners Z4 sup on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The conhe textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lecture. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shopping the course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shopping the course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shopping the course covers generals and specific topics:	Z ntents is roughly co e notes French for B ing, weather, unive	2 vered with Engineering
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The course builds lessons 19 - 23 of t Students of FJFI.	French for Beginners Z4 s up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The conhetextbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lecture. The course covers generals and specific topics: health-illness, sport, free time, environment, study, travelling in France, Paris, shoppic country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet French for Beginners Z5	Z Intents is roughly co e notes French for B ing, weather, unive et. Z	2 vered with Engineering rsity in our
The course builds lessons 19 - 23 of t Students of FJFI. 04XFZ5 All four skills acqui	French for Beginners Z4 s up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The conhet textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lecture. The course covers generals and specific topics: health-illness, sport, free time, environment, study, travelling in France, Paris, shoppic country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet French for Beginners Z5 red in FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topic. They prepare to the communication and reading skills are practiced. The conhect	Z Intents is roughly co e notes French for B ing, weather, unive et. Z resent it orally in the	2 vered with Engineering rsity in our 2 e class. The
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The course builds lessons 19 - 23 of the Students of FJFI. 04XFZ5 All four skills acquing general contents notes, success 04XFZZK The content is the content is the modes of the word formation environmental is: 04XNM2 The course introdue the world at the legractise reading for the world at the legractise reading for modes of the world at the legractise reading for the world at the legractic reading for the world at the legractise reading for the world at the legractise reading for the world at the legractic reading for the world at the legrac	French for Beginners Z4 s up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The core textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lecture. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shoppic country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, interns French for Beginners Z5 red in FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topic. They pris covered by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other materials. To of French science and technology, information about France. Grammar is systemized and complemented with syntax (subordinate classubjunctive clauses, gerund, passive. French for Beginners Examination examination as given by the study plan. The course is terminated with an examination consisting of oral and written part. The examination of revamination for examination. Its content covers the levels FZ1 - FZ5. German for Intermediate Students M1 e course is to level off the students' skills in the German language. The course focuses on revision of more difficult phenomena and st no processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Repusues together with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physicists terminology. It develops communication on related topics and is aimed at correct pronunciation, grammatical correctness and unders German for Intermediate Students M2 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, linguisticall	tents is roughly coeenotes French for Bing, weather, universit. Z resent it orally in the pics: on physics from the pics: on physics: on	2 e class. The om lecture unctions, 3 e document 2 assive) and current ntals of IT 2 and society, Students grammatical 4 arts - written information 2 ning of the

more difficult gramn	nar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on practice., telephoning.	ctical everyday com	munication,
04XNP2	German for Advanced Students P2	Z	2
	is 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 pro-	_	
bo	oth written and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indi	rect speech).	
04XNP3	German for Advanced Students P3	Z	2
The course consis	ets of 3 main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a varie	ety of less common	situations
(traffic problems ar	nd car accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the voca	abulary range in fiel	lds such as
nuclear power en	gineering, the environment, computer science, and car technology, will also be extended. Only authentic professional texts are used.	By means of a pre-	sentation,
students are trained	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	ourse also includes	s translation
	practice to and from German.		
04XNPZK	German for Advanced Students Examination	ZK	4
The course conten	t is the examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination c	onsisting of two par	rts - written
and oral, which o	over the courses NP1 - NP3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungraded	l assessment. More	e detailed
	information is to be obtained from the teacher.		
04XRM1	Russian for Intermediate Students M1	Z	2
	ned for students with previous knowledge of Russian from secondary schools. Students are supposed to know the Russian alphabet (both printed and ha	andwritten),
basic vocabulary fo	r communication in everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday need, asking	the way and giving	directions),
	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 the		_
04XRM3	Russian for Intermediate Students M3	Z	2
		1	
The course develop	os 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 in the timetable.	wer, for flair of the ti	ille allotteu
0.4\/\DN.47\/		71/	4
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	-	
	ents are eligible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given inst		
04XRP1	Russian for Advanced Students P1	Z	2
The entrance req	uirement for the course is to achieve the B1 CEFR level. The objective of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures, practice of the course is revision of standard language structures.	ticing more difficult	grammar
	structures, understanding the fundamentals of technical language and training writing skills.		
04XRP2	Russian for Advanced Students P2	Z	2
The course is bas	ed on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives, ve	rb aspects, specific	c syntactic
	structures). Stress is put on independent oral and written communication.		
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		•
these skills. Further	er study is aimed at professional and technical skills (reading technical literature according to the students´ specialization, oral and w	ritten interpretation)). Students
develop their subte	chnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write acc	urately and with cor	nfidence on
	technical topics.	,	
04XRPZK	Russian for Advanced Students Examination	ZK	4
	it is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowlec	-	
- RP3. Stud	ents are eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instr	uctions by the teac	her.
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 with	h mastering
the Russian alphab	pet (for both reading and writing skills) and fundamentals of grammar necessary for everyday communication (listening and speaking). Students will be a	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	chnical texts. Stud	ents will be
able to communica	te using short sentences and appropriate structures, and read aloud with confidence a short text without marked stress. They will also	o develop their voca	abulary and
	master further grammatical structures. They will have mastered with confidence the Russian alphabet and will be able to use it in	writing.	
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	various forms of re	
and listening) an	d introduces new grammar. Students will be trained to distinguish intonation patterns while listening to spoken language. They will be	able to respond so	as to 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	1	
	unication 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.	, ,,	
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. understandin		
· ·	specialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Comr	-	- 1
	specialized text) and speaking, and to a certain extent, whiling about the professional information obtained by reading the texts. Some		
	re voice). Students develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, po		pi00,
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		
	ents are eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instr	-	
0. 0.00	5		-

04XSM1			
	Spanish for Intermediate Students M1	Z	2
	igned for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-semester		
	ays attention to further grammar topics (e.g., perífrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative		
	to written and oral communication on a given everyday or easy subtechnical topic, for which the students are trained by reading text		1
04XSM2	Spanish for Intermediate Students M3	.,, Z	2
i ne course develop	ps the students' knowledge from the previous course (SM1). Students are gradually acquainted with fundamentals of Spanish for spe able to work with specialized texts on the Internet.	ecific purposes in	order to b
0476M3	·	Z	2
04XSM3	Spanish for Intermediate Students M3		1
	ire supplemented with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of academic Internet in Spanish and search for information of their specialization or field of interest. Students will use the information to write short		
	final part of the programme, general Spanish course based on course books, covers presentations and, finally, a written and oral exa		
04XSMZK	Spanish for Intermediate Students Examination	ZK	4
	is the examination as given by the study plan. SMZK examination consists of two parts - written and oral; to be eligible for the written parts - written and oral; to be eligible for the written parts - written and oral; to be eligible for the written parts - written and oral; to be eligible for the written parts - written and oral; to be eligible for the written parts - written and oral; to be eligible for the written parts - written and oral; to be eligible for the written parts - written and oral; to be eligible for the written parts - written and oral; to be eligible for the written parts - written and oral; to be eligible for the written parts - written and oral; to be eligible for the written and oral; to be eligible fo		1
	non-graded assessment for course SM3.Oral examination follows the written part.		
04XSP1	Spanish for Advanced Students P1	Z	2
Course concentrate	es on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communication. C	Course prerequis	ites: level
	of CEFR.		_
04XSP2	Spanish for Advanced Students P2	Z	2
course SP2 is the s	second part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and syntax	and focuses on i	independe
	written communication.		
04XSP3	Spanish for Advanced Students P3	Z	2
ourse SP3 is the fi	inal part of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is focus	sed on written cor	mmunicat
- 1) (0.5.5)	based on what students will need in their career.		
04XSPZK	Spanish for Advanced Students Examination	ZK	4
ne course content	is the examination as given by the study plan. Examination SPZK consists of two parts, namely oral and written. The prerequisite for ac passed the written test. Examination content is based on syllabi of courses SP1, SP2, and SP3 or on an individual study plan of the		art is nav
047624			1 2
04XSZ1	Spanish for Beginners Z1 irst stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundamenta	Z	2
	communicate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Spanis		
04XSZ2	Spanish for Beginners Students Z2	Z	2
	d on course SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structures and lexis v	_	-
	short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries and others		
	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	-	_
ne course is based		Spanish-speakir	ng countri
	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative).		-
			-
	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). communication on a given general topic, for which the student is trained by reading texts or listening to them.		-
mainly of Spain. It	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative).	It includes writte	and ora
mainly of Spain. It 04XSZ4 The course is base	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). communication on a given general topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z4	It includes writte Z speaking countrie	and ora
04XSZ4 The course is base Spain. It pays atten	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). communication on a given general topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z4 ed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish s	It includes writte Z speaking countries imperative, and s	and ora
mainly of Spain. It 04XSZ4 The course is base Spain. It pays atten	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). communication on a given general topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z4 ed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish's intion to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the intervence of the culture and social customs of the spanish social customs.	It includes writte Z speaking countries imperative, and s	and ora
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04XSZ4 The course is base Spain. It pays atten to 04XSZ5	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). communication on a given general topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z4 ed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish social to to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the into written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening Spanish for Beginners Z5	It includes writte Z speaking countries imperative, and s g to them. Z specific purpose	2 es, mainly subjunctive
04XSZ4 The course is base Spain. It pays atten to 04XSZ5	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). communication on a given general topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z4 ed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish solution to further grammar topics (perifrasis verbales, future imperfecto, direct object and indirect object pronouns, negative form of the ito written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening Spanish for Beginners Z5 are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish for	It includes writte Z speaking countries imperative, and s g to them. Z specific purpose	2 es, mainly subjunctive
mainly of Spain. It 04XSZ4 The course is base Spain. It pays attent 04XSZ5 The course books attention of the course books at	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). communication on a given general topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z4 ed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish so the formal to further grammar topics (perifrasis verbales, future imperfecto, direct object and indirect object pronouns, negative form of the into written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening Spanish for Beginners Z5 are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish for part, the general Spanish course based on the course book will end with presentations and, finally, a written and oral examination.	It includes writte Z speaking countrie imperative, and s g to them. Z specific purpose ion. ZK	2 es, mainly subjunctive 2 es. In its fill 3
mainly of Spain. It 04XSZ4 The course is base Spain. It pays attent 04XSZ5 The course books attention of the course books at	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). communication on a given general topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z4 ed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish so the formal to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the ite to written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening Spanish for Beginners Z5 are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish for part, the general Spanish course based on the course book will end with presentations and, finally, a written and oral examination.	It includes writte Z speaking countrie imperative, and s g to them. Z specific purpose ion. ZK amination only if h	2 es, mainly subjunctive 2 es. In its fill 3
mainly of Spain. It 04XSZ4 The course is base Spain. It pays attent 04XSZ5 The course books attention of the course books at	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). communication on a given general topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z4 ed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish so the formal to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the idea to written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening Spanish for Beginners Z5 are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish for part, the general Spanish course based on the course book will end with presentations and, finally, a written and oral examination as given by the study plan. Examination consists of two parts - written and oral. Student can register for oral examination to the student of the presentation or the student of two parts - written and oral. Student can register for oral examination to the student is trained by reading texts or listening to the student student is trained by reading texts or listening to the student student is trained by reading texts or listening to the student student is trained by reading texts or listening to the student stude	It includes writte Z speaking countrie imperative, and s g to them. Z specific purpose ion. ZK	2 es, mainly subjunctive 2 es. In its fil
mainly of Spain. It 04XSZ4 The course is base Spain. It pays attent to 04XSZ5 The course books at 04XSZZK The course conter 12NMEA	t pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). communication on a given general topic, for which the student is trained by reading texts or listening to them. Spanish for Beginners Z4 ed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish so the formal to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the into written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to written and oral communication on a given general or subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish for part, the general Spanish course based on the course book will end with presentations and, finally, a written and oral examination or spanish for Beginners Examination Spanish for Beginners Examination In is the examination as given by the study plan. Examination consists of two parts - written and oral. Student can register for oral examination test.	It includes writte Z speaking countrie imperative, and s g to them. Z specific purpose ion. ZK amination only if h	2 es, mainly subjunctive 2 es. In its fin 3 ne/she ha
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15APLA	Laboratory Training in Analytical Chemistry	Z	4
	atory exercises is oriented to qualitative analysis of cations and anions using wet chemistry procedures. Quantitative determination of	_	
·	titration procedures follows. In the last part of exercises students become acquainted with basic instrumental methods of chemical		
15BPCH1	Bachelor Thesis 1	Z	5
'	Background research and results of research		1
15BPCH2	Bachelor Thesis 2	Z	10
'	Background research and results of research		
15CHEM	Analytical Calculations and Chemometry Principals	ZK	2
Lecture deals with	basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basic	c data distribution	s, one- an
wo-tailed significa	nce testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, sem	inar part consists	of equation
solving, titratio	on stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in post-	otentiometry, cou	ometry,
	spectrophotometry and separation methods, solving of complex forming equilibria.		
15DEIZ	Practical Exercises in Detection of Ionizing Radiation	KZ	3
his laboratory exe	rcise is a practical introduction to fundamental principles of detection of ionizing radiation (IR), interaction of IR with matter, and function	nality and settings	of particu
45DI7	types of detectors and detection systems.	71/	
15DIZ	Detection of Ionizing Radiation course deals with the definitions, properties, and application of the detectors of ionising radiation (IR). In the second part, a detailed	ZK	2
•	tors, detectors for high energy IR, semiconductor detectors, and integrating solid state detectors is given. The last part of the course	-	
Scirilliation detec	statistical treatment of data, and limits of detection.	reviews the philici	pies oi trie
15EXK1	Excursion 1	Z	1
ISEARI	The excursion aims at mediating the students the acquaintance with various radiochemical and radiation methods used in practical and radiation methods are practical and radiation methods and radiation methods are practical and radiation methods are pract	-	'
15FCHN1	Physical Chemistry 1	Z,ZK	5
	rt is devoted to the recapitulation of the thermodynamic systems and thermodynamic properties of ideal and real gases. Next chapters a	•	
	rmodynamics and their applications. Last but not least, attention is devoted also to the thermodynamic, phase and chemical equilibrium		
	of nonequilibrium thermodynamics.		
15FCHN2	Physical Chemistry 2	Z,ZK	5
	Chemistry 2 focuses on thermodynamics of solutions, particularly on electolytes. Basics of colloidal chemistry extend the theory of sol		_
15INSN1	Instrumental Methods 1	ZK	3
	view of selected modern instrumental methods of research and analysis, theoretical fundamentals, instrumental technique, utilization		1
15JACH1	Nuclear Chemistry 1	Z.ZK	3
	pry of nuclear chemistry and radiochemistry, nuclear entities, nuclear reactions, natural and artificial radioactivity. Kinetics of nuclear r	,	1
•	cay. Energetics of nuclear reactions, mass and energy balance of nuclei and energy of alpha, beta decay, gamma deexcitation in nucl		
formed in a nucleon	Nuclear Chemistry 2 s are discussed in detail in the course: Nuclear reactions yield, reaction cross section, excitation function. Fission reaction, spontaneo clear reaction, local temperature, atomic recoil and recoil energy, recoil of atom bound in a molecule, hot atom chemistry, retention, S Practical Training in Laboratory Technique hasic laboratory training and is designed for students of "Chemistry in Science" "Teaching of Chemistry" and "Biology". The course is	zilard Chalmers ı Z	eaction.
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15RATEC	Practical Exercises in Radiochemical Techniques	KZ	2			
The exercise is	oriented on the training of students in laboratory praxis and work with open radioactive sources through basic lab operations such a	s pipetting, extract	ion and			
chromatography techniques. Training is also focused on decontamination of surfaces and clean-up of the accident, work behind shielding and in a glove box.						
15SBP	Bachelor Thesis Seminar	Z	1			
Tr	ne aim is to prepare students to write and defend bachelor thesis, including work with information sources and to acquire basic prese	ntation skills.				
15TOXA	Toxicology	ZK	2			
Overview of basic toxicology, containing general and special toxicology, toxicological data, legislation and basic aspects of chemical compounds handling. In general toxicology aspects						
of toxicity, metabolism, biodistribution and elimination has been described, as well as toxicological effects, evaluation of toxicity, indexes, and biological tests. In special toxicology part						
selected group of organic compounds, inorganic compounds, natural compounds and warfare were described from toxicity behaviour. In legislation part REACH, international and						
	national regulation is described.					
15ZBCHA	Fundamentals of Biochemistry	ZK	2			
The course covers the whole field of a general biochemistry as well as basic biochemical pathways. The special attention is paid to make students understand interconnection of cell processes essential for the life.						
16EPAM	Exact Methods in Research of Historic Monuments	ZK	2			
Aims and methods o	of historic monument investigations, methods of age determination (radiocarbon, thermoluminescence and related methods, further radiation	on methods, dendro	chronology,			
archaeomagnetism), analytical methods for determination of origin and production technologies of artefacts (activation analysis, X-ray fluorescence analysis and other methods), photogrammetry.						
16ZBAF1	Fundamentals of Human Biology, Anatomy and Physiology 1	Z,ZK	4			
Organization of liv	ring systems, non-cellular and cellular organisms, prokaryotic and eukaryotic cell. Molecular and cell biology. Biopolymers. Molecular	genetics. Cell cycl	e, mitosis,			
their regulation. Ge	eneral human anatomy. Basics of medical terminology. Overview of tissues. Skeleton. Muscle anatomy in general. Digestive system a	nd its physiology. F	Respiratory			
system and physiology of respiration. Excretory and genital tract.						
16ZBAF2	Fundamentals of Human Biology, Anatomy and Physiology 2	Z,ZK	4			
Heart and physiology of cardiac activity. General anatomy of blood vessels, main arteries of the body, overview of veins and physiology of blood, blood clotting. Overview of nerves.						
	s. Visual system and physiology of the visual system. Auditory and vestibular system and physiology of hearing and balance. Skin, en					
16ZDOZ1	Fundamentals of Radiation Dosimetry 1	Z,ZK	4			
History, development, and objectives of dosimetry. Quantities and units used for description of sources, fields, interactions of ionizing radiation, ionizations, energy transfer and						
	absorption. Fundamentals of the effects of ionizing radiation.					
17BPROV	Safe operation of nuclear facilities	KZ	2			
	The aim of the subject is to familiarize students with basic principles of nuclear safety.					
17JARE	Nuclear Reactors	ZK	2			
Introduction. World	power issue. Previous evolution of power reactor. Nuclear fission reactors, fuel assemblies, active core, control systems, safety systen	ns, containment. C	lassification			
of reactors into IV generations. Standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Pressurized water reactors (PWR).						
	PWR (Westinghouse, KWU, Framatom). VVER-type reactors, Temelín nuclear power plant. Boiling water reactors. Heavy water react					
•	gas cooled reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF and		Evaluation			
	selection of proposed systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in lo					
18ZALG	Basics of Algorithmization	Z,ZK	4			
	devoted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of	· · · · · ·				
18ZPRO	Basics of Programming	Z	4			
This course is intended mainly for students with little or no experience in programming. It familiarizes the students with the basic concepts in programming and with the Python programming language.						
TV-1	Physical Education	Z	1			
TV-2	Physical Education	Z	1			
T\/-3	Physical education	7	1			

Physical education

For updated information see http://bilakniha.cvut.cz/en/FF.html Generated: day 2024-05-19, time 19:40.