Study plan

Name of study plan: Jaderné inženýrství - Jaderné reaktory

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

Name of the block: Compulsory courses in the specialization Minimal number of credits of the block: 0 The role of the block: PS

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

Podminkou skládání zkoušky 01MANZ je získání zápočtu z 01MAN.Podmínkou skládání zkoušky 01LALZ je získání zápočtu z 01LAL.

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
02ELMA	Electricity and Magnetism Iskender Yalcinkaya, Josef Schmidt, Ji í Hrivnák, Goce Chadzitaskos, Jan Vysoký Jan Vysoký Josef Schmidt (Gar.)	Z,ZK	6	4+2	L	PS
01LAL	Linear Algebra 1 Petr Ambrož, Lubomíra Dvo áková Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	Z	2	2P+2C		PS
01LALZ	Linear Algebra 1, exam Petr Ambrož, Lubomíra Dvo áková Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	ZK	2	0P+0C		PS
01LAL2	Linear Algebra 2 Petr Ambrož, Lubomíra Dvo áková Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	Z,ZK	4	2P+2C		PS
01MAN	Calculus 1 Pavel Strachota, Miroslav Kolá, Edita Pelantová Pavel Strachota Pavel Strachota (Gar.)	Z	4	4+4		PS
01MANZ	Calculus 1, exam Pavel Strachota, Miroslav Kolá, Edita Pelantová Pavel Strachota Pavel Strachota (Gar.)	ZK	4	0P+0C		PS
01MAN2	Calculus 2 Miroslav Kolá, Edita Pelantová, Maksym Dreval Edita Pelantová Maksym Dreval (Gar.)	Z,ZK	8	4P+4C		PS
02MECH	Mechanics David B e Antonín Hoskovec David B e (Gar.)	Z	4	4+2	Z	PS
02MECHZ	Mechanics - Examination Iskender Yalcinkaya, Goce Chadzitaskos, Stanislav Skoupý, Petr Novotný, David B e , Filip Petrásek, Antonín Hoskovec Antonín Hoskovec David B e (Gar.)	ZK	2	-	Z	PS
00PT	Preparatory Week Petr Ambrož, Milan Krbálek Petr Ambrož Petr Ambrož (Gar.)	Z	2	týden	Z	PS
02TER	Heat and Molecular Physics Filip Petrásek Petr Novotný Petr Jizba (Gar.)	Z,ZK	4	2+2	L	PS
17UING	Introduction to Engineering Jan Frýbort, Petr Haušild, Radek Mušálek Jan Frýbort (Gar.)	KZ	3	2P+1C	Z	PS
16UJRF1	Introductory Nuclear and Radiation Physics 1 Ladislav Musílek Ladislav Musílek (Gar.)	Z,ZK	4	2P+2C	L	PS

	Basics of Programming					
18ZPRO	Maksym Dreval, Nichita Vatamaniuc, Jan Vondruška, Vladimír Jarý, Miroslav Virius, Jakub Klinkovský, Petr Pauš, František Vold ich, Jan Tomsa,	Z	4	4C	Z	PS
	Miroslav Virius Miroslav Virius (Gar.)					
Characteristic	s of the courses of this group of Study Plan: Code=BSPJIJR1 Name=I	BS P_JIB JI	R 1st year			
02ELMA	Electricity and Magnetism			Z	Z,ZK	6
Electric charge, Co	oulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectr	ics. Electric curr	rent and circu	its, conduct	ivity. Basic	s of the relativity
theory. Electrodyna	amic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, RLC circuits.	Electromagnet	ic waves, Max	well equation	ons.	
01LAL	Linear Algebra 1				Ζ	2
1. Vector space. 2. theorem.	Linear dependence and independence. 3. Basis and dimension. 4. Subspaces of vector spaces.	5. Linear mapp	ings. 6. Matric	ces of linear	mappings	. 7. Frobenius
01LALZ	Linear Algebra 1, exam				ZK	2
01LAL2	Linear Algebra 2			7	7.7K	4
Outline: 1. Inverse	matrix and operator. 2. Permutation and determinant. 3. Spectral theory (eigenvalue, eigenvecto	r, diagonalizatio	on). 4. Hermitia	an and quad	dratic form	s. 5. Scalar
product and orthog	gonality. 6. Metric geometry. 7. Riesz theorem and adjoint operator. Outline of the exercises: 1. M	ethods for calcu	lation of inver	se matrices	. 2. Metho	ds of calculation
of determinants. 3	. Calculation of eigenvalues and eigenvectors. 4. Hermitian and guadratic forms. Canonical form.	5. Scalar produ	ict and orthog	onality. Calo	culation of	orthogonal
complements. 6. G	Geometry exercises and examples. 7. Adjoint operators.		0	,		0
01MAN	Calculus 1				Z	4
Basic calculus (rea	al analysis, functions of one real variable, differential calculus).			I		I
01MANZ	Calculus 1. exam				ZK	4
	Calculus 2				7 7 1	8
1 Continuation of	differential calculus: Taylor's Polynomials Taylor's formula 2 Infinite series: criteria of convergen	ce operations (on series abs	olute and co	onditional	convergence 3
Real and complex	power series, the Cauchy-Hadamard theorem, expansion of function into power series, summati	on of infinite ser	ies. 4. Theory	of integrals	primitives	. definite integra
(Riemann definitio	n), techniques of integration and application of integrals, Generalized Riemann integral		,	J		,g
02MECH	Mechanics				7	4
Introduction to phy	rsics, physical quantities and units. Kinematics of a particle, basic types of motion and their supe	rposition. Dvnar	mics of a part	icle. solvina	equations	of motion for
one-dimensional n	notion, motion in a central force field, forces in non-inertial reference frames. Mechanics of a sys	tem of particles	, two-body pro	blems, part	ticle collision	ons. Mechanics
of a rigid body, rota	ation.					
02MECHZ	Mechanics - Examination				ZK	2
The content of the	subject is the examination according to the plan of studies.			I		I
00PT	Preparatory Week				Z	2
02TER	Heat and Molecular Physics			7	 7 7K	4
Thermal expansion	n of materials heat transfer: stationary and non-stationary heat conduction heat transfer and pe	netration: 1st ar	nd 2nd thermo	odvnamic pr	inciple ide	al and real das
entropy: non-chem	nical systems; dielectric and magnetic materials: Maxwell relations and thermodynamic potentials	: kinetic theory:	Maxwell's vel	ocitv distribu	ution.equip	artition theorem
17UING	Introduction to Engineering				KZ	3
This course provid	les introduction to engineering skills. Students should gain general engineering skills at basic lev	el (e.g. material	properties ar	nd behavior.	basics of	manufacturing
and production, qu	ality assurance, environmental impacts,). In addition, the introduction to scientific work and tech	nical drawing w	ill be included			0
16UJRF1	Introductory Nuclear and Radiation Physics 1				Z.ZK	4
The aim of the cou	irse is to provide students with basic knowledge about atomic nucleus and radiation physics, whi	ch is followed by	other specia	lized lecture	s. The sub	ject summarizes
thematic areas: de	evelopment of opinions on micro-wave and radiation physics, basic characteristics of the atom an	d nucleus, bind	ing energy, m	easurement	t of mass a	and dimensions
of the nuclei, the m	nost important nuclear models. General characteristics of the interaction of ionizing radiation with	the matter, inter	raction of alph	a, beta, gar	nma and r	eutron radiation
passage of radiation	on beams through the matter, radiation effects in matter.			-		
18ZPRO	Basics of Programming				Ζ	4
				1 <u>.</u>	-	· _ · ·

programming language.

Code of the group: BSPJIJR2

Name of the group: BS P_JIB JR 2nd year

Requirement credits in the group:

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

Note on the group:

Předmět 02TEF1 lze absolvovat až po absolvování předmětu 02MECHZ

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
01ANB3	Calculus B 3 Miroslav Kolá , Milan Krbálek Milan Krbálek Miroslav Kolá (Gar.)	Z,ZK	8	4P+4C		PS
01ANB4	Calculus B 4 Ji í Mikyška, Miroslav Kolá Ji í Mikyška Milan Krbálek (Gar.)	Z,ZK	6	2P+4C		PS
17NFYZ	Neutron physics Milan Štefánik Milan Štefánik (Gar.)	KZ	3	2P+1C		PS
12NME1	Numerical Methods 1 Pavel Váchal Pavel Váchal (Gar.)	Z,ZK	4	2+2	L	PS
15CH1	General Chemistry 1 Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z	3	2+1	Z	PS
17RFYZ	Reactor physics Jan Frýbort, Lenka Frýbortová Jan Frýbort (Gar.)	Z,ZK	4	2P+2C		PS

Tert Monorgy Michael Jacks for Jack (dar) Tert Monorgy Michael Jacks for Jack (dar) Link PS 0215FA Therm codynamics and Link field Physics Z,ZK 4 4242 L PS 0210G Mores, Optics and Atomic Physics Z,ZK 6 44.2 Z PS 0210G Fundamentals of Radiation Dosimetry 1 Z,ZK 4 24.2 PS 01ANBS Calculus B 7 Calculus B 7 X 8 1 <punctional requirements<="" td=""> Ordinal contrast, co</punctional>	02TEF1	Theoretical Physics 1	7.7K	4	2+2	7	PS
Differint Design Robustion Calobian Robustion Calobian Robustion Robustin Robustion Robust		Petr Novotný Michal Jex Igor Jex (Gar.) Thermodynamics and fluid mechanics of nuclear power plants	7.71		40		
Q2TSFA Immemorphism is and statistical injects ZZK 4 242 L PS Q2VOAF Waves, Optica and Anomy ZZK 6 44-2 Z PS Q2VOAF Waves, Optica and Anomy ZZK 6 44-2 Z PS 182DO21 Fundamentals of Realization Dosimetry 1 (model royek Transf Tr	171EMI	Dušan Kobylka Dušan Kobylka (Gar.)	Ζ,ΖΚ	4	4P		PS
02VOAF Waves, Optics and Atomic Physics ZZK 6 4+2 Z ps 182DO21 Fundamentals of Realization Desimetry 1 meets may frame fra	02TSFA	Ihermodynamics and Statistical Physics Igor Jex, Jaroslav Novotný Antonín Hoskovec Igor Jex (Gar.)	Z,ZK	4	2+2	L	PS
IBZDQ21 Fundamentals of Realistics Dosimetry 1 Z.ZK 4 2+2 ps Characteristics of the courses of this group of Study Plan: Code=BSPJJR2 Name=BS P_JJB JR 2nd year Z/X 8 Characteristics of the courses of this group of Study Plan: Code=BSPJJR2 Name=BS P_JJB JR 2nd year Z/X 8 DirANBS Calculus B 3 Z/X 8 8 Expension: Toyle values (1) See regarding the properties of the state of the properties of the state of the	02VOAF	Waves, Optics and Atomic Physics Josef Schmidt Jan Vysoký Ji í Tolar (Gar.)	Z,ZK	6	4+2	Z	PS
Characteristics of the courses of this group of Study Plan: Code=BSPJUR2 Name=BSP_JIB JR 2nd year Z,ZX< 8 (1 Androis assumptions and string- convergence rings, cherins of unitors of finit order (method of integration factor, soution of Burroill, source) strings. Strings Expansion, Taylor's theorem 2. Oxformy differential equations - method requires and the intervention of the convergence and the convergence of finit order (method of integration factor, soution of Burroill, source) strings. Strings Expansion, Taylor's theorem 2. Oxformy differential equations 1. Method integration of the convergence and the convece and the convergence and the convergence and the con	16ZDOZ1	Fundamentals of Radiation Dosimetry 1 Tomáš Trojek Tomáš Trojek Tomáš Trojek (Gar.)	Z,ZK	4	2+2		PS
01AB3 Calculus B.3 2.ZK 8 1-Functional sequences and series - convergence, incriteria of unitorn convergence, continuity, limit, differentiation and megation of variables, howers areas, series series - convergence, continuity, limit, differentiation and megation of variables, howers areas, series - convergence. They're sheepen - and calculation of convergence, continuity, limit differentiation of an entering on the convergence. They convergence. The convergence. The convergence. The convergence - Differentiat calculates of the convergence - Differentiat calculates of the convergence. The convergence - Differentiat calculates of the convergence - Differentiat calculates - Differentiat calculates of the convergence - Differentiat calculates - Differentiat calcu	Characteristics of the	courses of this group of Study Plan: Code=BSPJIJR2 Name=B	SP JIB JR	2nd vea	r		
1. Functional sequences and series - convergence angle, interial of uniform convergence, continuely, limit, differentiation and megation of functional series, power series. Series Equations and secies equation and equations at historics and intervals, equation and exact equation and equations at historics and secies equation and exact equation and equations at historics and secies equation and exact equation and equations at historics and highers equation and exact equation and exact equation and exact equation and exact equation and equations. The intervals are and historic exacts and the exact equation and exact equation and exact equation and exact equation and exact equations. The exact intervals are and historic exacts and the exact intervals and exact equations. The exact equation and exact equation and exact equations and exact equations and exact equations. The exact is and the exact exact equation and exact equations and exact equations and exact equations. The exact equations are and historic exact equations and exact equations and exact equations. The exact equations are and historic exact equations and exact equations and exact equations are exact equations. The exact equation and exact equation and exact equations are exact equations and exact equations and exact equations and exact equations and exact equations are exact equations and equations and exact equations ande	01ANB3 Cal	culus B 3			Z	,ZK	8
Expansion, Taylor's theorem. 2 Ordinary differential equations - equations of finis order (mithod of integration factor, equation of Auronicke, periodicinans and appearing (high-had acie, Eurif officer equations in Appearing of Lynamich 2). Shelf expansion of Lynamichal Cynabio Chrophene (Lynamichal Cynabio Chrophene), to a several equation of Auronicke, practice and the Convergence. 5 Other exists and the Convergence. 5 Other exists and converting term of Variables - Imit, Contrainty, partial and freedomal Convergence, 5 Other exists and anom-induced term (Auronice and Sector) and Variables. The Contrainty partial and freedomal Convergence, 5 Other exists and exists and anom-induced term (Auronice and Sector) and Variables. The Contrainty partial and freedomal Convergence, 5 Other exists and the convergence of the convergence, 5 Other exists and the convergence of the convergence, 5 Other exists and the convergence of the convergence	1. Functional sequences and	series - convergence range, criteria of uniform convergence, continuity, limit, differentia	ation and integrat	tion of funct	tional series	power series	, Series
equation in a cased equation) and equations of ingere obser (undamental system, reaction or order, Variation of patientiets, equations with constant coefficients and special right-fands equations. But of the equations and pecial right-fands equations and the equations and pecial right-fands ender points and the equations and pecial right-fands equations. But of the equations and pecial right-fands equations and pecial regret fands equations and pecial regret fands equations. But of the equations are for the equations and pecial regret fands equations and pecial regret fands equations. But of the equations are for the equations are for the equations and pecial regret fands equations. But of the equations are for the equations are for the equations are for the equations and pecial regret fands equations. But of the equations are for the equations are for the equations are for the equations are for the equations of the equations are for the equations are for the equations are for the equations are for the equations are equations. But of the equations are equations are equations are equations are equations. But of the equations are equations are equations are equations are equations are equations are equations. But of the equations are equations are equations are equations are equations are equations are equations. But of the equations are equations. The equation of the fundamental pecification are equited are equations. The equation are equited are equations are equited ar	Expansion, Taylor's theorem.	2. Ordinary differential equations - equations of first order (method of integration factor	r, equation of Ber	noulli, sepa	aration of va	riables, homo	geneous
and est. completeness of space, Hither Spaces, O'Integrate phynomials Complete ontogrand systems. 4 Tourier series: expansion of functions into Fourier series: traggement for the series estimates and the reconsegrence 5. Offerences and tangent plane. The series estimates are series estimates and the reconsegrence for the series estimates and the recent and the recent and the series estimates and the recent and the re	equation and exact equation)	and equations of higher order (fundamental system, reduction of order, variation of para	ameters, equation	s with cons	ated and no	ents and spec	al right-hand
series and their convergence 5. Differential calculus of functions of several variables. Finite, continuity, partial and directional domains, equadent, total derivatives and tangent plane, Typer series, elementary terms of varian analysis, Lacobin matrix, 6. Functions defined implicitly by one or several equations. CI NNEM Calculus B 4 [1] Differentiation on might a functionation's vaktor. [2] Funcces zatant implicits. [3] Tayloroy ady function vice prom might, held (4] Regularial zations, possible and the bespace vinegrity. Zational variants a globalin interrer function vice prom might a function of the base bespace vinegrity. Zational viscosits for the bases are interval to a constraint of the a cobespace vinegrity. The function of the constraints of the basies of neutron physics and the applications. The locates start with the description of the functions of the constraints of information is paid to functions in paid to functions. The basies of neutron physics and the applications are neutron solving transmission of neutron physics are descripted in distaltification of particular nuclear reactions operation do neutron helps and subset of differential coose sections approxements in the lead of the discussed in destription of the discussed in destription of the discussed in destription of the discussed in destriptions of neutron helps and the basies of relearners. The probability of malaristic of particular nuclear reactions for neutron helps and the basies of relearners frames. The probability of malaristic of the sections for the section function. Finally, the most important applications of neutron physics are descripted in addition to the basies are neutron solving and and the section of the sections of neutron physics are descripted in addition to the basies are neutron solving and and the section of the sections of the sections of neutron physics are descripted in the section of the section in the other sections and the section of the section	of set, completeness of space	e. Hilbert spaces. Orthogonal polynomials. Complete orthogonal systems. 4. Fourier serie	es - expansion of	functions ir	nto Fourier se	eries, trigonon	netric Fourier
Tayler series, elementary terms of vector analysis, Jacobi matrix. C. Functions defined implicitly by one or several equations. OTANEA Calculus B 4 Calculus B 4 Z,ZK 6 (1) Definencial in poet turks/vice prom. might a funkcionalinich vector. (2) Funkce standare implication. (3) Tindevory edy funkces vice prom. might a funkcionalinich vector. (2) Funkce standare implication. (3) Tindevory edy funkces vice prom. might a funkcionalinich vector. (2) Explicit a diverse integrate used in turks. (2) Explicit a diverse integrate used in turks on each explicit a diverse integrate used in turks. (2) Funkce standare implications. The lectures start with the discription of advacativity and nuclear reactions follows. Great attentions is paid to the materials of nuclear reactions approach by indeplications. The lectures start with the discription of nuclear reactions of nuclear nectors. States of nuclear nectors are provided by and nuclear reactions follows. Great attentions is paid to the materials of nuclear reactions of nuclear nectors. Students will and taminar with the conditions for realization of fission chain reaction. Finally, the most important applications of nuclear nectors. Students will and terminar strength addition of particulations of nuclear nectors. Students and nuclear reactions of fission chain reaction. Finally, the most important applications of nuclear nectors. Students and nuclear reactions follows. Great attention in physics and technology. Methods for solution of taxes and the student of the state analysis of nuclear nectors. 12NHE1 Numerical Methods 1 Z,ZK 4 12NHE1 Numerical Methods 1 Z,ZK 4 12RFV2 Reactor physics Calcia nuclear necy	series and their convergence	. 5. Differential calculus of functions of several variables - limit, continuity, partial and di	irectional derivati	ve, gradient	t, total deriva	atives and tan	gent plane,
01ANB4 Calculus B 4 Z,ZK 6 11/Distronciating or thunks via perum myön a funkcondanich vektor. [2] Funkce zadané implicitm .[3] Taylorovy ady funkce vice porm myön, le funkce vice porm myön, neknattexes ou soakie.[1] Ragularia zodarszeni, zám na prom myön, neknattexes to soakav, sou adnic. [5] Lokahi, vizané a globahi extrémy funkce vice porm myön, a funkteo vice porm myön, neknattexes to the besice of neutron physics. KZ 3 The ourse Neutron Physics' introduces students to the basics of neutron physics and ta separators. The incluses start with the description of doublet vice vice porm myön, is described. The starse start with the description of doublet vice vice porm myön, is described. The starse of neutrons with nuclei of the matternes, mechanisme on exactines of neutrons. With that a description of doublet vice and enterion basics of neutrons with nuclei of the matternes. mechanisme on for adisuses of differential cross-sections and neutron down down process are discussed in description of doublet vice and enterion basics of neutron physics are discussed in teactines. The physics are discussed in description of doublet vice and enterion basics of neutron physics are discussed. 12NME1 Numerrical Methods 1 Z.XK 4 There are explaine of neutron implemation indication of physics and the checked start on physics and the checked start on physics and the checked start on physics and the doublet of the start on physics of neutron physics are discussed in description of doublet on the start on physics and the doublet of the start on physics and the doublet on physics and the doublet on physics and the doublet on the start on physics and the doublet on the start on physics and the doublet on physics and the doublet on physics and the dou	Taylor series, elementary terr	ms of vector analysis, Jacobi matrix. 6. Functions defined implicitly by one or several ec	quations.				
[1] Ditensitis of the standard of the standard of the standard institution of the standard insthestitution of the standard institution of t	01ANB4 Cal	culus B 4			Z	"ZK	6
prom mrych, nekartizski soutskary sou adhic. [5] Lokalin, vizana a globalin externy funkce vice prom mrych. [6] Zakladi ylobarski, Fubiniova v ta, v ta o substituci. Levho a Lebesgueova v ta. Limita, spojitost a derivace integrial po ot kikadin a pichabich. Integrialin v ta, v ta os substituci. Levho a Lebesgueova v ta. Limita, spojitost a derivace integrial po ot kikadin a pichabich. Integrialin v ta, v ta os substituci. Levho a Lebesgueova v ta. Limita, spojitost a derivace integriality pole kikadin a pichabich. Integriality v ta, v ta os substituci. Levho a Lebesgueova v ta. Limita, spojitost a derivace integriality pole kikadin a pichabich. Integriality v ta, v ta os substituci. Levho a Lebesgueova v ta. Limita, spojitost a derivace integriality pole kikadin a globalini externy the tass. Creat attention is pical to the reactions of neutron structure v tass. The probability of realization of particular nuclear reactions (binger and tasser) for pices are discussed. In detain: The probability of realization of particular nuclear reactions (binger and tasser) for pices are discussed. In detain: The probability of realization of particular nuclear reactions (binger and tasser) pices of numerical mathematics important for physics and technology. Methods for solution of tasks very important to physics is of numerical mathematics important for numerical aching of problems important to physics and technology. Methods for solution on tasks very important to replacits, quantilies and units used in chemistry are introduced in the course General Chemistry 1. Their significance and practical excertises. I TREVZ Reactor physics is a demonstration tool. The seminars and held in computer laboratory. I Z/ZK 4 4 There are esplained metachels scheckers depress schecks scheckers depres schecks scheckers depress and scheckers depress with scheckers and process with a spoil definition of multiple and the course of ensites on the analysis of ensites of the analysis of ensites of the analysis of ensites of the analysis of ensites o	[1] Diferenciální po et funkcí	více prom nných a funkcionálních vektor . [2] Funkce zadané implicitn . [3] Taylorovy	ady funkce více	prom nnýo	ch. [4] Regul	ární zobrazer	ií, zám na
Integrating of thinke vice prom mayb. Hemann via Lebesgue vintegral, zakadan visathesii, Fubiniova v ta, v ta o substruct. Lewho a Lebesgueva v ta Limita, spojtest a drivence integratua of the transmission of the terms of te	prom nných, nekartézské so	ustavy sou adnic. [5] Lokální, vázané a globální extrémy funkce více prom nných. [6] z	Základy teorie mí	ry a obrys l	konstrukce L	ebesgueovy i	níry. [7]
Cale model integrate (cold parameters) (cold magnative (cold magnative (cold parameters)) KZ 3 TNFFZ Neutron Physics Tradications and materials of metrons. Net the task ascerption of a relations with and a duclear reactions follows. Great attention is paid to the reactions of neutrons with the nuclear indication of a neutron set that a description of a relations with and a duclear reactions follows. Great attention is paid to the reactions of neutrons. Net that a description of a relations with a description of a relations with the conditions and neutron set that cold of differential cross sections and neutron set the fease of electrons. Fortune and the fease of electrons protons and sectors of the basic of relations of neutrons. Net the task sectors in origon and neutrons. After that a description of the basic fortune neutrops is described. The issues of relation physics are discussed. INMERI Numerical Methods 1 Them are associated the basic protongles of numerical mathematics important for numerical asking of problems important for physics and technology. Microbio Stra Sution of tasks very important for physics and dischology and differential equations, random numbers) are induced in addition to the basic numerical methods. Integrated computational environment MATLAB is used as a principle programming language as a demonstration tool. The seminars are held in computer laboratory. ZZK 4 The rote important for nuclear reactors. fission products, yield of fission neutrons, energy release from fission, and hencic energy of released neutrons. Such a knowledge of fission chant neaction. All fission aspects are important for nuclear reactors. General Chemistry 1. ZZK 4 <	Integrální po et funkce více p	prom nných - Riemann v a Lebesgue v integrál, základní vlastnosti, Fubiniova v ta, v	ta o substituci. I	_eviho a Le	besgueova v	/ ta. Limita, sj	pojitost a
INPLIA NetWork INPLIA		Integraly po k lvkach a piochach. Integraini v ty.				V7	2
The subset Resolution is the fiber of electrons, protons and neutrons. After that a description of natioactivity and nuclear reactions for a nuclear nearborn of neutrons with nuclei of the matter. The probability of realization of particular nuclear reactions expressed by the effective cross-section errors unation energy is described. The issues of reference frames, mechanisms of neutron interactions, and issues of offerencial cross-sections are neutron energy is described. The issues of reference frames, mechanisms of neutron interactions, and issues of offerencial cross-section are neutron increations of neutron physics are discussed. In the neutron interactions, and issues of thermode interaction and neutron showing down process are discussed of neutron physics are discussed. Interact on physics is fordinary differential equations, random numbers) are included in addition to the basic numerical methods. Integrated computational environment MATLAB is used as a principle programming language as a demonstration tool. The seminars are held in computer laboratory. International environment MATLAB is used as a principle programming language as a demonstration tool. The seminars are held in computer laboratory. International environment MATLAB is used as a principle programming language as a demonstration tool. The seminars are held in computer laboratory. International environment MATLAB is used as a principle programming language as a demonstration tool. The seminars are held in computer laboratory. International environment MATLAB is used as a principle programming language as a demonstration of distribution of multiplication factor physics. The student fract and definition of multiplication factor physics and exactor physics helds and units used in chemistry are introduced in the course General Chemistry 1. Their significance and practical use are illustrated by examples divide intractication on the introduced predictions of neutrons energy and theld within an endore physic of the states and definition of multi		UITON PNYSICS " introduces students to the basics of neutron physics and its applications. The lectures s	tart with the desc	ription of th	e fundament	NZ	3 orld structure
The matter. The probability of realization of particular nuclear reactions expressed by the effective cross-section erests neutron energy is described. The issues of reference frames, mechanisms of neutron heredonism, and issues of differential cross-sections and neutron slowing dom process are discussed in detail. Fission of hereary nuclei is the basis for the operation of nuclear reactors. Students will get familiar with the conditions for realization of fission chain reaction. Finally, the most important applications of neutron physics are explained the basic principles of numerical mathematics important for numerical solving of problems important for physics and technology. Methods for solution of tasks very important for physics (active) and provident applications of an under a addition of the basic numerical methods. Integrated computational environment MATLAB is used as a principle programming language as a demonstration tool. The seminars are held in computer laboratory. If CoH1 General Chemistry 1 Constant for nuclear reactors. Since and units used in chemistry are introduced in the course General Chemistry 1. Their significance and practical use are illustrated by examples solved in exarcises. If TRFVZ Reactor physics helps Bachelors degree students to get acquainted with fundamentals of reactor physics. The students will get broad knowledge of fission chain reaction. All fission apectic as ere important for nuclear reactors: fission products, yield of fission nuclear reactor candelines on dynamics is able included. If the oran physic of neutron energy needs of their solutions of diffusion for homospenous matching and non-multiphysics 1. Es tudents will get knowledge of Ficks law and diffusion theory of neutron solving down and fundamental approximation or heuron energy needs of neutron energy analidiation of neutrons energy needs of the subsections of the subsections of analytical candelines of heurons engreenous reactors. Lecture on fundamentals of nuclear reactor and definition free organise analyt	at the level of electrons, proto	ons and neutrons. After that a description of radioactivity and nuclear reactions follows.	Great attention is	s paid to the	e reactions of	of neutrons wi	th nuclei of
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will be utilized for analysis of neutron balance in a nuclear reactor and definition of multiplication tactor. The students will ear heory of nearing and truttom spatial distribution in homogeneous multiplying and non-multiplying media. The same theory is also utilized for large-scale calculations of nuclear reactor cores. Conclusions obtained for homogeneous reactor are subsequently compared to heterogeneous reactors. Lecture on fundamentals of nuclear rector kinetics and dynamics is also included. 02TEF1 Theoretical Physics 1 Z,ZK 4 The course is an introduction to analytical mechanics. The students acquire knowledge of the basic concepts of the Lagrange and Hamiltonian formalisms as well as different approaches to description of dynamics (Newtons, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these methods is illustrated on elementary examples like the two-body problem, the motion of a system of constrained mass points, and of a rigid body. Advanced parts of the course of classical theoretical physics (02TEF1, 02TEF2). 17TEMT Thermodynamics and fluid mechanics of nuclear power plants Z,ZK 4 The course gives summary of basic knowledge of the two theoretical fields which are important for the nuclear reactors and nuclear power plants design and operation: thermodynamics engineering and fluid mechanics. Both fields are lectured with hand-on approach, so that students obtain elementary view on issue, they will be able to study this issues in more details in next continuing special courses. Z,ZK 4 02TEFA Thermodynamics and Statistical Physics Nermodynamics and statistical Physics. Z,ZK 4	All fission aspects are import	ant for nuclear reactors: fission products, yield of fission neutrons, energy release from	fission, and kinet	ic energy of	f released ne	eutrons. Such	a knowledge
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problem, the motion of a system of constrained mass points, and of a rigid body. Advanced parts of the course cover differential and integral principles of mechanics. The subject is the first part of the course of classical theoretical physics (02TEF1, 02TEF2). 17TEMT Thermodynamics and fluid mechanics of nuclear power plants Z,ZK 4 The course gives summary of basic knowledge of the two theoretical fields which are important for the nuclear reactors and nuclear power plants design and operation: thermodynamics engineering and fluid mechanics. Both fields are lectured with hand-on approach, so that students obtain elementary view on issue, they will be able to acludate basic and simplified tasks and they will be able to study this issues in more details in next continuing special courses. Z,ZK 4 02TSFA Thermodynamics and Statistical Physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelier principle. Statistical entropy. Basics of many body descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Z,ZK 6 02VOAF Waves, Optics and Atomic Physics Z,ZK 6 Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effec	to description of dynamics (N	lewtons, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these n	nethods is illustra	ted on elen	nentary exa	nples like the	two-body
the first part of the course of classical theoretical physics (021EF1, 021EF2). 17TEMT Thermodynamics and fluid mechanics of nuclear power plants Z,ZK 4 The course gives summary of basic knowledge of the two theoretical fields which are important for the nuclear reactors and nuclear power plants design and operation: thermodynamics engineering and fluid mechanics. Both fields are lectured with hand-on approach, so that students obtain elementary view on issue, they will be able to calculate basic and simplified tasks and they will be able to study this issues in more details in next continuing special courses. 02TSFA Thermodynamics and Statistical Physics Z,ZK 4 Foundation of thermodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelier principle. Statistical entropy. Basics of many body descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Z,ZK 6 02VOAF Waves, Optics and Atomic Physics Z,ZK 6 Wave phenomena in mechanics and spectra of finite systems. Iffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrödinger equation, stationary states and spectra of finite systems. Z,ZK 6 16ZDOZ1 Fundamen	problem, the motion of a syst	em of constrained mass points, and of a rigid body. Advanced parts of the course cove	er differential and	integral pri	nciples of m	echanics. The	subject is
171 EM1 Intermodynamics and fluid mechanics of nuclear power plants Z,ZK 4 The course gives summary of basic knowledge of the two theoretical fields which are important for the nuclear reactors and nuclear power plants design and operation: thermodynamics engineering and fluid mechanics. Both fields are lectured with hand-on approach, so that students obtain elementary view on issue, they will be able to calculate basic and simplified tasks and they will be able to study this issues in more details in next continuing special courses. Importantics Z,ZK 4 02TSFA Thermodynamics and Statistical Physics Z,ZK 4 Foundation of thermodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelier principle. Statistical entropy. Basics of many body descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Z,ZK 6 02VOAF Waves, Optics and Atomic Physics Z,ZK 6 Wave phenomena in mechanics of finite systems. Schody radiation, unterference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrodinger equation, stationary states and spectra of finite systems. Z,ZK 4 16ZDOZ1 Fundamentals of Radiation Dosimetr	the first part of the course of	classical theoretical physics (02TEF1, 02TEF2).					
The course gives summary of basic knowledge of the two infortant on approach, so that students obtain elementary view on issue, they will be able to calculate basic and simplified tasks and they will be able to study this issues in more details in next continuing special courses. 02TSFA Thermodynamics and Statistical Physics Z,ZK 4 Foundation of thermodynamics and statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Z,ZK 6 02VOAF Waves, Optics and Atomic Physics Z,ZK 6 Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrödinger equation, stationary states and spectra of finite systems. Z,ZK 4 16ZDOZ1 Fundamentals of Radiation Dosimetry 1 Z,ZK 4 History, development, and objectives of dosimetry. Quantities and units used for description of sources, fields, interactions of ionizing radiation, ionizations, energy transfer and absorption. Fundamentals of the effects of ionizing radiation.		ermodynamics and fluid mechanics of nuclear power plants		warnlanta	Z	.,∠K	4 modunomico
Output Intermodynamics and Statistical Physics Z,ZK 4 Foundation of thermodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelier principle. Statistical entropy. Basics of many body descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. 02VOAF Waves, Optics and Atomic Physics Z,ZK 6 Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrodinger equation, stationary states and spectra of finite systems. IfZDOZ1 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. Z,ZK 4	engineering and fluid mecha	not be a set to be a set of the two theoretical neids which are important for the nuclear reactor	rs and nuclear po	they will be	able to calc	ulate basic ar	nouynamics
02TSFA Thermodynamics and Statistical Physics Foundation of thermodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelier principle. Statistical entropy. Basics of many body descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is usedto discusses simple transport phenomena. 02VOAF Waves, Optics and Atomic Physics Z,ZK 6 Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrodinger equation, stationary states and spectra of finite systems. IdZDOZ1 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. Z,ZK 4	tasks and they will be able to	study this issues in more details in next continuing special courses.	y now on locus,				a ompinoa
Foundation of thermodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelier principle. Statistical entropy. Basics of many body descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is usedto discusses simple transport phenomena. 02VOAF Waves, Optics and Atomic Physics Z,ZK 6 Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrodinger equation, stationary states and spectra of finite systems. Image: Compton in the form of the effects 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.	02TSFA The	ermodynamics and Statistical Physics			7	ZK	4
Basics of many body descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is usedto discusses simple transport phenomena. 02VOAF Waves, Optics and Atomic Physics Z,ZK 6 Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrodinger equation, stationary states and spectra of finite systems. IAZZK 4 16ZDOZ1 Fundamentals of Radiation Dosimetry 1 Z,ZK 4 History, development, and objectives of dosimetry. Quantities and units used for description of sources, fields, interactions of ionizing radiation, ionizations, energy transfer and absorption. Fundamentals of the effects of ionizing radiation. E	Foundation of thermodynamic	cs and statistical physics. Thermodynamic potential, the Joule Thomson effect, condition	s of equilibrium, tl	he Braun-Le	e Chatelier p	rinciple. Statis	tical entropy.
of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Z,ZK 6 02VOAF Waves, Optics and Atomic Physics Z,ZK 6 Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrodinger equation, stationary states and spectra of finite systems. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrodinger equation, stationary states and spectra of finite systems. Z,ZK 4 16ZDOZ1 Fundamentals of Radiation Dosimetry 1 Z,ZK 4 History, development, and objectives of dosimetry. Quantities and units used for description of sources, fields, interactions of ionizing radiation, ionizations, energy transfer and absorption. Fundamentals of the effects of ionizing radiation. Image: Compton in the effects of ionizing radiation.	Basics of many body descrip	tionfrom a statistical point of view (classical and quasiclassical regime within the frame	of a canonical a	nd grand-ca	anonical ens	emble, Fermi	gas, models
02VOAF Waves, Optics and Atomic Physics Z,ZK 6 Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrodinger equation, stationary states and spectra of finite systems. 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. X 4	of crystals and the black body	y radiation). The Boltzmann equation is usedto discusses simple transport phenomena					
Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrodinger equation, stationary states and spectra of finite systems. 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.	02VOAF Wa	ves, Optics and Atomic Physics			Z	"ZK	6
concretence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrödinger equation, stationary states and spectra of finite systems. 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. Image: Concentration of the effects of ionizing radiation.	Wave phenomena in mechan	nics and electromagnetism: modes, standing and travelling waves, wave packets indisp	ersive media. Wa	ve optics: p	olarization, i	interference, o	liffraction,
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. Image: Comparison of the effects of ionizing radiation.	equation stationary states ar	cs. introduction to quantum physics: black body radiation, quantum of energy, photoeffe ad spectra of finite systems.	ect, the Compton	enect, the c	ie proglie w	aves,the Schr	oainger
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.	167D071 Fur	adamentals of Radiation Dosimetry 1			7	7K	4
absorption. Fundamentals of the effects of ionizing radiation.	History, development. and ob	jectives of dosimetry. Quantities and units used for description of sources. fields. intera	actions of ionizing	radiation.	ionizations.	energy transfe	er and
	absorption. Fundamentals of	the effects of ionizing radiation.		,, .		- 3,	

Code of the group: BSPJIJR3 Name of the group: BS P_JIB JR 3rd year Requirement credits in the group: Requirement courses in the group: In this group you have to complete at least 14 courses Credits in the group: 0 Zkoušku z předmětu 01RMAF lze skládat až po složení všech zkoušek z Matematické

	analýzy a Lineární algebry.					
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members)	Completion	Credits	Scope	Semester	Role
17BPJI1	Bachelor Thesis 1 Dučan Kolvika, Tomáš Trojek, Jan Pataj Jan Pataj (Gar.)	Z	5	5ZP		PS
17BPJI2	Bachelor Thesis 2 Dušan Kolylka Tomáš Trojek, Jan Rataj Jan Rataj (Gar.)	Z	10	10ZP		PS
17BPROV	Safe operation of nuclear facilities Lenka Frýbortová, ubomír Sklenka Lenka Frýbortová (Gar.)	KZ	2	2P		PS
17DEZA	Detection of Ionizing Radiation Martin Cesnek, Marcel Miglierini, Miloš Tichý Marcel Miglierini (Gar.)	KZ	3	2P+1L	Z	PS
17EXE	Excursion Evžen Losa Evžen Losa (Gar.)	Z	2	1XT	Z	PS
17ENEF	Experimental Neutron Physics Jan Rataj Jan Rataj (Gar.)	KZ	3	1P+2L	L	PS
17IJR	Instrumentation of Nuclear Reactors Martin Kropík Martin Kropík (Gar.)	Z	3	3P		PS
17JARE	Nuclear Reactors Tomáš Bílý Tomáš Bílý Tomáš Bílý (Gar.)	ZK	2	2	L	PS
17KOJE	Design and Equipment of Nuclear Power Plants Jan Rataj, Pavel Zácha Jan Rataj (Gar.)	ZK	3	3P	L	PS
17PALC	Nuclear Fuel Cycle ubomír Sklenka, Evžen Losa, Radovan Starý ubomír Sklenka (Gar.)	ZK	2	2P	L	PS
01PRST	Probability and Statistics Tomáš Hobza Tomáš Hobza (Gar.)	Z,ZK	4	3+1	Z	PS
01RMAF	Equations of Mathematical Physics Václav Klika Václav Klika Václav Klika (Gar.)	Z,ZK	7	4P+2C		PS
17STJE	Heat Transfer in Nuclear Power Plants Dušan Kobylka, Martin Ševe ek, Sebastian Nývlt Martin Ševe ek (Gar.)	Z,ZK	4	2P+2C		PS
01STME	Statistical Methods with Applications Tomáš Hobza Tomáš Hobza Tomáš Hobza (Gar.)	ZK	2	2P+0C		PS
Characteristics of the	courses of this group of Study Plan: Code=BSPJIJR3 Name=	BS P_JIB JR	3rd year			
17BPJI1 Ba	chelor Thesis 1				Z	5
Student on the basis of these	es assignment and under leading of a supervisor individually processes given topic d	uring 2 semesters	The subjec	t is given by	self-reliant wo	rk on given
topic. The work is continuous	ly check by a supervisor.					
17BPJI2 Bar Student on the basis of these topia. The work is continuous	chelor Thesis 2 es assignment and under leading of a supervisor individually processes given topic d	uring 2 semesters	The subjec	t is given by	Z self-reliant wo	10 rk on given
				1	1/7	
The sim of the subject is to f	e operation of nuclear lacinities			I	NZ	2
	annianze sudents with basic principles of flucieal salety.				V7	
	tection of ionizing Radiation			<u> </u>	KZ	3
The outline former of the	iormation about sources and methods of detection of ionizing radiation and spectros	copy, with special	empnasis or	i neutron de	election and sp	ectrometry.
individually solve seven tasks	s in groups of up to three students. It also includes writing a measurement report, wh	ich teaches to writ	e scientific v	vork.	practice, where	students
17EXE Exc	cursion				Z	2
The goal of the subject is to the	amiliarize students with institutions and industry connected with the nuclear energy p	production in the C	zech Repub	lic. The sub	ject content is	variable,
according to the possibilities	of the participating companies, but it always covers basic fields: (i) research, develop	ment and enginee	ring (e.g. Ú.	JV a.s., CV	ež s.r.o., ÚJF	AV R,
ŠKODA JS a.s.), (ii) fuel cycl	e (e.g. UJP PRAHA a.s., SÚRAO, EZ a.s.), (iii) electricity and heat production (EZ	a.s.), (iv) radiation	n protection	and oversig	ht (SÚJB, SÚR	O). The
subject requires 5 full days, v	which are uniformly spread among semester and examination period.	-				
17ENEF Exi	perimental Neutron Physics				KZ	3
The course is focused on exp	perimental methods and experiments in the field of neutron physics, mainly using radi	ionuclide neutron s	ources. The	lectures ar	e devoted to the	e theoretica
bases necessary for preparat	ion and realization of the laboratory exercises and to the methods of experimental data	a processing and e	valuation. Sp	pecifically, t	ne lectures prov	vide detailed
description of neutron proper	ties and their utilization, the characteristics of neutron sources, properties of prompt a	nd delayed neutro	ne salactad	methods of	neutron detect	ion neutro

ation, the characteristics of neutron sources, properties utron properties and their utiliz of prompt and delayed neutrons, sele transport in substances, production, formation and modification of neutron fields and neutron beams. The lectures are complemented by the laboratory exercises in the field of neutron detection, measurement of delayed neutrons, study of neutron transport in various substances, experiments with various neutron sources (252Cf, AmBe, D-D neutron generator), preparation and detection of photo-neutron source, calibration of the radionuclide neutron source. The experiments are realized at the VR-1 training reactor and its laboratories. Ζ

3

ZK

17IJR Instrumentation of Nuclear Reactors

Lectures are concentrated on the instrumentation of nuclear reactors. The introduction is devoted to requirements on the safe operation of nuclear power plants and categorization of nuclear power plant systems with a respect to the nuclear safety according to IAEA, IEC and IEEE standards. Next, the attention is oriented to sensors of nuclear instrumentation netron detectors, their pulse, DC current and Campbell operation, thermocouples, thermoresistors, pressure and flow meters.Next part is directed to the incore and excore instrumentation of nuclear power plants Dukovany and Temelin, to the evaluation of their states and power measurement. Next are presented safety functions of nuclear power plants, their actication and systems that carries out safety actions. Attention is also given to the qualification of nuclear power plants systems. There are also presented examples of foreign nuclear power plants instrumentation. The conclusion of the lectures is oriented to requirements of research nuclear facilities instrumentation. The instrumentation of the VR-1 training reactor is presented in a detail, then instrumentations of LVR15, LR0, TRIGA Mark II and SUR100 reactors is also given. 2

17JARE Nuclear Reactors

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

17KOJE De	sign and Equipment of Nuclear Power Plants				ZK	3
Main components of nuclear	r units. Basic designs of cooling circuits. Design of main parts of units with pressuriz	ed wa-ter reactors. S	Selected cor	nponents o	f different nucl	ear power
Requirements on electrical e	equipment and power output systems from nuclear power plant, examples of NPP w	vir-ing diagrams inclu	idina electri	cal equipme	ents paramete	space etc.). rs.
17PALC Nu	clear Fuel Cycle	3 . 3	J		ZK	2
The course deal with introduc	ction to the nuclear fuel cycle of nuclear power plants, particularly PWR which are in o	peration in the Czec	h Republic d	or are under	consideration	for operatio
in future in the Czech Repub	blic. The first part of the course is focused on front-end of the nuclear fuel cycle, the	second part is focus	ed on fuel u	tilisation in	the reactor co	re and the
third part of the course is for	cused on back-end of the nuclear fuel cycle.				[
01PRST Pro	bability and Statistics				Z,ZK	4
It is a basic course of probat definition. The notions as rar	bility theory and mathematical statistics. The probability theory is build gradually beg	Jinning with the class	sical definition	on and cont	inuing till the r	and proved
On the basis of this theory th	he basic methods of mathematical statistics such as estimation of distribution paran	neters and hypothesi	is testing are	explained.		and proved.
01RMAF Eq	uations of Mathematical Physics			2	Z,ZK	7
The subject of this course is	solving integral equations, theory of generalized functions, classification of partial of	lifferential equations	, theory of ir	tegral trans	sformations, ar	nd solution o
partial differential equations	(boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).					
17STJE He	at Transfer in Nuclear Power Plants			_ Z	Z,ZK	4
The course titled Heat Trans	fer in Nuclear Power Plants presents to the students the fundamental principles of h	eat transfer with a fo	ocus on nuc	lear power-	related applica	ations. Most
of students mainly in the are	as related to the heat transfer in nuclear cores. An overview lecture of the basic prin	rsije elaborates tr	at the begin	ning of the	course and all	of the
fundamental heat transfer m	echanism will be discussed during the next weeks. It will start with conduction follow	ved by convection ar	nd radiation	at the end.	The course for	cuses on the
applications of thermokinetic	s related to nuclear reactors and equipment related to nuclear power plants and sp	ent nuclear fuel. For	that reason	, conductio	n and convecti	ion are to be
discussed into details. Conve	ection is divided according the nature of the flow into laminar and turbulent. The cor	cept of radiative hea	at transfer w	as theoretic	ally introduced	d in previous
courses and the applications	s and models used by industry will be presented here. The course includes also fund	amentals of heat tra	ansfer with p	hase chang	ges main empl	hasis is give
	atistical Methods with Applications				7K	2
The course consists of selec	cted methods of statistical data analysis such as: linear regression and correlation, a	analysis of variance.	nonparame	 tric method	s. contingency	∠ / tables. and
their application. The aim is t	to illustrate the use of statistical procedures on examples. Solutions of concrete exa	mples by use of stat	istical softwa	are are also	o included.	
Name of the grou Requirement crea Requirement cou Credits in the grou	ip: BS - Social Sciences dits in the group: irses in the group: In this group you have to comp up: 0	blete at leas	t 1 cou	rse		
Note on the grou	n: Only one of these co	urses is obliga	atory			
	Name of the course / Name of the group of courses				1	<u> </u>
Code	(in case of groups of courses the list of codes of their members) Tutors, authors and quarantors (gar.)	Completion	Credits	Scope	Semester	Role
	Economy in Technology	7	1	2+0		PV/
	Jana Ková ová		'	210		
00ETV	Ethics of Science and Technology Jakub Hají ek Jana Ková ová Jakub Hají ek (Gar.)	Z	1	0+2	L	PV
OORET	Rhetoric Jana Ková ová Jana Ková ová Beatriz Vadillo Gonzalo (Gar.)	Z	1	0+2		PV
00UPRA	Introduction to Law Martin ech Jana Ková ová Martin ech (Gar.)	Z	1	0+2		PV
00UPSY	Introduction to Psychology Jakub Hají ek Jana Ková ová Jakub Hají ek (Gar.)	Z	1	0+2		PV
Characteristics of the	e courses of this group of Study Plan: Code=BSSPOLVEDY N	ame=BS - Soci	ial Scien	ces		
00EKOT Ec	onomy in Technology				Z	1
The course introduces the back	asics of micro- and macroeconomics.				_	
	nics of Science and Technology				2	1
	IETORIC	tion The second	laa day tu t	 to th -		1
The course is focused on the as well as to its nonverbal as	e acquisition of speech and voice techniques and on the rules of correct pronouncia spects. Stylistics exercises, strategies for coping with stage-fright and a short excurs	ition. The course is a sion into the history o	also devoted	to the com	position of put al part of the c	blic speech course.

Introduction to Psychology Code of the group: BSPJAZYKYZK

Introduction to Law

Name of the group: BS P languages

00UPRA

00UPSY

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 2 courses

Ζ

Ζ

1

1

Credits in the group: 0 Note on the group:

<u></u>						
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 Jana Ková ová, Slav na Brownová Jana Ková ová Jana Ková ová (Gar.)	ZK	4		Z	PV
04XAPZK	English for Advanced Students Examination Slav na Brownová, Darren Copeland Jana Ková ová Darren Copeland (Gar.)	ZK	4		Z	PV
04XCESZZK	Czech for Foreigners Beginners - Examination Slav na Brownová Jana Ková ová Jana Ková ová (Gar.)	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 Jana Ková ová (Gar.)	ZK	4		Z	PV
04XFMZK	French for Intermediate Students Examination V ra Šlechtová V ra Šlechtová V ra Šlechtová (Gar.)	ZK	4		Z	PV
04XFPZK	French for Advanced Students Examination V ra Šlechtová V ra Šlechtová V ra Šlechtová (Gar.)	ZK	4		Z	PV
04XFZZK	French for Beginners Examination V ra Šlechtová V ra Šlechtová (Gar.)	ZK	3		L	PV
04XNMZK	German for Intermediate Students Examination Miloslava echová Miloslava echová Miloslava echová (Gar.)	ZK	4		Z	PV
04XNPZK	German for Advanced Students Examination Miloslava echová Miloslava echová Miloslava echová (Gar.)	ZK	4		Z	PV
04XRMZK	Russian for Intermediate Students Examination Zhanna Isaeva Zhanna Isaeva Zhanna Isaeva (Gar.)	ZK	4		Z	PV
04XRPZK	Russian for Advanced Students Examination Zhanna Isaeva Zhanna Isaeva Zhanna Isaeva (Gar.)	ZK	4		Z	PV
04XRZZK	Russian for Beginners Examination Zhanna Isaeva Zhanna Isaeva Zhanna Isaeva (Gar.)	ZK	3		L	PV
04XSMZK	Spanish for Intermediate Students Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	4		z	PV
04XSPZK	Spanish for Advanced Students Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	4		Z	PV
04XSZZK	Spanish for Beginners Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	3		L	PV

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

04XAMZK	English for Intermediate Students Examination	ZK	4		
The course content is th	e examination as given by the study plan. The examination covers the AM1, AM2, and AM3 courses and consists of two part	s - written (100 m	nin) and oral		
(20-30 min). The studen	t is expected to master the AM syllabus and demonstrate the ability to apply their knowledge gained in the three English could	rses.			
04XAPZK	English for Advanced Students Examination	ZK	4		
The course content is th	e examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability	to apply their kno	wledge obtained		
in the three AP courses	The examination consists of 2 parts - written (100 min) and oral (30 min) and includes also oral presentation of a topic from	the student's field	d of study.		
04XCESZZK	Czech for Foreigners Beginners - Examination	ZK	4		
The course content is th	e examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04	XCESZ1,2,3 cou	rses and can		
only be taken after succ	essful completion of all three courses. Detailed information is to be obtained from the teacher.				
04XCESMZK	Czech for Intermediate Students Examination	ZK	4		
The course content is th	e examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the C	ESM1,2,3 courses	s and can only		
be taken after successfe	al completion of the 3 courses. Detailed information is to be obtained from the teacher.				
04XCESPZK	Czech for Foreign Students - Advanced Examination	ZK	4		
The course content is th	e examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the C	ESP1,2,3 courses	s and can only		
be taken after successfe	al completion of the 3 courses. Detailed information is to be obtained from the teacher.				
04XFMZK	French for Intermediate Students Examination	ZK	4		
The content is the exam	ination 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	d oral part and is organized according to Examination Instructions, a document available on the web.				
04XFPZK	French for Advanced Students Examination	ZK	4		
The whole French progr	am is ended with an examination covering the contents of FP1-FP3. The examination consists of a written and/or an oral par	t and is organized	1 according to		
Examination Instruction	s, a document available on the web. Assessment of the presentation is included into the examination grading.				
04XFZZK	French for Beginners Examination	ZK	3		
The content is the exam	ination as given by the study plan. The course is terminated with an examination consisting of oral and written part. The exam	nination is ruled b	by the document		
Instruction for examinat	ion. Its content covers the levels FZ1 - FZ5.				
04XNMZK	German for Intermediate Students Examination	ZK	4		
The course content is th	e examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examination	on consisting of tv	vo parts - written		
and oral, which cover the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessment. More detailed information					
is to be obtained from th	is to be obtained from the teacher.				

04XNPZK	German for Advanced Students Examination	ZK	4				
The course content is the	ne examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination	n consisting of two	o parts - written				
and oral, which cover th	ne courses NP1 - NP3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungrade	d assessment. M	ore detailed				
information is to be obta	ained from the teacher.						
04XRMZK	Russian for Intermediate Students Examination	ZK	4				
The course content is the	ne examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	ledge and skills a	cquired in RM1				
- RM3. Students are elig	gible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given instruct	ions by the teache	er.				
04XRPZK	Russian for Advanced Students Examination	ZK	4				
The course content is the	ne examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	ledge and skills a	cquired in RP1				
- RP3. Students are elig	pible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruction	ons by the teache	r.				
04XRZZK	Russian for Beginners Examination	ZK	3				
The course content is the	ne examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	ledge and skills a	cquired in RZ1				
- RZ5. Students are elig	pible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instruction	ons by the teacher	r.				
04XSMZK	Spanish for Intermediate Students Examination	ZK	4				
The course content is th	e examination as given by the study plan. SMZK examination consists of two parts - written and oral; to be eligible for the writte	n part, students w	ill have obtained				
non-graded assessmer	t for course SM3.Oral examination follows the written part.						
04XSPZK	Spanish for Advanced Students Examination	ZK	4				
The course content is the	e examination as given by the study plan. Examination SPZK consists of two parts, namely oral and written. The prerequisite f	or admission to or	ral 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	ZK	3				
The course content is the	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 exar	nination 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: BSPJIJRV Name of the group: BS P_JIB JR Optional courses Requirement credits in the group: Requirement courses in the group: Credits in the group: 0 Note on the group:

Note on the group	<i>.</i>					
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
02DEF1	History of Physics 1 Igor Jex Igor Jex (Gar.)	Z	2	2+0	Z	V
02DEF2	History of Physics 2 Igor Jex Igor Jex (Gar.)	Z	2	2+0	L	V
17ENER	Energy Ond ej Novák, Miloš Tichý Miloš Tichý Miloš Tichý (Gar.)	ZK	2	2P	L	V
02EXF	Experimental Physics Jaroslav Adam, Barbara Antonina Trzeciak, Jaroslava Óbertová, Katarína K ížková Gajdošová Jaroslava Óbertová Katarína K ížková Gajdošová (Gar.)	ZK	2	2P+0C	z	v
02PRA1	Experimental Laboratory 1 Libor Škoda, Jaroslav Biel ík Jaroslav Biel ík (Gar.)	KZ	6	0+4	Z	V
02PRA2	Experimental Laboratory 2 Libor Škoda, Jaroslav Biel ík Jaroslav Biel ík (Gar.)	KZ	6	0+4	L	V
02FYS1	Physical Seminar 1 Filip Petrásek (Gar.)	Z	2	0+2	Z	V
04AKS	English Conversation Jana Ková ová Jana Ková ová (Gar.)	Z	1	0+2	L	V
00MAM1	Essentials of High School Course 1 David B e	Z	1	0+1		V
00MAM2	Essentials of High School Math Course 2 Lukáš Heriban Severin Pošta Lukáš Heriban (Gar.)	Z	1	0+1		V
17NRE	Experiment Design and Control Dušan Kobylka	Z,ZK	3	2+1	Z	V
15CH1	General Chemistry 1 Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z	3	2+1	Z	V
15CH2	General Chemistry 2 Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z,ZK	3	2+1	L	V
18PRC1	Programming in C++ 1 Vladimír Jarý, Miroslav Virius Miroslav Virius (Gar.)	Z	4	2+2	Z	V
18PRC2	Programming in C++ 2 Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)	KZ	4	2+2	L	v

TTEXT Witting and presenting academic text KZ 2 1 FZ V TV-1 Physical Education Z 1 L V TV-3 Physical Education Z 1 L V TV-4 Physical Education Z 1 0+2 L V TV-3 Physical education Z 1 0+2 L V TV-4 Physical education Z 2 260C V 14TED Creating Electronic Documents Z 2 260C V 16ZVB Introduction to Elementary Particle Physics Z 2 2400 Z V 02UFEC Introduction to Elementary Particle Physics Z 2 2400 Z V 112ZLG Basics of Algorithmization Z Z 2 2400 Z V 02ZMI Foundations of Physical Measurements KZ 3 2422 V V 02ZMI Foundations of Physical Measurements KZ 3 242 Z V 02ZMI Foundations of Physical Measurements KZ 3 242 Z V 02ZMI Foundations of Physical Measurements KZ<	18PMTL	Programming in MATLAB Mat j Pokorný, Quang Van Tran, Jaromír Kukal Quang Van Tran Jaromír Kukal (Gar.)	КZ	4	4C	Z	v		
TV-1 Physical Education Z 1 Z V TV-2 Physical Education Z 1 L V TV-3 Physical Education Z 1 0+2 Z V TV-4 Physical education Z 1 0+2 L V TV-4 Physical Education Z 1 0+2 Z V 14TED Creating Electronic Documents Z 2 260 V 02UFEC Introduction to Elementary Particle Physics Z 2 2+0 Z V 02UFEC Basics of Algorithmization ZZ/K 4 2+2 L V 17ZEL Basics of Electronic Documents ZZ/K 4 2+2 L V 17ZEL Basics of Electronic Documents More Work Merror Work Meroror Work Merror Work Mer	17TEXT	Writing and presenting academic text	KZ	2	1P+1C	Z	v		
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TV-3Physical educationZ10+2ZvTV-4Physical educationZ10+2ZvT4TEDCentring Electronic DocumentsAle Materia (Gar)Z2260v1327UBIntroduction to EcologyKZ2240Zv02UFECIntroduction to EcologyKZ2240Zv132ALGBasics of AlgorithmizationZacar (PM Kather) MeasurementsZX4242Lv12ZLBBasics of ElectronicsKather (Marco Measurements)ZX4242Lv12ZMLBasics of ElectronicsKather (Marco Measurements)ZK4044LLv02ZM2Foundations of Physical MeasurementsKZ3242Zv02ZM2Foundations of Physical Measurements 2KZ4074LZ2202ZM2Foundations of Physical Measurements 2KZ222232202ZM2Foundations of Physical Measurements 2KZ4074L222202ZM2Foundations of Physical Measurements 2KZ2222322232222222222222222222222222222222222<	TV-2	Physical Education	Z	1		L	V		
TV-4 Physical education Z 1 0+2 L v 14TED Creating Electronic Documents Z 2 26C V 162TVB Introduction to Ecology Z 2 26C V 162TVB Introduction to Ecology KZ 2 240 Z v 02UFEC Introduction to Elementary Particle Physics Z 2 240 Z v 18ZALG Basics of Algorithmizan's Particle Physics KZ Z 240 Z v 17ZEL Basics of Electronics Xama Part look, Facebak Ready Volus (Gar) KZ 3 2+2 Z v 02ZM1 Foundations of Physical Measurements KZ 4 0P-44 L v 02ZM2 Foundations of Physical Measurements KZ 4 0P-44 L v 02ZM2 Foundations of Physical Measurements KZ 4 0P-44 L v 02ZM2 Foundations of Physical Measurements bit (Gar) Z 3 <td>TV-3</td> <td>Physical education</td> <td>Z</td> <td>1</td> <td>0+2</td> <td>Z</td> <td>V</td>	TV-3	Physical education	Z	1	0+2	Z	V		
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162/VB Introduction to Ecology KZ 2 240 Z v 02UFEC Introduction to Elementary Particle Physics Z 2 240 Z v 182ALG Baaks of Algorithmization Franks (Sava) Z 2 240 Z v 182ALG Baaks of Algorithmization Franks (Sava) ZX 4 242 L v 182ALG Baaks of Algorithmization Franks (Sava) KZ 3 242 Z v 02ZM1 Foundations of Physical Measurements 1 ZK 4 0P-4L L v 02ZM2 Foundations of Physical Measurements 2 KZ 4 0P-4L L v 15CH1 General Chemistry 1 Z 3	14TED	Creating Electronic Documents Aleš Materna, Ji í Martin ík Aleš Materna Aleš Materna (Gar.)	Z	2	26C		V		
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Q2DEF2 History of Physics 2 Z 2 Development of classical mechanics after Newton, Bernoulli's, Euler, Lagrange, Historical development of optics, corpuscular and wave approach. Electricity and magnetism - electrostatics, advaniam, electrostatics, electrostatics, advaniam, electrostatics, electrostatis, electrostatics, electrostatics, electrostatics, ele	as experimental science. New	Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano i vton and his work.	Bruno. Copernicus	s, Kepler, G	allieo, Huyge	ens. The dirtr	i of physics		
Development of classical mechanics after Newton, Bernoull's, Euler, Lagrange, Historical development of optics, orpuscular and wave approach. Electricity and magnetism - electrostatics, galvanism, electrostatics approx by Burk and Einstein, Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclear energy. Elementary particles, standard model. The concept of Nature and Universe of today. 17ENER Energy ZK 2 The ocurse provides students with basic information about energy industry as a branch of economy, It has five co-related parts. World energy, including basic concepts, energy history and global resources, transport and consumption. Energy industry components and the State Energy. Strategy. Energy industry in the EU: the development, including involvant processes, documents and legal instruments. Institutions of energy systems oereatide velops and of energy production/transformation focused on electricity generation covering a basic technical description of fossi, nuclear, water, wind and solar power plants, including a discussion of the discussing of the main topics of current energy industry and the observe plants. Including a discussion of the covers is devolved to discussing of the main topics of current energy industry and sudent presentations on the chosen topic. ZK 2 Q2EXF Experimental Laboratory 1 KZ 6 C2EXF Experimental Laboratory 1 KZ 6 C2EXF Experimental Laboratory 2 Laboratory 2 ZK 2 C2EXF Experimental Laboratory 1 KZ 6<	02DEF2 His	tory of Physics 2				Z	2		
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	UUMAM2 Est Review of basics of high sch	sentials of High School Math Course 2 ool mathematics.			I	Ζ	1		

17NRE	Experiment Design and Control	Z,ZK	3
Lecture deals with desig	in and operation of systems for control of experiments, acquisition and evaluation of experimental data. It provides informatic	n about interfaces	of personal
computers for control of	experimental systems (COM, USB, Firewire, LAN, GPIB), further about measuring systems with VME, VXI and LXI interface	s, discuss their ac	dvantages and
graphical oriented dovel	cures dear with programming of measuring systems - special dedicated software, problems of use of high programming lang	for data acquisition	any use of
	Concerned Chemietry 2		
	General Oneniusity 2 Nation of the course General chemistry I. The main attention is naid to general principles governing chemical processes. Usi		J les the fact that
the validity of these prin	ciples is not restricted only to chemical processes is documented. The significance and practical use of explained principles.	are illustrated by e	es, the lact that
in exercises.			
18PRC1	Programming in C++ 1	7	4
This course covers main	It was a second and a second	. – .	
18PRC2	Programming in C++ 2	KZ	4
This course covers the c	biject oriented programming and othesr advanced constructs in the C+;+ programming language and the Standard Template	e Library.	-
18PMTL	Programming in MATLAB	KZ	4
Introducing Matlab envir	ronment as efficient tool for computation in complex arrays and symbolic variables, namely for linear algebra, mathematic an	alysis, statistics, a	Igorithmization
and geometric represen	tation of results.		
17TEXT	Writing and presenting academic text	KZ	2
The course focuses on	examples development of soft skills how to write and present academic text. The first part of the course is dedicated to introd	lucing and classify	ring various
academic texts, essentia	al rules for writing an academic text, and creating an appropriate structure of the written text. Follows lectures related to basi	c typographic rule	s for graphical
arrangement of a writter	n text; rules how to write and create tables, graphs, figures; differences between new text and plagiarism; and how to manage	e references and c	itations in
academic texts in nuclea	ar engineering. In this part, students are familiarised with widely used software for the writing of the academic text. The first p	art of the course i	s dedicated to
presenting academic tex	t, mainly to introduction to verbal and non-verbal aspects of presentation; to all stages of presentation building; and widely used	I software for prese	enting academic
writing and presenting th	w theoretical lectures give a chance to students to apply theory into practice with the primary aim to give the first experience	s to students befor	re they start
	Physical Education	7	1
TV-1	Physical Education		1
TV-2	Physical Education		1
TV-3	Physical education		1
TV-4	Physical education	Z	1
14TED	Creating Electronic Documents	Z	2
Basic skills for creating	and presenting student theses. Individual exercises focus on creating and formatting texts, equations, charts, tables, present	ations and entire of	documents in an
office suite.			
16ZIVB	Introduction to Ecology	KZ	2
The subject inform abou	t basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the en	ivironment and eva	aluate economic
	Je development.	7	
	Introduction to Elementary Particle Physics		2
The course provides an	easily accessible infroduction to elementary particle physics. Development, methods, goals and perspectives of the subject		4
18ZALG	Basics of Algorithmization		4 Iovitu
	Design of Electronice		iexity.
17ZEL	Basics of Electronics	KZ	3 icol circuito with
them Next lectures dea	mornation of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors and al with semiconductor components (standard, Zener, capacitive LED), bipolar, uninolar transistors and semiconductor components.	opents with more I	avers (thyristors
and triacs) Lectures con	timus with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analog/c	ligital converters	ectures are
completed with electron	ic laboratory exercises.	ingital control to cont	
027M1	Foundations of Physical Measurements 1	7K	2
The lecture is designed	for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however,	, it can be attende	d by students of
other branches. The goa	al of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired d	lata on a PC. Stud	ents learn the
basic habits of work in a	physics lab.		
02ZM2	Foundations of Physical Measurements 2	KZ	4
The lecture is designed	for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however,	, it can be attende	d by students of
other branches. The goa	al of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired d	lata on a PC. Stud	ents learn the
basic habits of work in a	physics lab.		
Code of the an	oup: BSPJAZYKYZAP		
Nome of the av	roup: BS D in zuku zop		
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Requirement c	redits in the group:		
Requirement of	ourses 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 Jana Ková ová Jana Ková ová (Gar.)	Z	2	0+2	Z	V
04XAM2	English for Intermediate Students M2 Jana Ková ová Jana Ková ová (Gar.)	Z	2	0+2	L	V
04XAM3	English for Intermediate Students M3 Jana Ková ová Jana Ková ová (Gar.)	Z	2	0+2	Z	V

04XAP1	English for Advanced Students P1 Jana Ková ová Darren Copeland (Gar.)	Z	2	0+2	Z	V
04XAP2	English for Advanced Students P2 Darren Copeland Darren Copeland (Gar.)	Z	2	0+2	L	V
04XAP3	English for Advanced Students P3 Jana Ková ová Darren Copeland (Gar.)	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 Jana Ková ová (Gar.)	Z	2	2S	Z	V
04XCESM1	Czech for Foreigners - Intermediate 1 Jana Ková ová Jana Ková ová (Gar.)	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 Jana Ková ová 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 Jana Ková ová 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 V ra Šlechtová (Gar.)	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 V ra Šlechtová (Gar.)	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 V ra Šlechtová (Gar.)	Z	2	0+4	Z	V
04XFZ5	French for Beginners Z5 V ra Šlechtová V ra Šlechtová (Gar.)	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 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XNM3	German for Intermediate Students M3 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XNP1	German for Advanced Students P1 Miloslava echová 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 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XRM1	Russian for Intermediate Students M1 Zhanna Isaeva 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 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRP1	Russian for Advanced Students P1 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRP2	Russian for Advanced Students P2 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	L	V
04XRP3	Russian for Advanced Students P3 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRZ1	Russian for Beginners Z1 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	L	V
04XRZ2	Russian for Beginners Z2 Zhanna Isaeva 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 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	Z	V
04XRZ5	Russian for Beginners Z5 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	L	V
04XSM1	Spanish for Intermediate Students M1 Beatriz Vadillo Gonzalo 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 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSP1	Spanish for Advanced Students P1 Beatriz Vadillo Gonzalo 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 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	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 Beatriz Vadillo Gonzalo 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 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	Z	V
04XSZ5	Spanish for Beginners Z5 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	L	V
Characteristics of the	courses of this group of Study Plan: Code=BSPJAZYKYZAP I	Name=BS P ja	azyky za	p		·
04XAM1 En	alish for Intermediate Students M1			•	Z	2
The course is designed for st	udents who have successfully completed the full secondary school English language	course at least at I	the A2 level	of the Com	mon Europe	ean Framework
of Reference for Languages	(CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., in	to fundame	ntals of voc	abulary 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 subtechr	nical interes	t. Attention i	s also paid to
extending the knowledge of a	arammar issues used in EAP.					•
	aliah far Intermediate Studente M2				7	2
				I	Z	2
The AM2 course expects the	student to have completed the AM1 course. It develops their skills for work with subte	echnical texts, focu	ising also m	ore on spec	cific gramma	ar, functions,
and lexical items typical of ES	SP and EAP (e.g., definition, existence and classification of phenomena, object descript	ions). Part of the c	ourse is also	o guided wri	ting. If neces	ssary, grammar
revision is included.						
04XAM3 En	alish for Intermediate Students M3				Z	2
The course develops the skill	s that enable students to cope with features typical of professional style. Increasing atte	ntion is paid to dev	elopina sub	technical v	- cabularv ar	nd independent
understanding of professiona	al texts. Great emphasis is placed on distinguishing different levels of formal and inform	nal oral and writte	n communio	cation and th	neir appropr	iate Czech
equivalents. The course also	includes studying abstracts and rules for writing them as well as basic rules for prepa	ring and giving a s	hort preser	tation on a	chosen topi	c related to the
student's field.						
04XAP1 En	glish for Advanced Students P1				7	2
The course is designed for st	tudents who have successfully completed the full secondary school English language	course (at least th	ne B1 level o	of the Comn	non Europe	an Framework
of Reference for Languages	- CEFR). It provides an introduction into English for Specific and Academic Purposes	(ESP, EAP), i.e., ir	nto the fund	amentals of	vocabulary	, functions,
grammar, and style typical of	professional oral and written communication situations (fundamentals of terms in ma	thematics and phy	sics, definit	ions, graph	descriptions	s, etc). It also
covers professional oral and v	written communication on topics related to the undergraduate's life and needs. It develop	os skills for free pro	ofessional w	riting (writin	g a CV, lette	r of application,
polite request). If necessary,	revision of selected grammar topics is included.					
04XAP2 En	glish for Advanced Students P2				Z	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 cho	sen branch	es of scienc	e. Accordina to
the students' needs it concer	ntrates on chosen grammar topics, but mainly intends to develop understanding of svr	ntactic structures a	and typical r	hetorical fu	nctions (e.a.	, various types
of descriptions, and, if possib	ble, a case study). Increasing emphasis is placed on the undergraduate s independent	t work with and rea	ading of lind	uistically m	ore demand	ling materials.
The course extends the stude	ent's subtechnical vocabulary, and includes fundamental notions of chosen branches	of science. It is foc	used on for	mal writing i	including the	e sentence and
paragraph structure, linking,	cohesion and coherence in texts.					
04XAP3 Eng	glish for Advanced Students P3				Z	2
The AP3 course is based on	- AP2 and expects the student to work without any guidance with authentic professional	materials and to in	terpret the t	text. It includ	les training (oral and written
communication skills and fun	ctions (e.g., expressing an opinion, agreement, and objections; taking part in discussi	on, note-taking; su	ummarizing	, writing an	abstract) an	d, if possible,
also preparing a project on a	given or chosen topic and presenting it. The course places emphasis on distinguishin	g levels of formal	and informa	al language	both in oral	and written
communication.	<u> </u>					
04XCESZ1 Cze	ech for Foreigners - Beginners 1				Z	2
The course is designed for st	tudents of the English programme. Students will become acquainted with the main cha	aracteristics of Cze	ech (phonet	ic and gram	mar feature	s) and they will
acquire basic language and	speaking skills. The course focuses on pronunciation exercises, simple social phrases	, and oral and writ	ten commu	nication in th	ne most con	nmon everyday
situations. The course covers	roughly lessons 1-3 of eština Express (Czech Express) by L. Holá and P. Bo ilová.					
04XCESZ2 Cze	ech for Foreigners - Beginners 2				Z	2
The language and communic	cation competences acquired in CESZ1 are further developed. Students deepen their	knowledge of the	declension	and conjuga	ation system	and practise
basic communication topics.	The course covers roughly lessons 3-5 in Czech Express by L. Holá and P. Bo ilová.				,	
04XCESZ3 Cze	ech for Foreigners - Beginners 3				Z	2
The course further develops	the language and communication competences acquired in the XCESZ1 and XCESZ	2 courses. The tea	ching focus	ses on build	ing up basic	vocabulary,
fixing correct pronunciation a	nd deepening grammar, features through practice, as well as introducing the Czech c	ulture. Students ar	e asked to	produce sim	ple texts an	d they practise
frequent types of dialogue. The	ney also practise understanding texts in terms of main ideas or looking for specific deta	ails in texts. The co	urse covers	roughly les	sons 5-7 in	eština expres
1.						
04XCESM1 Cze	ech for Foreigners - Intermediate 1				Z	2
The course is focused on corr	rect pronunciation, important morphological phenomena, prepositional phrases, and ve	rb forms as well as	s on extendi	ng the stude	ent´s vocabu	lary for various
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, a	nd reading skills and tra	ains the student
in understanding common abbreviations, abbreviated words, and mathematical terms and formulas.	U U	
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	especially focused on s	stylistics and
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 Comr	non European Framewo	ork of Reference.
It is focused partly on revision of standard language structures, but mainly on practising more complex grammatical structures typical of the structures and the structures are structures to the structures are structured and the structures are structured as a structure and the structures are structured as a structure and the structures are structured as a structure as	/le 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 Studie	s and Student Life. Wri	tten practice
includes communication with teachers and faculty administrators.		
04XCESP2 Czech for Foreigners - Advanced 2	Z	2
This course extends the student's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with techn	nical 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 pres	entation, 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 both written and ora	al 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	e to transmit general ar	nd technical
information and to solve problems. FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises the secondary school is the secondary school in the secondary school in the secondary school is the se	es, systemizes and exp	pands language
skills gained in previous study. The following topics are covered: University studies in our country and in France, writing of transactional letters, (V, personal statement,	request, answer
to an advert, French culture and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts		exts.
04XFM2 French for Intermediate Students M2		2
Course FM2 builds on FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular so	ience texts, teatures typ	bical for technical
and scientific language (passives, nonlinalization, word formation). ropics, physics, power engineering, environment, miemet, success of Fren	In science and technolo	ogy, French
OdVEM2 Example for Letormodiate Students M2	7	2
D4AFIND FIEld in the fellow up courses. System of linguistic competence acquired during the fellow up courses. System of the fellow up courses.	uros (subordinato and i	∠ nfinitivo clausos
narticiple structures compound tenses) Text summary -Students prepare a written paper which will be delivered in form of an oral presentation	n in-class. The naner is	linked to the
field of students' future specialisation or to their interest and generally covers a technical /applied science topic. It is not a translation but a creation of the students	tive work compiled fror	n French articles
and one's own knowledge/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesior	and coherence.	
04XEP1 French for Advanced Students P1	7	2
FP advanced course The objective of this three-semester course is to improve and further develop communication in the French language in b	oth written and oral for	m. Students will
be able to communicate in social interaction and in academic, scientific and work environment. They will be able to use the language to transm	it general and technical	l information and
to solve problems. FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topics	are repeated and expa	anded: subjonctif,
passé composé-imparfait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of transa	ctional letters, CV, pers	sonal statement,
request, answer to an advert, environmental issues, success of French science and technology, chosen topics from French regional culture, Pari	s. Topics of specializatio	on: mathematics,
Internet, physics, chemistry. Reading of technical and popular science texts, turther work with these texts and interpretation.		
U4XFP2 French for Advanced Students P2		2
with the link to PT contents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication technical and scientific communication are stressed (passive voice, nominalization, word formation).	tion on given topics. re	atures typical of
04YEP2 Eronch for Advanded Studente P2	7	2
The course is focused on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication	tion in engineering envi	ronment Special
skill - translation of shorter texts (both from and into the language) Writing of a paper and making oral presentation in-class. The paper genera	Ilv covers a technical /a	applied science
topic. It is a creative work compiled from 3 French sources. Preparation of several set topics for oral examination.		
04XFZ1 French for Beginners Z1	7	2
French for beginners The objective of this 5-level course is to be able to communicate in French orally and in writing in situations of everyday lit	e, in socializing and in	professional life.
The course includes French for specific / technical communication and reading of popular science and scientific texts. FZ1 The objective is to t	e able to communicate	at elementary
level, actively using the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda -	Pravdová, French for be	eginners
(Francouzština pro za áte ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4 : introdu	ctions, personal informa	ation, asking and
giving the directions, simple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pron	unciation and grammar	-
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 of the textbook: Prav	vda - Pravdová :
French for Beginners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, ag	Jreement - disagreemer	nt, apology,
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral	communication. Specific	c topics covered:
How does the machine work? A few expressions concerning the study. Name of University and Faculty.		
04XFZ3 French for Beginners Z3		2
The course builts upon FZZ. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 or the textbook. Frav	da - Pravdova: French	for Beginners.
propues, renotions and studations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both	nor information and lot	uu as part of
0/XF7/ Franch for Baginnare 7/	7	2
The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced	The contents is roughly	v covered with
lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading skills are practiced.	the lecture notes French	h for Engineering
Students of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France. Pari	s, shopping, weather. u	niversity in our
country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.	, <u>, </u> , <u>,</u> , <u>,</u> , , , , , , , , , , ,	,
04XFZ5 French for Beginners Z5	Z	2
All four skills acquired in FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topi	c. They present it orally	in the class. The
general contents is covered by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other mate	rials. Topics: on physics	s from lecture
notes, success of French science and technology, information about France. Grammar is systemized and complemented with syntax (subordir	ate clauses, typical cor	njunctions,
l subjunctive clauses, gerund, passive,		

04XNM2	German for Intermediate Students M2	Z	2
The course introduces	other more complex grammatical structures and their application in communication based on technical texts, such as the relation	n between techno	logy and society,
the world at the beginn	ing of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and	l car technology e	tc. Students
practise reading for info	rmation and reading aloud, and appropriate language for various purposes in oral and written communication. The course system	natically revises o	ther grammatical
phenomena important	or professional discourse (participles, relative clauses).		
04XNM1	German for Intermediate Students M1	Z	2
The objective of the co	urse is to level off the students' skills in the German language. The course focuses on revision of more difficult phenomena and	d structures (e.g.	the passive) and
word formation process	es (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Reput	blic and Germany	current
environmental issues to	gether with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physicist	ts, and the fundar	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
The course introduces	ther more complex grammatical structures and their application in communication based on technical texts, such as the relation	n between techno	logy and society,
the world at the beginn	ng of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and	car technology e	tc. Students
practise reading for info	mation and reading aloud, and appropriate language for various purposes in oral and written communication. The course system	natically revises o	ther grammatical
phenomena important	or protessional discourse (participies, relative clauses).	_	2
	German for Advanced Students P1	<u> </u>	2
I his course requires go	loa grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be le	velled off at the b	eginning of the
course. The course is t	ten tocused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading tor	detail). It revises	and develops
more difficult grammars	tructures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on	practical everyday	communication,
	O among fair A diamaged Officiality DO	7	0
U4XINP2	German for Advanced Students P2	∠	Z
The course develops th	3 students skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extend	ding their general	and subtechnical
both written and arel (Jouces mathematical expressions and texts of nuclear power engineering, increasing emphasis is placed on understanding and	a practising format	communication,
	v, reiter of application, merview, scholarship), and more complex grammatical structures (i.e., subjunctive, indirect speech).	7	0
04XNP3	German for Advanced Students P3	<u> </u>	2
The course consists of	3 main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a va	ariety of less com	mon situations
(traffic problems and ca	ir accidents, accident report, tilling in a form, complaints). Based on presentations and technical and subtechnical texts, the vision of the subtechnical texts, the vision of the subtechnical texts and t	ocabulary range i	n fields such as
nuclear power enginee	ing, the environment, computer science, and car technology, will also be extended. Only authentic professional texts are used	d. By means of a	presentation,
students are trained to	process information gained from their reading of complex and difficult texts and present it to the class in a simplified oral form. If	ne course also inc	ludes translation
practice to and from Ge			0
04XRM1	Russian for Intermediate Students M1	Z	2
The course is designed	for students with previous knowledge of Russian from secondary schools. Students are supposed to know the Russian alphat	pet (both printed a	nd handwritten),
basic vocabulary for co	mmunication in everyday situations (introductions, socializing, greetings, shopping for tood and objects of everyday need, ask	ing the way and g	iving directions),
they can use basic gra	nmar structures (verbal and nominal forms, irregular verbs, pronouns). The initial knowledge corresponds to the achievement	level of the RZ2	course. The
Contents and scope of	the course correspond approximately to the RZ3 course, but for half of the time allotted in the timetable.		
		_	_
04XRM2	Russian for Intermediate Students M2	Z	2
04XRM2 The course is based or	Russian for Intermediate Students M2 the RM1 course, its contents and scope correspond roughly to RZ4, however, for half of the time allotted in the timetable.	Z	2
04XRM2 The course is based or 04XRM3	Russian for Intermediate Students M2 the RM1 course, its contents and scope correspond roughly to RZ4, however, for half of the time allotted in the timetable. Russian for Intermediate Students M3	Z Z	2 2
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4XSM3 Spanish for Intermediate Students M3 Z 2 he 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 nough 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 nal part of the programme, general Spanish course based on course books, covers presentations and, finally, a written and oral examination.
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4XSP1 Spanish for Advanced Students P1 Z 2
ourse concentrates on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communication. Course prerequisites: level B2
f CEFR.
4XSP2 Spanish for Advanced Students P2 Z 2
ourse 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
ritten communication.
4XSP3 Spanish for Advanced Students P3 Z 2
ourse 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
ased on what students will need in their career.
4XSZ1 Spanish for Beginners Z1 Z 2
ourse 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
e 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.
4XSZ2 Spanish for Beginners Students Z2 Z 2
ourse 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
iem 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.
ealia of Spanish-speaking countries are also included.
4XSZ3 Spanish for Beginners Z3 Z 2
he 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,
nainly 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
ommunication on a given general topic, for which the student is trained by reading texts or listening to them.
4XSZ4 Spanish for Beginners Z4 Z 2
he 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
pain. It pays attention to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the imperative, and subjunctive),
written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them.
4XSZ5 Spanish for Beginners Z5 Z 2
he 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
art, 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		
	Students are introduced to mathematical concepts and methods used in the introductory physics course.				
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	The course is focused on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the composition of public 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		
01ANB3	Calculus B 3	Z,ZK	8		

1. Functional sequences and series - convergence range, criteria of uniform convergence, continuity, limit, differentiation and integration of functional series, power series, Series Expansion, Taylor's theorem. 2. Ordinary differential equations - equations of first order (method of integration factor, equation of Bernoulli, separation of variables, homogeneous equation and exact equation) and equations of higher order (fundamental system, reduction of order, variation of parameters, equations with constant coefficients and special right-hand side, Euler differential equation). 3. Metric spaces - metric, norm, scalar product, neighborhood, interior and exterior points, boundary point, isolated and non-isolated point, boundary of set, completeness of space, Hilbert spaces. Orthogonal polynomials. Complete orthogonal systems. 4. Fourier series - expansion of functions into Fourier series, trigonometric Fourier

	Taylor series, elementary terms of vector analysis, Jacobi matrix. 6. Functions defined implicitly by one or several equations	S.	5 p.a,
01ANB4	Calculus B 4	Z.ZK	6
[1] Diferenciální p	o et funkcí více prom nných a funkcionálních vektor . [2] Funkce zadané implicitn . [3] Taylorovy ady funkce více prom nných. [4] F	Regulární zobrazer	ní, zám na
prom nných, nel	kartézské soustavy sou adnic. [5] Lokální, vázané a globální extrémy funkce více prom nných. [6] Základy teorie míry a obrys konstr	ukce Lebesgueovy	/ míry. [7]
Integrální po et f	unkce více prom nných - Riemann v a Lebesgue v integrál, základní vlastnosti, Fubiniova v ta, v ta o substituci. Leviho a Lebesgu	eova v ta. Limita, s	spojitost a
	derivace integrálu podle parametru. [8] Integrály po k ivkách a plochách. Integrální v ty.	_	
01LAL	Linear Algebra 1		_ 2
1. Vector space. 2	Linear dependence and independence. 3. Basis and dimension. 4. Subspaces of vector spaces. 5. Linear mappings. 6. Matrices of li	inear mappings. 7.	Frobenius
011 01 2		774	4
Outline: 1 Invers	LITERI AIGENIA Z e matrix and operator 2 Permutation and determinant 3 Spectral theory (eigenvalue eigenvector diagonalization) 4 Hermitian an	d quadratic forms	4 5 Scalar
product and orthog	onality. 6. Metric geometry. 7. Riesz theorem and adjoint operator. Outline of the exercises: 1. Methods for calculation of inverse matri	ices. 2. Methods of	calculation
of determinants.	3. Calculation of eigenvalues and eigenvectors. 4. Hermitian and quadratic forms. Canonical form. 5. Scalar product and orthogonalit	ty. Calculation of or	thogonal
	complements. 6. Geometry exercises and examples. 7. Adjoint operators.		
01LALZ	Linear Algebra 1, exam	ZK	2
01MAN	Calculus 1	Z	4
	Basic calculus (real analysis, functions of one real variable, differential calculus).		
01MAN2	Calculus 2	Z,ZK	8
1. Continuation of	differential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolute ar	nd conditional conv	ergence 3.
Real and complex p	power series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of integration and application of integrals. Constrained Diamona integral	rals: primitives, defi	nite integral
0114017	(Riemann deimition), techniques of integration and application of integrals, Generalized Riemann integral	71/	4
	Calculus I, exam		4
	Probability and Statistics The probability theory is build are dually beginning with the classical definition and	Continuing till the k	4 almogorov
definition The notic	to probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical deminion and the statistics of random variable are treated and basic limit the	orems are stated a	and proved
On the	e basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testin	ng are explained.	ina provoa.
01RMAF	Equations of Mathematical Physics	Z.ZK	7
The subject of this	course is solving integral equations, theory of generalized functions, classification of partial differential equations, theory of integral tr	ansformations, and	d solution of
	partial differential equations (boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).		
01STME	Statistical Methods with Applications	ZK	2
The course consist	is of selected methods of statistical data analysis such as: linear regression and correlation, analysis of variance, nonparametric met	hods, contingency	tables, and
their applic	ation. The aim is to illustrate the use of statistical procedures on examples. Solutions of concrete examples by use of statistical softw	are are also includ	ed.
02DEF1	History of Physics 1		2 Dhuning in
Physics and its pla	ace in the system of sciences. The relationship of man and nature, Natural sciences in ancient Orientand Greece, Greek natural philo Archimed, Arabic science, European science in Middle Ages, Renaissance , da Vinci, Giordano Bruno, Conernicus, Kenler, Galileo, H	Sophers, Aristotie.	of physics in
ricienistic period,	as experimental science. Newton and his work.	luygens. The birth	or physics
020552			
	History of Physics 2	7	2
Development o	History of Physics 2 f classical mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. E	Z Electricity and mag	2 netism -
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The course is an introduction to analytical mechanics. The students acquire knowledge of the basic concepts of the Lagrange and Hamiltonian formalisms as well as different approaches to description of dynamics (Newtons, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these methods is illustrated on elementary examples like the two-body

problem, the motion of a system of constrained mass points, and of a rigid body. Advanced parts of the course cover differential and integral principles of mechanics. The subject is the first part of the course of classical theoretical physics (02TEF1, 02TEF2).

the first part of the course of classical theoretical physics (02TEF1, 02TEF2).		
02TER Heat and Molecular Physics	Z,ZK	4
Thermal expansion of materials, heat transfer; stationary and non-stationary heat conduction, heat transfer and penetration; 1st and 2nd thermodynamic	principle, ideal ar	nd real gas,
entropy; non-chemical systems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials; kinetic theory: Maxwell's velocity distr	ibution, equipartition	on theorem.
02TSFA Thermodynamics and Statistical Physics	Z,ZK	4
Foundation of thermodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelie	er principle. Statisti	ical entropy.
Basics of many body description from a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical effective statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical effective statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical effective statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical effective statistical point of view (classical and quasiclassical regime within the frame of a canonical effective statistical effective statistical point of view (classical and quasiclassical regime within the frame of a canonical effective statistical effective	ensemble, Fermi g	as, models
of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena.		
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 sub	oject are presente	d.
02VOAF Waves, Optics and Atomic Physics	Z,ZK	6
Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarizati	ion, interference, o	diffraction,
coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Brog	glie waves,the Sch	nrodinger
equation, stationary states and spectra of finite systems.		
02ZM1 Foundations of Physical Measurements 1	ZK	2
The lecture is designed for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it can	an be attended by	students of
other branches. The goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired data	on a PC. Students	s learn the
basic habits of work in a physics lab.		
02ZM2 Foundations of Physical Measurements 2	KZ	4
The lecture is designed for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it can	an be attended by	students of
other branches. The goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired data	on a PC. Students	s learn the
basic habits of work in a physics lab.		
04AKS English Conversation	Z	1
The course will develop the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral communication	ion. The student w	vill develop
their vocabulary for various communication situations and will master their communication strategy. They will also practise their listening skills in order to	better follow and	participate
in discussions. The student will be trained to express their ideas clearly and according to current English usage, and become a more conf	ident speaker.	
04XAM1 English for Intermediate Students M1	Z	2
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 Co	ommon 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 v	ocabulary and sty	le 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 inte	rest. Attention is a	also paid to
extending the knowledge of grammar issues used in EAP.		
04XAM2 English for Intermediate Students M2	Z	2
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 with the course is also gui	writing. If necessar	ry, grammar
revision is included		
revision is included.		
04XAM3 English for Intermediate Students M3	Z	2
O4XAM3 English for Intermediate Students M3 The course develops the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtechnica	Z I vocabulary and ir	2 ndependent
O4XAM3 English for Intermediate Students M3 The course develops the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtechnica understanding of professional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communication attended.	Z I vocabulary and ir and their appropria	2 ndependent ate Czech
O4XAM3 English for Intermediate Students M3 The course develops the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtechnica understanding of professional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communication a 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	Z I vocabulary and ir and their appropria a chosen topic re	2 ndependent ate Czech elated to the
O4XAM3 English for Intermediate Students M3 The course develops the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtechnica understanding of professional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communication a 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 student's field.	Z I vocabulary and ir and their appropria a chosen topic re	2 ndependent ate Czech elated to the
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04XCESM3	Czech for Foreigners - Intermediate 3	Z	2
The last course i	evises morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is especial	ally focused on styl	listics and
	lexicology and on developing the student's writing skills.		
04XCESMZK	Czech for Intermediate Students Examination	ZK	4
The course conte	nt is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the CES	M1,2,3 courses ar	nd can only
	be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.		1
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 Europ	ean Framework of	f Reference.
It is focused partly	v on revision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of scie	ence. Students are	e taught the
basics of function	hal style of engineering and professional communication, both in spoken and written form. The topics include University Studies and s	Student Life. Writte	n practice
		7	2
	CZECITION FOREIGNES - AUVALICEU Z	Z specialist toxts pla	
	emphasis on individual work	specialist texts pla	cing greater
04205502	Czoch for Eoroignore Advanced 3	7	2
	os the student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation a	and finally presen	tation of the
	student's knowledge non official 2. It includes working with during the specialist indentials, their interpretation and presentation, t	and, many, presen	
04XCESP7K	Czech for Foreign Students - Advanced Examination	7K	4
The course conte	nt is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the CES	P1 2 3 courses an	nd can only
	be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.		ia can chij
04XCES71	Czech for Foreigners - Beginners 1	7	2
The course is desi	aned for students of the English programme. Students will become acquainted with the main characteristics of Czech (phonetic and g	rammar features) a	and they will
acquire basic langi	Lage and speaking skills. The course focuses on pronunciation exercises, simple social phrases, and oral and written communication	in the most commo	on everyday
	situations. The course covers roughly lessons 1-3 of eština Express (Czech Express) by L. Holá and P. Bo ilová.		
04XCESZ2	Czech for Foreigners - Beginners 2	Z	2
The language and	I communication competences acquired in CESZ1 are further developed. Students deepen their knowledge of the declension and cor	jugation system a	nd practise
	basic communication topics. The course covers roughly lessons 3-5 in Czech Express by L. Holá and P. Bo ilová.		
04XCESZ3	Czech for Foreigners - Beginners 3	Z	2
The course furthe	er develops the language and communication competences acquired in the XCESZ1 and XCESZ2 courses. The teaching focuses on	building up basic v	ocabulary,
fixing correct pronu	inciation and deepening grammar, features through practice, as well as introducing the Czech culture. Students are asked to produce	simple texts and the	hey practise
frequent types of d	ialogue. 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 e	ština expres
	1.		
04XCESZZK	Czech for Foreigners Beginners - Examination	ZK	4
The course conte	ent is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04X	CESZ1,2,3 course	es and can
	only be taken after successful completion of all three courses. Detailed information is to be obtained from the teacher.		
04XFM1	only be taken after successful completion of all three courses. Detailed information is to be obtained from the teacher. French for Intermediate Students M1	Z	2
04XFM1 French - intermedi	French for Intermediate Students M1 ate FM The objective of this three-semester course is to improve and further develop communication in the French language in both v	Z vritten and oral for	2 m. Students
04XFM1 French - intermedia will be able to co	French for Intermediate Students M1 ate FM The objective of this three-semester course is to improve and further develop communication in the French language in both v mmunicate in social interaction and in academic, scientific and professional environment. They will be able to use the language to tra	Z vritten and oral form nsmit general and	2 m. Students technical
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04XFZ1	French for Beginners Z1	Z	2
French for beginne	rs 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	alizing and in profe	ssional life.
The course includ	es French for specific / technical communication and reading of popular science and scientific texts. FZ1 The objective is to be able to	communicate at e	elementary
level, actively u	using the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Pravd	ová, French for beç	ginners
(Francouzstina pro	za ate ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4 : introductions, pe	rsonal information,	asking and
giving the d	directions, simple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronu	nciation and gramm	nar.
04XFZ2	French for Beginners 22	Z	2
The course is linkin	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 :
thanking travelling	mers. Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (Introductions, Invitation, weicoming, agreeme	nt - disagreement,	apology,
thanking, travelling	, map of France, 1000, expression of will, wish, order, promotion, pleasure). Context pronunciation is practiced. Stress on order community How does the machine work? A few expressions concerning the study Name of University and Faculty	ation. Specific topi	cs covered.
047675	Fronch for Dogingoro 72	7	2
The course builts	unon E72 Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravida - Pra	vdová: French for F	Z
Topics functions	apoint 22. Daske iniguisite knowledge and skinis are developed. The contents is given by lessing 1+2 - 10 of the exclusion in trackar - 1 available and shittaking are complemented from other materials. Stress is nut on oral communication in dialogues and on reaction both for inf	ormation and loud :	as part of
	pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts		
04XE74	French for Beginners 7/	7	2
The course builds	up on FZ3 Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The cor	tents is roughly co	vered with
lessons 19 - 23 of th	he textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lecture	e notes French for E	Ingineering
Students of FJFI.	The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shopp	ing, weather, unive	rsity in our
	country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet	et.	.,
04XE75	French for Beginners Z5	7	2
All four skills acquir	I red in FZ4 are further developed as well as technical language. Students prepare a paper on a chosen popular science tonic. They pr	esent it orally in the	e class The
general contents	is covered by lessons 24 - 26 of the textbook: Pravda-Pravdova. French for Beginners, and is complemented from other materials. To	pics: on physics fro	m lecture
notes, success	of French science and technology, information about France. Grammar is systemized and complemented with syntax (subordinate cla	auses, typical coniu	inctions.
,	subjunctive clauses, gerund, passive.		
04XF77K	French for Beginners Examination	7K	3
The content is the	examination as given by the study plan. The course is terminated with an examination consisting of oral and written part. The examin	ation is ruled by the	e document
	Instruction for examination. Its content covers the levels FZ1 - FZ5.		
04XNM1	German for Intermediate Students M1	7	2
The objective of the	e course is to level off the students' skills in the German language. The course focuses on revision of more difficult phenomena and st	ructures (e.a. the p	assive) and
word formation	processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Repu	blic and Germany.	current
environmental is	sues together with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physicists	, and the fundamer	ntals of IT
	terminology. It develops communication on related topics and is aimed at correct pronunciation, grammatical correctness and unders	tandability.	
04XNM2	German for Intermediate Students M2	Z	2
The course introdu	ces other more complex grammatical structures and their application in communication based on technical texts, such as the relation be	tween technoloav ?	and society.
the world at the b	peginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and o	car technology etc.	Students
practise reading for	information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systemati	cally revises other g	rammatical
	phenomena important for professional discourse (participles, relative clauses).		
04XNM3	German for Intermediate Students M3	Z	2
The course introdue	ces other more complex grammatical structures and their application in communication based on technical texts, such as the relation be	، tween technology ہ	and society,
the world at the b	peginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and (ar technology etc.	Students
practise reading for	information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systemati	cally revises other g	rammatical
	phenomena important for professional discourse (participles, relative clauses).		
04XNMZK	German for Intermediate Students Examination	ZK	4
The course content	is the examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examination of	onsisting of two pa	rts - written
and oral, which co	ver the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme	ent. More detailed in	nformation
	is to be obtained from the teacher.		
04XNP1	German for Advanced Students P1	Z	2
This course requir	es good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be level	led off at the begin	ning of the
course. The cours	se is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for d	etail). It revises and	l develops
more difficult gramm	nar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on practice of the structures of the st	ctical everyday com	munication,
	i.e., telephoning.		
04XNP2	German for Advanced Students P2	Z	2
The course develop	s the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending	their general and s	ubtechnical
vocabulary range. I	t introduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and pra	actising formal com	munication,
b	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	sts 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 a	nd car accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the voca	bulary range in fiel	ds 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 pres	sentation,
students are trained	a 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	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 c	cover the courses NP1 - NP3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungraded	assessment. More	edetailed
	information is to be obtained from the teacher.		
04XRM1	Russian for Intermediate Students M1	Z	2
I ne course is desig	gned 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	in communication in everyday situations (introductions, socializing, greetings, snopping for food and objects of everyday need, asking	ine way and giving	urrections),
mey can use bas	su grammal structures (verbal and nominal ionis, inegular verbs, pronouns). The initial knowledge corresponds to the achievement i contents and scope of the course correspond approximately to the D72 course, but for half of the time allotted is the time table.	evei ui trie KZZ COL Ila	
		io.	

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	e timetable.				
04XRM3 Russian for Intermediate Students M3 Z 2						
The course develo	ps the knowledge and skills acquired in RM1 and RM2 and its contents and scope are roughly at the same level as those of RZ5, howe in the timetable.	ver, for half of the t	ime allotted			
04XRMZK	Russian for Intermediate Students Examination	ZK	4			
The course conter	It is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled	ge and skills acqui	ired in RM1			
- RM3. Stud	lents are eligible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given insti	ructions by the tead	cher.			
U4XRP1	RUSSIAN TOF AGVANCEG STUGENTS P1	ticing more difficul	Z			
	structures, understanding the fundamentals of technical language and training writing skills.	tiong more dimedia	grammar			
04XRP2	Russian for Advanced Students P2	Z	2			
The course is bas	sed on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives, ve	rb aspects, specifi	c syntactic			
	structures). Stress is put on independent oral and written communication.					
04XRP3	Russian for Advanced Students P3		2			
The course is bas	ed on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraphrasing and provide structures). The	J, translation). The	RP1 - RP3			
these skills Furth	or previous knowledge of general language at secondary level (listening, reading, correct communication in everyday situations). The er study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and wi	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 accu technical topics	urately and with co	nfidence on			
04XRP7K	Russian for Advanced Students Examination	7K	4			
The course conter	t is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled	lge and skills acqu	ired in RP1			
- RP3. Stud	lents 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 tead	cher.			
04XRZ1	Russian for Beginners Z1	Z	2			
The course repres	ents the first stage of the five-semester programme, its final aim being reading and understanding professional texts written in Russian	. Thus it begins wit	h mastering			
the Russian alpha	bet (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 Z_2		2 Ionto will be			
able to communication	ster of the programme is designed to teach skills for basic communication in everyday situations and for reading easy and short subte te using short sentences and appropriate structures, and read aloud with confidence a short text without marked stress. They will also	chnical texts. Stud	ents will be			
	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			
The course is base	d on RZ2 and includes further everyday topics, develops understanding of short compact texts on new subtechnical topics (for training	various forms of re	eading skills			
and listening) ar	d introduces new grammar. Students will be trained to distinguish intonation patterns while listening to spoken language. They will be understood, and to express their opinion. Writing skills will be trained on guided writing tasks and note-taking	able to respond so	o as to be			
04XR74	Russian for Beginners 74	7	2			
The course is base	d on RZ3. It improves and expands the knowledge of general language in all four skills (reading and understanding longer texts with a c	ertain percentage (of unfamiliar			
words, oral comn	nunication in everyday situations, writing longer texts). Students are trained to use grammar structures effectively (e.g., irregular verbs	, differences in ver	b patterns			
from Czech, mo	dality, imperatives, conditionals). They practice and develop communication skills for everyday situations (food, travelling, free time), a	ind practice oral an	nd written			
communication o	on more specific topics (environment, addictions, the green movement). They become acquainted with various geographical data (e.g.	, Siberia), learn ho	ow to fill in			
04XR75	Russian for Beginners 75	7	2			
The course expect	s the student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understanding	a. extracting and s	∠ ummarizina			
information from a	specialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Comm	nunication skills ar	e trained on			
everyday topics. S	Studying grammar is based on professional and technical texts and only includes items typically used in professional communication (verbal adjectives,	participles,			
passi	ve voice). Students develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, po	lite request, etc.)				
04XRZZK	Russian for Beginners Examination	ZK	3			
I ne course contei	n is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled lents are clicicly and a successful written examination. Students are clicic instructions in the students are clicic instructions and a successful written examination.	ige and skills acqu	irea in RZ1 ther			
04XSM1	Spanish for Intermediate Students M1	7	2			
The course is de	signed for students whose competence is at level B1 of CEFR. i.e. those who studied Spanish in the secondary school. The 3-semest	er course develops	s standard			
vocabulary and p	ays attention to further grammar topics (e.g., perífrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negativ	e form of the impe	rative, and			
subjunctive), to written and oral communication on a given everyday or easy subtechnical topic, for which the students are trained by reading tex	ts or listening to th	em.			
04XSM2	Spanish for Intermediate Students M3	Z	2			
The course develo	ops the students' knowledge from the previous course (SM1). Students are gradually acquainted with fundamentals of Spanish for sp	ecific purposes in o	order to be			
0420142	able to work with specialized texts on the Internet.	7				
	Spanish for intermediate Students IVI3	i C style They will be				
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 shor	t articles and sum	maries. The			
final part of the programme, general Spanish course based on course books, covers presentations and, finally, a written and oral examination.						
04XSMZK	Spanish for Intermediate Students Examination	ZK	4			
The course conten	t is the examination as given by the study plan. SMZK examination consists of two parts - written and oral; to be eligible for the written 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	art, students will ha	ve obtained			
	non-graded assessment for course SM3.Oral examination follows the written part.					
04XSP1	Spanish for Advanced Students P1	Z	2			
Course concentrat	es on more amount grammar topics, revision or vocabulary, basics of Spanish for specific purposes as well as written communication. of CEFR.	Course prerequisit	es: level B2			
04XSP2	Spanish for Advanced Students P2	Z	2			
Course SP2 is the	second part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and synta:	x and focuses on ir	ndependent			
	written communication.		-			

04XSP3	Spanish for Advanced Students P3	Z	2			
Course SP3 is the	final part of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is focu	used on written com	munication			
	based on what students will need in their career.					
04XSP7K	Spanish for Advanced Students Examination	7K	4			
The course content	Cpaining of Advanced Double Characteristics of two parts, namely oral and written The prerequisite for a	dmission to oral na	art is having			
The course content	ts the examination as given by the study plant. Examination of 21 study we parts, namely of a low written. The prerequisite for a passed the written start event study plant is based on sulls in courses SPI SP2 and SP3 or on an individual study plan of the	e student	artis naving			
042074	passed the written test. Examination content is based on synap of conserve 7.					
048521	Spanish for Beginners 21	<u> </u>	لا: الانتخاب ا			
Course SZ1 is the i	inst stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundament	al grammar structu	res and will			
be able to	communicate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Span	ish and will develop	Dit.			
04XSZ2	Spanish for Beginners Students Z2	Z	2			
Course SZ2 is base	ed 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 a	as to enable			
them to understand	d short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries and other	s such as the Czec	h Republic.			
	Realia of Spanish-speaking countries are also included.					
04XSZ3	Spanish for Beginners Z3	Z	2			
The course is base	d on course SZ2, and develops the student's vocabulary and grammar structure. The course covers realia (history and culture) of the	e Spanish-speaking	g 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.					
04XSZ4	Spanish for Beginners Z4	Z	2			
The course is bas	ed 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 atte	ntion to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the	imperative, and su	biunctive).			
-1	to written and oral communication on a given general or subtechnical topic. for which the student is trained by reading texts or listeni	ng to them.	· · · · · //			
042975	Spanish for Boginners 75	7	2			
	Spanish for supplemented with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be analyzed with additional subtechnical matching to the students will be additional subtechnical matching to the s		∠ In its final			
	are supplemented with additional subject initial materials, so the students will be gradually additional with peculiarities of spanish to the source back will be the source and finally, a written and sha low private the source and finally, a written and sha low private the source and finally a written and sha low private the source and finally and the source and sha low private the source and finally and the source and sha low private the source and finally and the source and sha low private the source and the source and sha low private the source and finally a written and sha low private the source and the source	tion	s. IIT its iiriai			
0.41/0771/	part, the general spanish course based on the course book will end with presentations and, finally, a written and oral examina					
04XSZZK	Spanish for Beginners Examination	ZK	3			
The course conte	ent is the examination as given by the study plan. Examination consists of two parts - written and oral. Student can register for oral ex	amination only if he	e/she has			
	passed the written examination test.					
12NME1	Numerical Methods 1	Z,ZK	4			
There are explaine	d the basic principles of numerical mathematics important for numerical solving of problems important for physics and technology. Me	thods for solution of	f tasks very			
important for phys	icists (ordinary differential equations, random numbers) are included in addition to the basic numerical methods. Integrated computat	ional environment	MATLAB is			
	used as a principle programming language as a demonstration tool. The seminars are held in computer laboratory.					
14TED	Creating Electronic Documents	Z	2			
Basic skills for crea	ting and presenting student theses. Individual exercises focus on creating and formatting texts, equations, charts, tables, presentatio	ns and entire docu	ments in an			
	office suite.					
15CH1	General Chemistry 1	7	3			
The most importan	t concents quantities and units used in chemistry are introduced in the course General Chemistry I Their significance and practical u	ise are illustrated b	v examples			
	solved in evercies	ise are indstrated b	y champies			
150112		771/	2			
	General Green Library 2		3			
The subject is the o	continuation of the course General chemistry i. The main attention is paid to general principles governing chemical processes. Using i	various examples, t	the fact that			
the validity of these	principles is not restricted only to chemical processes is documented. The significance and practical use of explained principles are	illustrated by exam	pies solved			
	in exercises.					
16UJRF1	Introductory Nuclear and Radiation Physics 1	Z,ZK	4			
The aim of the cou	rse is to provide students with basic knowledge about atomic nucleus and radiation physics, which is followed by other specialized lect	tures. The subject s	summarizes			
thematic areas: de	velopment of opinions on micro-wave and radiation physics, basic characteristics of the atom and nucleus, binding energy, measurer	nent of mass and d	limensions			
of the nuclei, the m	ost important nuclear models. General characteristics of the interaction of ionizing radiation with the matter, interaction of alpha, beta,	gamma and neutro	on radiation,			
	passage of radiation beams through the matter, radiation effects in matter.					
16ZDOZ1	Fundamentals of Radiation Dosimetry 1	Z,ZK	4			
History, develop	pment, and objectives of dosimetry. Quantities and units used for description of sources, fields, interactions of ionizing radiation, ioniz	ations, energy trans	sfer and			
	absorption. Fundamentals of the effects of ionizing radiation.					
16ZIVB	Introduction to Ecology	KZ	2			
The subject inform	about basic of the ecologic principles, terms and ideas. It covers overview information regarding to particular components of the enviro	nment and evaluat	e economic			
-	indicators and sustainable development.					
17BP.II1	Bachelor Thesis 1	7	5			
Student on the bas) cis of theses assignment and under leading of a supervisor individually processes given tonic during 2 semesters. The subject is give	n by self-reliant wo	rk on given			
orddenir on the bac	topic The work is continuously check by a supervisor	IT by Sell Tellant wo	in on given			
	inple. The work is continuously crieck by a supervisor.	7	10			
	Datrielui Thesis 2		10			
Student on the bas	sis of theses assignment and under leading of a supervisor individually processes given topic during 2 semesters. The subject is give	n by self-reliant wo	rk on given			
(topic. The work is continuously check by a supervisor.					
17BPROV	Sate operation of nuclear facilities	KZ	2			
	The aim of the subject is to familiarize students with basic principles of nuclear safety.					
17DEZA	Detection of Ionizing Radiation	KZ	3			
The course provide	es basic information about sources and methods of detection of ionizing radiation and spectroscopy, with special emphasis on neutro	n detection and sp	ectrometry.			
The subject focuses on the physical principles of detection, but introduces detection technology to the extent appropriate. An important part is a laboratory practice, where students						
individually solve seven tasks in groups of up to three students. It also includes writing a measurement report, which teaches to write scientific work.						
17ENEF	Experimental Neutron Physics	KZ	3			
The course is focus	sed on experimental methods and experiments in the field of neutron physics, mainly using radionuclide neutron sources. The lectures	are devoted to the	theoretical			
bases necessary for preparation and realization of the laboratory exercises and to the methods of experimental data processing and evaluation. Specifically, the lectures provide detailed						
description of neutr	on properties and their utilization, the characteristics of neutron sources, properties of promot and delayed neutrons, selected method	s of neutron detecti	on, neutron			
transport in substa	nces, production, formation and modification of neutron fields and neutron beams. The lectures are complemented by the laboratory e	exercises in the field	d of neutron			
detection, measurement of delayed neutrons, study of neutron transport in various substances, experiments with various neutron sources (252Cf, AmBe, D-D neutron generator),						
preparation and detection of photo-neutron source, calibration of the radionuclide neutron source. The experiments are realized at the VR-1 training reactor and its laboratories						

17ENER Energy	ZK	2				
The course provides students with basic information about energy industry as a branch of economy. It has five co-related parts: World energy, includin	a basic concepts, en	ergy history				
and global resources, transport and consumption. Energy industry of the Czech Republic, including history with an emphasis on recent development, ir	cluding privatization	, the current				
legal and institutional basis, a description of the main Czech energy industry components and the State Energy Strategy. Energy industry in the EU; th	e development and c	current state				
of EU energy integration, including important processes, documents and legal instruments. Institutions of energy systems describing the basic mode	s of energy systems	s operation				
roles in general and specifically in the EU and the Czech Republic. Attention is also paid to energy modelling. Technical ground of energy production/tran	sformation focused (on electricity				
generation covering a basic technical description of fossil, nuclear, water, wind and solar power plants, including a discussion of their advantages and d	sadvantages and en	vironmental				
impact, including phenomena such as greenhouse effect and climate change. Attention is also paid to energy networks. The conclusion of the course	is devoted to discus	ssing of the				
main topics of current energy industry and student presentations on the chosen topic.						
17EXE Excursion	Z	2				
The goal of the subject is to familiarize students with institutions and industry connected with the nuclear energy production in the Czech Republic.	he subject content i	s variable,				
according to the possibilities of the participating companies, but it always covers basic fields: (i) research, development and engineering (e.g. ÚJV a	.s., CV ež s.r.o., Ú	JF AV R,				
ŠKODA JS a.s.), (ii) fuel cycle (e.g. UJP PRAHA a.s., SÚRAO, EZ a.s.), (iii) electricity and heat production (EZ a.s.), (iv) radiation protection and	oversight (SÚJB, SÚ	ÚRO). The				
subject requires 5 full days, which are uniformly spread among semester and examination period.						
17IJR Instrumentation of Nuclear Reactors	Z	3				
Lectures are concentrated on the instrumentation of nuclear reactors. The introduction is devoted to requirements on the safe operation of nuclear por	ver plants and cated	orization of				
nuclear power plant systems with a respect to the nuclear safety according to IAEA, IEC and IEEE standards. Next, the attention is oriented to sensors of	f nuclear instrument	ation netron				
detectors, their pulse, DC current and Campbell operation, thermocouples, thermoresistors, pressure and flow meters. Next part is directed to the income	e and excore instrur	mentation of				
nuclear power plants Dukovany and Temelin, to the evaluation of their states and power measurement. Next are presented safety functions of nuclear	r power plants, their	actication				
and systems that carries out safety actions. Attention is also given to the qualification of nuclear power plants systems. There are also presented exa	nples of foreign nuc	lear power				
plants instrumentation. The conclusion of the lectures is oriented to requirements of research nuclear facilities instrumentation. The instrumentation	of the VR-1 training	reactor is				
presented in a detail, then instrumentations of LVR15, LRU, TRIGA Mark II and SUR100 reactors is also given.						
1/JARE Nuclear Reactors	<u>ZK</u>	2				
Introduction. World power issue. Previous evolution of power reactor. Nuclear fission reactors, fuel assemblies, active core, control systems, safety syst	ens, containment. C	assification				
of reactors into IV generations, standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Private the standard types of nuclear power reactors: concept, description, layout, personard types of nuclear power reactors: concept, description, layout, personard types of nuclear power reactors: concept, description, layout, personard types of nuclear power reactors: concept, description, layout, personard types of nuclear power reactors: concept, description, layout, personard types of nuclear power reactors: concept, description, layout, personard types of nuclear power reactors: concept, description, layout, personard types of nuclear power reactors: concept, descriptio	ssurized water reac	tors (PVVR).				
vestern-type PWK (westinghouse, kwv), Framatonii). V VER-type readouts, remeinin nuclear power plant, bolling water reactors, neavy water reactors, beavy water reactors, and a power plant. Bolling water reactors, neavy water reactors, and a power plant is a power plant. Bolling water reactors and a power plant is a power plant. Bolling water reactors and a power plant is a power plant. Bolling water reactors are power plant. Bolling water rea	d INDRO initiativos	Evoluction				
high-temperature gas cooled reactors. Second induced eta, reactors of generation in (EFR, AF-1000, VER 1200, Reactors of generation in USB) and a construction by the second processor in the second s	long torm outlook					
17KO IF		2				
Design and Equipment of audios units Boold design of activity Design of mole parts of units with property of audios the reaction.	L ZN					
main components of nuclear units. Basic designs of cooling circuits. Design of main parts of units with pressurized water reactors. Selected components of next technological systems (/ accumulator tasks, boric acid systems, systems for coolapt nuclear and coolapt inventor	v control bormotic (
Plant units. Components on electrical equipment and power output systems from nuclear power plant, examples of NPP wirring diagrams including electric	y control, nermetic s	neters				
		neters.				
The source "Neutron Device" introduces students to the basics of neutron physics and its explications. The lectures start with the description of the fund		rld etructure				
at the level of electrons protons and neutrons. After that a description of radioactivity and nuclear reactions follows. Great attention is naid to the reac	tions of neutrons wi	th nuclei of				
the matter The prohability of realization of particular nuclear reactions expressed by the effective cross-section versus neutron ensures described	he issues of referer	ce frames				
mechanisms of neutron interactions, and issues of differential cross sections and neutron slowing down process are discussed in detail. Fission of h	eavy nuclei is the ba	sis for the				
operation of nuclear reactors. Students will get familiar with the conditions for realization of fission chain reaction. Finally, the most important applic	ations of neutron ph	vsics are				
discussed.	• •	, ,				
17NRE Experiment Design and Control	7.7K	3				
Lecture deals with design and operation of systems for control of experiments, acquisition and evaluation of experimental data. It provides informatic	n about interfaces o	f personal				
computers for control of experimental systems (COM, USB, Firewire, LAN, GPIB), further about measuring systems with VME, VXI and LXI interface	, discuss their adva	ntages and				
disadvantages. Next, lectures deal with programming of measuring systems - special dedicated software, problems of use of high programming lan	guages and especia	Illy use of				
graphical oriented development tools (Agilent VEE and LabView); data acquisition and evaluation. Finally, students prepare individual software project for	data acquisition and	d evaluation.				
17PALC Nuclear Fuel Cycle	ZK	2				
The course deal with introduction to the nuclear fuel cycle of nuclear power plants, particularly PWR which are in operation in the Czech Republic or are u	nder consideration f	or operation				
in future in the Czech Republic. The first part of the course is focused on front-end of the nuclear fuel cycle, the second part is focused on fuel utilisa	ion in the reactor co	ore and the				
third part of the course is focused on back-end of the nuclear fuel cycle.						
17RFYZ Reactor physics	Z,ZK	4				
The subject Reactor physics helps Bachelors degree students to get acquainted with fundamentals of reactor physics. The students will get broad kno	wledge of fission cha	ain reaction.				
All fission aspects are important for nuclear reactors: fission products, yield of fission neutrons, energy release from fission, and kinetic energy of release	ed neutrons. Such a	a knowledge				
will be utilized for analysis of neutron balance in a nuclear reactor and definition of multiplication factor. The students will learn theory of neutron ske	wing down and fund	damental				
approximations of neutron energy spectrum and group theory. Students will get knowledge of Ficks law and diffusion theory for basic analytical calculation	is of neutrons spatia	l distribution				
in homogeneous multiplying and non-multiplying media. The same theory is also utilized for large-scale calculations of nuclear reactor cores. Conclus	ons obtained for hor	mogeneous				
reactor are subsequently compared to heterogeneous reactors. Lecture on fundamentals of nuclear rector kinetics and dynamics is	also included.	1				
17STJE Heat Transfer in Nuclear Power Plants	Z,ZK	4				
The course titled Heat Transfer in Nuclear Power Plants presents to the students the fundamental principles of heat transfer with a focus on nuclear p	ower-related application	ations. Most				
of the terms and laws were introduced in the course 02TER which is a predecessor of this course. The course 17STJE elaborates the principles in de	ails and extends the	e knowledge				
of students mainly in the areas related to the heat transfer in nuclear cores. An overview lecture of the basic principles will be given at the beginning of the course and all of the						
tundamental heat transfer mechanism will be discussed during the next weeks. It will start with conduction followed by convection and radiation at the end. The course focuses on the						
applications or mermokinetics related to nuclear reactors and equipment related to nuclear power plants and spent nuclear rule. For that reason, conduction and convection are to be discussed into details. Convection is divided according the nature of the flow into laminar and turbulant. The concept of redictive heat transfer use theoretically introduced in according to a service and turbulant.						
courses and the applications and models used by industry will be presented here. The course includes also fundamentals of heat transfer with phase	handes main omeh					
courses and the applications and models used by industry will be presented here. The course includes also initialitientials of heat transfer with phase to	nanges main empire	asis is given				
17TEMT Thermodynamics and fluid mechanics of nuclear newer plants	774	1				
The course gives summary of basic knowledge of the two theoretical fields which are important for the pucker reactors and nuclear power plants design	and operation: there	1 4 nodvnamice				
engineering and fluid mechanics. Both fields are lectured with hand-on approach, so that students obtain elementary view on issue, they will be able	o calculate basic an	d simplified				
tasks and they will be able to study this issues in more details in next continuing special courses	- Juliuliu Dabie all	- ompilled				
17TEXT Writing and presenting academic text	k7	2				
The course focuses on examples development of soft skills how to write and present academic text. The first part of the course is dedicated to intro		∠ a various				
academic texts essential rules for writing an academic text and creating an appropriate structure of the written text. Fillows lectures related to been	typographic rules fr	or granhical				
arrangement of a written text; rules how to write and create tables, graphs, figures; differences between new text and plagarism; and how to management of a written text; rules how to write and create tables, graphs, figures; differences between new text and plagarism; and how to management of a written text; rules how to write and create tables, graphs, figures; differences between new text and plagarism; and how to management of a written text; rules how to write and create tables, graphs, figures; differences between new text and plagarism; and how to management of a written text; rules how to write and create tables, graphs, figures; differences between new text and plagarism; and how to management of a written text; rules how to write and create tables, graphs, figures; differences between new text and plagarism; and how to management of a written text; rules how to write and create tables, graphs, figures; differences between new text and plagarism; and how to management of a written text; rules how to write and create tables, graphs, figures; differences between new text and plagarism; and how to management of a written text; rules how to write and create tables, graphs, figures; differences between new text and plagarism; and how to management of a written text; rules how to write and create tables, graphs, figures; differences between new text and plagarism; and how to management of a written text; rules how to write and create tables.	ie references and cit	tations in				
academic texts in nuclear engineering. In this part, students are familiarised with widely used software for the writing of the academic text. The first part	art of the course is d	edicated to				

presenting academic text, mainly to introduction to verbal and non-verbal aspects of presentation; to all stages of presentation building; and widely used software for presenting academic text. Exercises that follow theoretical lectures give a chance to students to apply theory into practice with the primary aim to give the first experiences to students before they start

writing and presenting their bachelor thesis.						
17UING	Introduction to Engineering	KZ	3			
This course provid	This course provides introduction to engineering skills. Students should gain general engineering skills at basic level (e.g. material properties and behavior, basics of manufacturing					
and production, quality assurance, environmental impacts,). In addition, the introduction to scientific work and technical drawing will be included.						
17ZEL	Basics of Electronics	KZ	3			
Lectures provide b	asic information of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors and so	lution of electrical	circuits with			
them. Next, lecture	s deal with semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor component	nts with more layer	s (thyristors			
and triacs). Lectu	res continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analog/dig	gital converters. Le	ctures are			
	completed with electronic laboratory exercises.					
18PMTL	Programming in MATLAB	KZ	4			
Introducing Matlab	environment as efficient tool for computation in complex arrays and symbolic variables, namely for linear algebra, mathematic analy	sis, statistics, algo	rithmization			
	and geometric representation of results.					
18PRC1	Programming in C++ 1	Z	4			
	This course covers mainly the C programming language and non-object oriented features of the C++ language.					
18PRC2	Programming in C++ 2	KZ	4			
This course covers the object oriented programming and othesr advanced constructs in the C+;+ programming language and the Standard Template Library.						
18ZALG	Basics of Algorithmization	Z,ZK	4			
This course is devoted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of the algorithm complexity.						
18ZPRO	Basics of Programming	Z	4			
This course is in	ntended mainly for students with little or no experience in programming. It familiarizes the students with the basic concepts in program	nming and with the	e Python			
	programming language.		-			
TV-1	Physical Education	Z	1			
TV-2	Physical Education	Z	1			
TV-3	Physical education	Z	1			
TV-4	Physical education	Z	1			

For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 2025-07-12, time 08:58.