Study plan

Name of study plan: BS Fyzika a technika termojaderné fúze

Faculty/Institute/Others: Department: Branch of study guaranteed by the department: Welcome page Garantor of the study branch: Program of study: Applications of Natural Sciences Type of study: Bachelor full-time Required credits: 98 Elective courses credits: 82 Sum of credits in the plan: 180 Note on the plan:

Name of the block: Compulsory courses of the specialization Minimal number of credits of the block: 98 The role of the block: PO

Code of the group: BSFTTFPP1 Name of the group: BSFTTF - povinné p edm ty 1. ro ník Requirement credits in the group: In this group you have to gain at least 24 credits Requirement courses in the group: In this group you have to complete at least 7 courses Credits in the group: 24 Note on the group:

Note on the grou	p.					
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
02DEF1	History of Physics 1 Igor Jex, Miroslav Myška Miroslav Myška Igor Jex (Gar.)	Z	2	2+0	Z	PO
02ELMA	Electricity and Magnetism Iskender Yalcinkaya, Goce Chadzitaskos, Josef Schmidt, Jan Vysoký Jan Vysoký Goce Chadzitaskos (Gar.)	Z,ZK	6	4+2	L	PO
02MECH	Mechanics Iskender Yalcinkaya, David B e Michal Jex David B e (Gar.)	Z	4	4+2	Z	PO
02MECHZ	Mechanics - Examination Iskender Yalcinkaya, Goce Chadzitaskos, David B e , Filip Petrásek, Stanislav Skoupý, Antonín Hoskovec, Petr Novotný Antonín Hoskovec David B e (Gar.)	ZK	2	-	Z	PO
00PT	Preparatory Week Petr Ambrož, Milan Krbálek Petr Ambrož Petr Ambrož (Gar.)	Z	2	týden	Z	PO
02TER	Heat and Molecular Physics Filip Petrásek Petr Novotný Petr Jizba (Gar.)	Z,ZK	4	2+2	L	PO
18ZPRO	Basics of Programming Maksym Dreval, Vladimír Jarý, Miroslav Virius, Jakub Klinkovský, Petr Pauš, František Vold ich, Jan Tomsa, Zuzana Pet í ková Miroslav Virius Miroslav Virius (Gar.)	Z	4	4C	Z	PO

Characteristics of the courses of this group of Study Plan: Code=BSFTTFPP1 Name=BSFTTF - povinné p edm ty 1. ro ník

02DEF1	History of Physics 1	7	2
		<u>ک</u>	2
Physics and its place in	the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural ph	nilosophers, Aristo	tle. Physics in
Helenistic period, Archir	ned. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galileo	o, Huygens. The b	irth of physics
as experimental science	e. Newton and his work.		
02ELMA	Electricity and Magnetism	Z,ZK	6
Electric charge, Coulorr	b's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors anddielectrics. Electric current and circuits, co	onductivity. Basics	of the relativity
theory. Electrodynamic	orces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, ac currents. Electromagnetic waves, Maxwell ed	quations	
02MECH	Mechanics	Z	4
ntroduction to physics, p	physical quantities and units. Particle kinematics, basic types of motion and theirsuperposition. Particle dynamics, one-dimension	sional equations o	f motion, motion
in central force field, for	ces innoninertial reference frames. Mechanics of system of free particles, two-body problem, collisions. Mechanics ofrigid bo	dy, rotation. Funda	amentals of
continuum mechanics, e	elasticity, hydrodynamics. Sound.		
02MECHZ	Mechanics - Examination	ZK	2
The content of the subje	ect is the examination according to the plan of studies.		

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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 and real ga								
entropy; non-chemical s	ystems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials; kinetic theory: Maxwell's velocity	distribution, equip	artition theorem.					
18ZPRO	Basics of Programming	Z	4					
This course is intended	This course is intended mainly for students with little or no experience in programming. It familiarizes the students with the basic concepts in programming and with the Python							
programming language								

Code of the group: BSFTTFPP2 Name of the group: BSFTTF - povinné p edm ty 2. ro ník Requirement credits in the group: In this group you have to gain at least 22 credits Requirement courses in the group: In this group you have to complete at least 6 courses Credits in the group: 22 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
02PRA1	Experimental Laboratory 1 Libor Škoda, Katarína K ížková Gajdošová, Barbara Antonina Trzeciak, Jaroslav Biel ík Jaroslav Biel ík Jaroslav Biel ík (Gar.)	КZ	6	0+4	Z	PO
02PRA2	Experimental Laboratory 2 Libor Škoda, Jaroslav Biel ík Jaroslav Biel ík (Gar.)	KZ	6	0+4	L	PO
02LCF1	Experimental Laboratory 1 Jaroslav Biel ik Jaroslav Biel ik (Gar.)	Z	2	0+2	Z	PO
02LCF2	Experimental Laboratory 2 Jaroslav Biel ík Jaroslav Biel ík (Gar.)	Z	2	0+2	L	PO
02TEF1	Theoretical Physics 1 Petr Novotný Petr Novotný Igor Jex (Gar.)	Z,ZK	4	2+2	Z	PO
02TEF2	Theoretical Physics 2 Filip Petrásek, Petr Novotný Josef Schmidt Petr Novotný (Gar.)	Z,ZK	4	2+2	L	PO
02TSFA	Thermodynamics and Statistical Physics Igor Jex, Jaroslav Novotný Antonín Hoskovec Igor Jex (Gar.)	Z,ZK	4	2+2	L	PO
02VOAF	Waves, Optics and Atomic Physics Josef Schmidt, Petr Novotný Jan Vysoký Ji í Tolar (Gar.)	Z,ZK	6	4+2	Z	PO

Characteristics of the courses of this group of Study Plan: Code=BSFTTFPP2 Name=BSFTTF - povinné p edm ty 2. ro ník

02PRA1	Experimental Laboratory 1	KZ	6
Lecture is intended espe	ecially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear	Engineering). Bu	it it can be also
attended by students inte	erested in the otherspecializations. In Experimental laboratory students learn how to prepare for experiments (including work with	n theliterature), the	e implementation
of the measurement (ac	quire of different experimental procedures and routines), willteach writing the records of measurement, processing and evalu	uation of results. A	t the same time
practically extendthe know	owledge gained in lectures on physics.		
02PRA2	Experimental Laboratory 2	KZ	6
Lecture is intended espe	ecially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear	Engineering). Bu	it it can be also
attended by students inte	erested in the otherspecializations. In Experimental laboratory students learn how to prepare for experiments (including work with	n theliterature), the	e implementation
	quire of different experimental procedures and routines), willteach writing the records of measurement, processing and evalu	ation of results. A	t the same time
practically extendthe kn	owledge gained in lectures on physics.		
02LCF1	Experimental Laboratory 1	Z	2
Cavendish experiment.	Elasticity.Thermal capacities. Electric measurements, Acoustic. Oscillations.		
02LCF2	Experimental Laboratory 2	Z	2
Electric and magnetic field	eld, microwaves, Xray and gamma rays, geometric optics		
02TEF1	Theoretical Physics 1	Z,ZK	4
The course is an introdu	ction to analytical mechanics. The students acquire knowledge of the basic concepts of the Lagrange and Hamiltonian formali	sm as well as dife	rent approaches
	ics (Newton's, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these methods is illustrated on element	, ,	
problem, the motion of a	a system of constrained mass points, and of a rigid body. Advanced parts of the course cover differential and integral principle	es of mechanics.	The subject is
the first part of the cours	se of classical theoretical physics (02TEF1, 02TEF2).		
02TEF2	Theoretical Physics 2	Z,ZK	4
Tensors and transformation	tions in physics. Mechanics of point mass, rigid body and continuum. The special theory of relativity: relativistic mechanics ar	nd classical field th	heory in the
Minkowski space-time.	Classical electrodynamics: Maxwell's equations in the Minkowski space-time, electromagnetic waves in dielectric media, elect	tromagnetic radia	tion in the dipole
approximation.			
02TSFA	Thermodynamics and Statistical Physics	Z,ZK	4
Foundation of thermody	namics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Cha	atelier principle. St	tatistical entropy.
Basics of many body de	escriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canoni	ical ensemble, Fe	rmi gas, models
of crystals and the black	k body radiation). The Boltzmann equation is usedto discusses simple transport phenomena.		
02VOAF	Waves, Optics and Atomic Physics	Z,ZK	6
Wave phenomena in me	echanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polari	zation, interferenc	e, diffraction,
coherence. Geometrical	optics. Introduction toquantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Bro	oglie waves,the So	chrodinger
equation, stationary stat	tes and spectra of finite systems.		

Code of the group: BSFTTFPP3 Name of the group: BSFTTF - povinné p edm ty 3. ro ník

Requirement credits in the group: In this group you have to gain at least 52 credits Requirement courses in the group: In this group you have to complete at least 13 courses Credits in the group: 52 Note on the group:

Note on the grou	•				,	
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
02BPTF1	Bachelor Thesis 1 Tomáš Markovi Igor Jex (Gar.)	Z	5	0+5	Z	PO
02BPTF2	Bachelor Thesis 2 Ivan uran Igor Jex (Gar.)	Z	10	0+10	L,Z	PO
02KF	Quantum Physics Filip Petrásek Martin Štefa ák Libor Šnobl (Gar.)	Z,ZK	3	2P+1C	Z	PO
02KVAN	Quantum Mechanics Martin Štefa ák Martin Štefa ák Martin Štefa ák (Gar.)	Z,ZK	6	4+2	Z	PO
01MMF	Martin Stela ak Martin Stela ak Martin Stela ak (Gar.) Methods of Mathematical Physics Pavel Š oví ek	Z,ZK	6	4+2	L	PO
14NMA	Parter S over ex Materials Science Petr Haušild, Jaroslav ech Petr Haušild Petr Haušild (Gar.)	KZ	3	2+1	5	PO
01NME2	Numerical Methods 2 Michal Beneš Michal Beneš Michal Beneš (Gar.)	KZ	2	2+0	L	PO
01PRST	Probability and Statistics Tomáš Hobza Tomáš Hobza Tomáš Hobza (Gar.)	Z,ZK	4	3+1	Z	PO
01RMF	The Equations of Mathematical Physics Václav Klika Václav Klika Václav Klika (Gar.)	Z,ZK	6	4+2	Z	PO
02TJNS	Transport Phenomena / Nonequilibrium Systems Igor Jex Martin Štefa ák Igor Jex (Gar.)	KZ	2	2+0	L	PO
17UEN	Introduction to Power Engineering	ZK	2	2+0	L	PO
02UFU	Introduction to Nuclear Fusion Jana Brotánková Jana Brotánková (Gar.)	Z,ZK	4	2+2	L	PO
12VAK	Vacuum Physics and Technology Richard Švejkar Richard Švejkar Richard Švejkar (Gar.)	KZ	4	2+2	Z	PO
12ZELD	Fundamentals of Electrodynamics Milan Ši or Ivan Richter Ivan Richter (Gar.)	Z,ZK	2	2+0	Z	PO
12ZFP	Principles of Plasma Physics Ji í Limpouch, Martin Jirka Martin Jirka Ji í Limpouch (Gar.)	Z,ZK	4	3+1	L	PO
02ZJFB	Nuclear Physics B Vladimír Wagner Martin Štefa ák Vladimír Wagner (Gar.)	KZ	3	3+0	Z	PO
02BPTF1 Ba	e courses of this group of Study Plan: Code=BSFTTFPP3 Nar ichelor Thesis 1 d on a topic approved by the administrators of the programme, department and by the	-			Z	5 ing commor
<u> </u>	ichelor Thesis 2				Z	10
The bachelor project is base regular meetings and discus	d on a topic approved by the administrators of the programme, department and by the	e dean. The student	is guided by	the project	supervisor dur	ing commo
1	Jantum Physics			2	Z,ZK	3
	tion, postulates of quantum mechanics, Born s statistical interpretation, expectation	n values, Schrödinge	er equation,	Heisenberg	uncertainty pr	inciple,
	nentum, solution of simple systems, hydrogen atom. Jantum Mechanics			7	Z,ZK	6
The lecture describes the bi	rth of quantum mechanics and description of one particle and more particles by eler rvable quantities by operators in the Hilbert space and calculation of their spectra.	ments of the Hilbert	space as we			
	ethods of Mathematical Physics			2	Z,ZK	6
	oduction to the theory of distributions with applications to solutions of partial different	-		ficients, furt	her the Fredhol	
	of a continuous kernel on a compact set as well as Sturm-Liouville operators on bour adary value problems and mixed problems.	nded intervals, and	applications	of the sepa	ration of variab	les method
	aterials Science				KZ	3
	Imerical Methods 2				KZ	2
The course is devoted to nur	nerical solution of boundary-value problems and intial-boundary-value problems for or initial-value problems and finite-difference methods for elliptic, parabolic and first-or		-		xplains method	s convertin
	obability and Statistics	,			Z,ZK	4
It is a basic course of proba	bility theory and mathematical statistics. The probability theory is build gradually beg ndom variable, distribution function of random variable and characteristics of random	-			-	-
-	he basic methods of mathematical statistics such as estimation of distribution param	neters and hypothes	is testing are			
The subject of this course is	e Equations of Mathematical Physics solving integral equations, theory of generalized functions, classification of partial d	ifferential equations	, theory of ir	1	Z,ZK formations, an	6 d solution c
	(boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).			1	V 7	0
	ansport Phenomena / Nonequilibrium Systems tudents to the field of transport phenomena. The concept of a distribution function, Bo	Itzmann equation a	nd H theore		KZ ssed. The gene	2 ral concepts
	specifically to problems of plasma physics.					

	ntroduction to Power Engineering				ZK	2
	course is to transmit to our students the basic information about power engineering as			•		
	cs function. The course is - from the beginning - structured logically from definition of te influence on our environment, to the transformation of fuel power to nobler types of pow	•	• •			
	rmation. They are described quite briefly- mostly from the view as their features for con					°
	ontains also power network features, their managing and structures, described on the p			-		
-	r of the Czech Republic and the State energy policy.				·	
02UFU	ntroduction to Nuclear Fusion			Z	Z,ZK	4
Criteria for fusion ignition,	fusion in stars, priniciples of plasma confinement in magnetic field (mirrors, pinches, st	ellarators, tokamak	s), principle	s of inertial	plasma con	finement,
	ent fusion research facilities and project (including ITER), plasma heating and control, f	fusion technology, f	uture fusion	<u> </u>		
	/acuum Physics and Technology				KZ	4
-	ncepts and relations; flow of rarefied gas. Interaction of gas with surface of solid surface um generation. Pumping process. Pumps. Vacuum measurements: vacuum gauges of t		-		-	-
-	ials and vacuum instalation parts. Practical exercises.		oouro, pump	nig speca,	gus now, co	nadolivity,
12ZELD F	undamentals of Electrodynamics			7	Z,ZK	2
	n of Maxwell-Lorentz microscopic equations followed by transition to Maxwell macrosco	opic theory. Using s	pecial theor		·	
transformation of field vect	ors between two inertial systems of coordinates with appropriate invariants. Wave and He	Imholtz equations a	re derived. E	By expansion	n into plane r	monochromatic
-	these equations are studied in homogeneous media with gradually increasing complex	-		-		
	tion in weakly non-homogeneous madia is presented using the method of eiconal. Indiv	lidual chapters are	illustrated b			
	Principles of Plasma Physics perature plasmas is explained using particle, kinetic and fluid approaches. It includes dri	ift motions and adia	abatic invaria	1	Z,ZK	4 ves in plasmas
	magnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as pondero				-	-
	tion into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multip		-	-		
02ZJFB N	luclear Physics B				KZ	3
	ts formidable challenges both experimentally and theoretically, simply because we are			c domain, w	where much	of our classical
intuition regarding the beh	aviour of objects fails us. The lecture is a basic introduction to very interesting regions of	of subatomic physic	cs.			
	ck: Compulsory elective courses					
Minimal numbe	r of credits of the block: 0					
The role of the l	block: PV					
Code of the aro	un BSSPOLVEDY					
-	up: BSSPOLVEDY					
Name of the gro	oup: BS - Social Sciences					
Name of the gro Requirement cr	oup: BS - Social Sciences edits in the group:					
Name of the gro Requirement cr	oup: BS - Social Sciences	lete at leas	t 1 coui	rse		
Name of the gro Requirement cr Requirement co	oup: BS - Social Sciences edits in the group: ourses in the group: In this group you have to comp	lete at leas	t 1 coui	rse		
Name of the gro Requirement cr Requirement cc Credits in the gro	oup: BS - Social Sciences edits in the group: ourses in the group: In this group you have to comp oup: 0			ſSe		
Name of the gro Requirement cr Requirement co	oup: BS - Social Sciences edits in the group: ourses in the group: In this group you have to comp roup: 0 up: Only one of these cou			ſSe		
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro	oup: BS - Social Sciences edits in the group: ourses in the group: In this group you have to comp oup: 0 Up: 0 Name of the course / Name of the group of courses	urses is obliga	atory.			
Name of the gro Requirement cr Requirement cc Credits in the gro	oup: BS - Social Sciences edits in the group: ourses in the group: In this group you have to comp roup: 0 up: Only one of these cou		atory.		Semeste	er Role
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Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code	oup: BS - Social Sciences edits in the group: ourses in the group: In this group you have to completo oup: Only one of these course (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová	Urses is obligation	atory. Credits	Scope 2+0		
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Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code	oup: BS - Social Sciences edits in the group: ourses in the group: In this group you have to completo oup: Only one of these course oup: Only one of these course Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Ethics of Science and Technology Jakub Hají ek Jana Ková ová	Urses is obligation	atory. Credits	Scope 2+0		PV
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV	Dup: BS - Social Sciences edits in the group: Durses in the group: In this group you have to completoup: 0 up: Only one of these courses Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Rhetoric Jana Ková ová Jana Ková ová Introduction to Law	Completion	Credits	Scope 2+0 0+2		PV PV
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV 00RET 00UPRA	Dup: BS - Social Sciences edits in the group: Durses in the group: In this group you have to completoup: 0 up: Only one of these courses Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Rhetoric Jana Ková ová Jana Ková ová Introduction to Law Martin ech Jana Ková ová	Completion Z Z Z Z Z Z	Credits	Scope 2+0 0+2 0+2 0+2		PV PV PV
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV 00RET	Dup: BS - Social Sciences edits in the group: Durses in the group: In this group you have to completoup: 0 up: Only one of these courses Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Rhetoric Jana Ková ová Jana Ková ová Introduction to Law Martin ech Jana Ková ová	Completion Z Z Z Z	Credits	Scope 2+0 0+2 0+2		PV PV PV
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV 00RET 00UPRA	Dup: BS - Social Sciences edits in the group: Durses in the group: In this group you have to completoup: 0 up: Only one of these courses Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Rhetoric Jana Ková ová Jana Ková ová Introduction to Law Martin ech Jana Ková ová	Completion Z Z Z Z Z Z	Credits 1 1 1 1 1 1 1 1	Scope 2+0 0+2 0+2 0+2		PV PV PV PV PV
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Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of t	bup: BS - Social Sciences edits in the group: burses in the group: In this group you have to completoup: 0 up: Only one of these courses Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Ethics of Science and Technology Jana Ková ová Jana Ková ová Introduction to Law Martin ech Jana Ková ová Introduction to Psychology Jakub Hají ek Jana Ková ová Sconomy in Technology Jana Ková ová Jana Ková ová	Completion Z Z Z Z Z Z Z	Credits 1	Scope 2+0 0+2 0+2 0+2 0+2		PV PV PV PV PV
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of t 00EKOT E The course introduces the	bup: BS - Social Sciences edits in the group: burses in the group: In this group you have to completoup: 0 up: Only one of these courses Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Ethics of Science and Technology Jana Ková ová Jana Ková ová Introduction to Law Martin ech Jana Ková ová Introduction to Psychology Jakub Hají ek Jana Ková ová Sconomy in Technology Jana Ková ová Jana Ková ová Introduction to Psychology Jakub Hají ek Jana Ková ová Martin ech Jana Ková ová Exconomy in Technology Jakub Hají ek Jana Ková ová	Completion Z Z Z Z Z Z Z	Credits 1	Scope 2+0 0+2 0+2 0+2 0+2	L Z	PV PV PV PV PV PV
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of t 00EKOT E The course introduces the 00ETV	bup: BS - Social Sciences edits in the group: burses in the group: In this group you have to completoup: 0 up: Only one of these courses Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Rhetoric Jana Ková ová Jana Ková ová Introduction to Law Martin ech Jana Ková ová Introduction to Psychology Jakub Hají ek Jana Ková ová Economy in Technology Jana Ková ová Jana Ková ová Ethics of Science and Technology Jana Ková ová Jana Ková ová Entroduction to Law Martin ech Jana Ková ová Economy in Technology Jakub Hají ek Jana Ková ová Economy in Technology Jakub Hají ek Jana Ková ová	Completion Z Z Z Z Z Z Z	Credits 1	Scope 2+0 0+2 0+2 0+2 0+2	Z	PV PV PV PV PV PV 1
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of t 00EKOT E The course introduces the 00ETV E 00RET F	bup: BS - Social Sciences edits in the group: burses in the group: In this group you have to completoup: 0 up: Only one of these courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Ethics of Science and Technology Jana Ková ová Jana Ková ová Introduction to Law Martin ech Jana Ková ová Introduction to Psychology Jakub Hají ek Jana Ková ová Economy in Technology Jana Ková ová Jana Ková ová Ethics of Science and Technology Jana Ková ová Jana Ková ová Introduction to Psychology Jakub Hají ek Jana Ková ová Economy in Technology Jakub Hají ek Jana Ková ová Economy in Technology Jakub Hají ek Jana Ková ová Economy in Technology Basics of micro- and macroeconomics. Ethics of Science and Technology Basics of micro- and macroeconomics. Ethics of Science and Technology Basics of micro- and macroeconomics. Ethics of Science and Technology Basics of	Completion C C C C C C C C C C C C C C C C C C C	Credits 1	Scope 2+0 0+2 0+2 0+2 0+2 0+2	L Z Z Z	PV PV PV PV PV 1 1 1
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of t 00EKOT E The course introduces the 00ETV E 00RET F The course is focused on	bup: BS - Social Sciences edits in the group: burses in the group: In this group you have to complete bup: Only one of these course bup: Only one of these courses Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Ethics of Science and Technology Jana Ková ová Jana Ková ová Introduction to Law Martin ech Jana Ková ová Introduction to Psychology Jakub Hají ek Jana Ková ová Ethics of Science and Technology Jakub Hají ek Jana Ková ová Introduction to Law Martin ech Jana Ková ová Economy in Technology Jakub Hají ek Jana Ková ová Economy in Technology Dasics of micro- and macroeconomics. Ethics of Science and Technology Dasics of micro- and macroeconomics. Ethics of Science and Technology Dasics of micro- and macroeconomics. Ethics of Science and Technology Dasics of micro- and macroeconomics. Ethics of Science and Tech	Inses is obligation Completion Z Z Z Z Z ame=BS - Soci	Credits 1	Scope 2+0 0+2 0+2 0+2 0+2 0+2 ces to the com	Z Z Z Z z position of p	PV PV PV PV PV PV 1 1 1 ublic speech
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of t 00EKOT E The course introduces the 00ETV E 00RET F The course is focused on as well as to its nonverbal	bup: BS - Social Sciences edits in the group: burses in the group: In this group you have to complete bup: Only one of these course bup: Only one of these courses Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Ethics of Science and Technology Jana Ková ová Jana Ková ová Introduction to Law Martin ech Jana Ková ová Introduction to Psychology Jakub Hají ek Jana Ková ová Economy in Technology Jakub Hají ek Jana Ková ová Introduction to Psychology Jakub Hají ek Jana Ková ová Economy in Technology Jakub Hají ek Jana Ková ová Economy in Technology basics of micro- and macroeconomics. Ethics of Science and Technology basics of micro- and macroeconomics. Ethics of Science and Technology basics of micro- and macroeconomics. Ethics of Science and Technology basics of micro- and macroeconomics. Ethics of Science and Techn	Inses is obligation Completion Z Z Z Z Z ame=BS - Soci	Credits 1	Scope 2+0 0+2 0+2 0+2 0+2 0+2 ces to the com	Z Z z position of p al part of the	PV PV PV PV PV PV 1 1 1 ublic speech e course.
Name of the gro Requirement cr Requirement cc Credits in the gro Note on the gro Code 00EKOT 00ETV 00RET 00UPRA 00UPSY Characteristics of t 00EKOT F The course introduces the 00ETV F 00RET F The course is focused on as well as to its nonverbal 00UPRA	bup: BS - Social Sciences edits in the group: burses in the group: In this group you have to complete bup: Only one of these course bup: Only one of these courses Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) Economy in Technology Jana Ková ová Ethics of Science and Technology Jana Ková ová Jana Ková ová Introduction to Law Martin ech Jana Ková ová Introduction to Psychology Jakub Hají ek Jana Ková ová Ethics of Science and Technology Jakub Hají ek Jana Ková ová Introduction to Law Martin ech Jana Ková ová Economy in Technology Jakub Hají ek Jana Ková ová Economy in Technology Dasics of micro- and macroeconomics. Ethics of Science and Technology Dasics of micro- and macroeconomics. Ethics of Science and Technology Dasics of micro- and macroeconomics. Ethics of Science and Technology Dasics of micro- and macroeconomics. Ethics of Science and Tech	Inses is obligation Completion Z Z Z Z Z ame=BS - Soci	Credits 1	Scope 2+0 0+2 0+2 0+2 0+2 0+2 ces to the com	Z Z Z Z z position of p	PV PV PV PV PV PV 1 1 1 ublic speech

Code of the group: BSMALA Name of the group: BS - analýza a algebra

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 10 courses Credits in the group: 0

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
01DIFR	Differential Equations	Z,ZK	4	2P+2C	L	PV
01LALA	Michal Beneš Michal Beneš Michal Beneš (Gar.)	ZK	5	-		PV
01LAA2	Petr Ambrož Linear Algebra A2	Z,ZK	6	2+2	L	PV
01LALB	Lubomíra Dvo áková Linear Algebra B 1, Examination	ZK	3			PV
	Lubomíra Dvo áková Linear Algebra B2	-				
01LAB2	Petr Ambrož Linear Algebra Plus	Z,ZK	4	1+2		PV
01LAP	Lubomíra Dvo áková	Z,ZK	5	1+1	Z	PV
01LA1	Linear Algebra 1 Lubomíra Dvo áková	Z	1	2+1	Z	PV
01LAL	Linear Algebra 1 Petr Ambrož, Lubomíra Dvo áková Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	Z	2	2P+2C		PV
D1LNA1	Linear Algebra 1 Lubomíra Dvo áková	Z	2	2+2		PV
01LAZ	Linear Algebra 1, Examination Lubomíra Dvo áková	ZK	2	-	Z	PV
D1MANA	Calculus A 1, Examination Severin Pošta	ZK	6	-		PV
01MAA2	Calculus A2 Edita Pelantová	Z,ZK	10	4+4	L	PV
01MAA3	Calculus A3	Z,ZK	10	4+4	Z	PV
D1MAA4	František Štampach Calculus A4	Z,ZK	10	4+4	L	PV
D1MANB	František Štampach František Štampach František Štampach (Gar.) Calculus B 1, Examination Severin Pošta	ZK	4	-		PV
01MAB2	Calculus B2	Z,ZK	7	2+4	L	PV
01MAB3	Severin Pošta Calculus B3	Z,ZK	7	2+4	z	PV
D1MAB4	Milan Krbálek Milan Krbálek Milan Krbálek (Gar.) Calculus B4 Milan Krbálek, Ji í Mikyška, Miroslav Kolá Milan Krbálek Milan Krbálek	Z,ZK	7	2+4	L	PV
01MAP	(Gar.) Calculus Plus Mat j Tušek	ZK	6	0	Z	PV
D1MA1	Calculus 1	Z	4	4+4	Z	PV
01MAN	Mat j Tušek Calculus 1 Pavel Strachota, Miroslav Kolá, Edita Pelantová Pavel Strachota Edita Pelantová (Car)	z	4	4+4		PV
01MAZ	Pelantová (Gar.) Calculus 1, Examination	ZK	4	-	Z	PV
D1NUM1	Mat j Tušek Numerical Mathematics 1	Z,ZK	4	3+1	Z	PV
12NME1	Numerical Methods 1 Pavel Váchal Pavel Váchal Pavel Váchal (Gar.)	Z,ZK	4	2+2	L	PV
01VYMA	Selected Topics in Mathematics Ji í Mikyška Ji í Mikyška Ji í Mikyška (Gar.)	Z,ZK	4	2+2	L	PV
01DIFR Diff	courses of this group of Study Plan: Code=BSMALA Name=I ferential Equations tion in the solution of ordinary differential equations. It contains a survey of equation introduction in the theory of boundary-value problems.		-	Z	Z,ZK	4 v, solutior
	ear Algebra A 1, Examination				ZK	5
	ear Algebra A2 theory of linear operators on vector spaces (mainly equipped with scalar product). In	n the same time we	e introduce t		Z,ZK	6 neory.
	ear Algebra B 1, Examination				ZK	3
	ear Algebra B2 most important notions and theorems related to the matrix theory, to the study of ver	ctor spaces with a	scalar produ		Z,ZK	4 try.
	ear Algebra Plus most important notions and theorems related to the study of vector spaces.				Z,ZK	5
)1LA1 Lin	ear Algebra 1 most important notions and theorems related to the study of vector spaces.				Z	1
	ear Algebra 1 bendence and independence. 3. Basis and dimension. 4. Subspaces of vector space	s. 5. Linear mappin	gs. 6. Matric	es of linear	Z mappings. 7. F	2 robenius

01LNA1	Linear Algebra 1	Z	2
	s the most important notions and theorems related to the study of vector spaces.		
01LAZ	Linear Algebra 1, Examination	ZK	2
The content of this subj	ect is the exam in Linear Algebra 1.		
01MANA	Calculus A 1, Examination	ZK	6
Examination of knowled	lge about stuff lectured in the 01MAN course.		
01MAA2	Calculus A2	Z,ZK	10
The subject is devoted	mainly to the integral calculus of the real functions with one real variable and to the theory of the number series and the pow	er series.	
01MAA3	Calculus A3	Z,ZK	10
Function sequences an	d series, foundation of topology, and differential calculus of several variables.		
01MAA4	Calculus A4	Z,ZK	10
Integration of functions	of several variables, measure theory, foundation of differential and integral calculus on manifolds and complex analysis.		
01MANB	Calculus B 1, Examination	ZK	4
Examination of knowled	ge about stuff lectured in the 01MAN course.		
01MAB2	Calculus B2	Z,ZK	7
	lysis, indefinite and definite integrals and series).	,	1
01MAB3	Calculus B3	Z,ZK	7
The course is devoted to	$_{ m o}^{ m j}$ functional sequences and series, theory of ordinary differential equations, theory of quadratic forms and surfaces, and gener	al theory of metric	spaces, normed
and prehilbert?s spaces	S.		
01MAB4	Calculus B4	Z,ZK	7
The course is devoted	properties of functions of several variables, differential and integral calculus. Furthermore, the measure theory and theory of	Lebesgue integral	is studied.
01MAP	Calculus Plus	ZK	6
01MA1	Calculus 1	Z	4
Basic course of real and	, alysis (functions of one real variable, differential calculus).		
01MAN	Calculus 1	Z	4
Basic calculus (real and	lysis, functions of one real variable, differential calculus).	1	'
01MAZ	Calculus 1, Examination	ZK	4
01NUM1	Numerical Mathematics 1	Z,ZK	4
The course introduces	, o numerical methods for solving the basic problems arising from technical and research problems. The accent is put on a go	od understanding	of the root of
theoretical methods.			
12NME1	Numerical Methods 1	Z,ZK	4
There are explained the	basic principles of numerical mathematics important for numerical solving of problems important for physics and technology	. Methods for solut	tion of tasks very
important for physicists	(ordinary differential equations, random numbers) are included in addition to the basic numerical methods. Integrated computer	utational environm	ent MATLAB is
used as a principle pro	gramming language as a demonstration tool. The seminars are held in computer laboratory.		
01VYMA	Selected Topics in Mathematics	Z,ZK	4
Fourier series: complete	e orthogonal systems, expansion of functions into Fourier series, trigonometric Fourier series and their convergence. Complex	analysis: derivativ	e of holomorphic
functions, integral, Cau	chy's theorem, Cauchy's integral formula, singularities, Laurent series, residue theorem.		

Code of the group: BSJAZYKY

Name of the group: BS - languages

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 2 courses Credits in the group: 0

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
04AMZK	English for Intermediate Students Examination Jana Ková ová, Slav na Brownová, Hana ápová Jana Ková ová Hana ápová (Gar.)	ZK	4		Z	PV
04APZK	English for Advanced Students Examination Slav na Brownová, Darren Copeland	ZK	5		Z	PV
04CESMZK	Czech for Intermediate Students Examination Jana Ková ová Jana Ková ová	ZK	4		Z	PV
04CESPZK	Czech for Foreign Students - Advanced Examination Jana Ková ová	ZK	5		Z	PV
04FMZK	French for Intermediate Students Examination V ra Šlechtová V ra Šlechtová (Gar.)	ZK	4		Z	PV
04FPZK	French for Intermediate Students Examination V ra Šlechtová V ra Šlechtová (Gar.)	ZK	5		Z	PV
04FZZK	French for Beginners Examination V ra Šlechtová V ra Šlechtová V ra Šlechtová (Gar.)	ZK	3		L	PV
04NMZK	German for Intermediate Students Examination Miloslava echová Miloslava echová Miloslava echová (Gar.)	ZK	4		Z	PV
04NPZK	German for Advanced Students Examination Miloslava echová Miloslava echová Miloslava echová (Gar.)	ZK	5		Z	PV
04RMZK	Russian for Intermediate Students Examination Zhanna Isaeva Jana Ková ová Zhanna Isaeva (Gar.)	ZK	4		Z	PV

04RPZK	Russian for Intermediate Students Examination Zhanna Isaeva Zhanna Isaeva (Gar.)	ZK	5	Z	PV
04RZZK	Russian for Beginners Examination Zhanna Isaeva Miloslava echová Zhanna Isaeva (Gar.)	ZK	3	L	PV
04SMZK	Spanish for Intermediate Students Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	4	Z	PV
04SPZK	Spanish for Advanced Students Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	5	Z	PV
04SZZK	Spanish for Beginners Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	3	L	PV
haracteristics of t	the courses of this group of Study Plan: Code=BSJAZYKY Name	=BS - langua	aes		
The course content is the corral (20-30 min). The stud Oral (20-30 min). The stud O4APZK	English for Intermediate Students Examination e examination as given by the study plan. The examination covers the 04AM1, 04AM2, and dent is expected to master the AM syllabus and demonstrate the ability to apply their know English for Advanced Students Examination e examination as given by the study plan. The student is supposed to demonstrate master AP courses. The examination consists of 2 parts - written (110 min) and oral (30 min) and i	vledge gained in ing the 04AP3 sy	the three Englis	sh courses. ZK ability to apply their kno	5 owledge
study. D4CESMZK	Czech for Intermediate Students Examination			ZK	4
	e examination as given by the study plan. The examination consisting of a written and oral	part covers all th	e topics of the C	4CESM1,2,3 courses	and can c
	completion of the 3 courses. Detailed information is to be obtained from the teacher. Czech for Foreign Students - Advanced Examination			ZK	5
	e examination as given by the study plan. The examination consisting of a written and oral	part covers all th	ne topics of the (-
be taken after successful	completion of the 3 courses. Detailed information is to be obtained from the teacher.	•	•		
1	French for Intermediate Students Examination			ZK	4
	nation as given by the study programme. The whole French programme is ended with an e		ering the conten	ts of FM1-FM3. The ex	aminatio
	oral part and is organized according to Examination Instructions, a document available or French for Intermediate Students Examination	the web.		ZK	5
The whole French progra	im is ended with an examination covering the contents of FP1-FP3. The examination cons , a document available on the web. Assessment of the presentation is included into the ex			art and is organized ac	-
The content is the examin	French for Beginners Examination nation as given by the study plan. The course is terminated with an examination consisting on. Its content covers the levels FZ1 - FZ5.	g of oral and writ	ten part. The ex	ZK amination is ruled by th	3 ne docum
	German for Intermediate Students Examination			ZK	4
-	e examination as given by the study plan. The whole German for Intermediate Students Con	urse is completed	d by an examina		barts - wri
	courses 04NM1 - 04NM3. The oral part follows after passing the written part successfully a	nd after obtaining	g the 04NM3 ass	sessment. More detaile	d informa
s to be obtained from the					
	German for Advanced Students Examination			ZK	5
	e examination as given by the study plan. The whole German for Advanced Students Cour courses 04NM1 - 04NM3. The oral part follows after passing the written part successfully				
nformation is to be obtain				ngraded assessment. r	
	Russian for Intermediate Students Examination			ZK	4
	e examination as given by the study plan. The course is completed by taking a written and	oral examination	n testing the kno	wledge and skills acqu	uired in R
The course content is the	ble for the oral examination only after a prior pass in RM3 and a successful written exami	nation. Students	are given instru	ctions by the teacher.	
RM3. Students are eligi				ZK	5
RM3. Students are eligi	Russian for Intermediate Students Examination			wiedge and skills acqu	lired in R
RM3. Students are eligi	e examination as given by the study plan. The course is completed by taking a written and		-	tions by the teacher	
RM3. Students are eligi D4RPZK The course content is the RP3. Students are eligit	e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RP3 and a successful written examin		-		3
RM3. Students are eligi 04RPZK The course content is the RP3. Students are eligit 04RZZK	e examination as given by the study plan. The course is completed by taking a written and	ation. Students a	are given instruc	ZK	3 uired in R
RM3. Students are eligit O4RPZK The course content is the RP3. Students are eligit O4RZZK The course content is the	e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RP3 and a successful written examin Russian for Beginners Examination	ation. Students a oral examinatior	are given instruc	ZK wledge and skills acqu	-
RM3. Students are eligit D4RPZK The course content is the RP3. Students are eligit D4RZZK The course content is the RZ5. Students are eligit D4SMZK	e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RP3 and a successful written examin Russian for Beginners Examination e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RZ5 and a successful written examin Spanish for Intermediate Students Examination	ation. Students a oral examinatior ation. Students a	are given instruct n testing the kno are given instruct	ZK wwledge and skills acquitions by the teacher. ZK	uired in R
RM3. Students are eligit O4RPZK The course content is the RP3. Students are eligit O4RZZK The course content is the RZ5. Students are eligit O4SMZK The course content is the	e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RP3 and a successful written examin Russian for Beginners Examination e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RZ5 and a successful written examin Spanish for Intermediate Students Examination e examination as given by the study plan. 04SMZK examination consists of two parts - write	ation. Students a oral examinatior ation. Students a	are given instruct n testing the kno are given instruct	ZK wwledge and skills acquitions by the teacher. ZK	uired in R
- RM3. Students are eligi 04RPZK The course content is the - RP3. Students are eligit 04RZZK The course content is the - RZ5. Students are eligit 04SMZK The course content is the obtained non-graded ass	e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RP3 and a successful written examin Russian for Beginners Examination e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RZ5 and a successful written examin. Spanish for Intermediate Students Examination e examination as given by the study plan. 04SMZK examination consists of two parts - writessment for course 04SM3.Oral examination follows the written part.	ation. Students a oral examinatior ation. Students a	are given instruct n testing the kno are given instruct	ZK www.edge and skills acquitions by the teacher. ZK ZK e written part, students	uired in R. 4 s will have
- RM3. Students are eligi 04RPZK The course content is the - RP3. Students are eligit 04RZZK The course content is the - RZ5. Students are eligit 04SMZK The course content is the obtained non-graded ass 04SPZK	e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RP3 and a successful written examin Russian for Beginners Examination e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RZ5 and a successful written examin Spanish for Intermediate Students Examination e examination as given by the study plan. 04SMZK examination consists of two parts - write sessment for course 04SM3.Oral examination follows the written part. Spanish for Advanced Students Examination	ation. Students a oral examinatior ation. Students a tten and oral; to l	are given instruct In testing the known are given instruct the eligible for the	ZK wledge and skills acqu tions by the teacher. ZK e written part, students ZK	uired in R 4 s will have 5
- RM3. Students are eligit 04RPZK The course content is the - RP3. Students are eligit 04RZZK The course content is the - RZ5. Students are eligit 04SMZK The course content is the obtained non-graded ass 04SPZK The course content is the	e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RP3 and a successful written examin Russian for Beginners Examination e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RZ5 and a successful written examin Spanish for Intermediate Students Examination e examination as given by the study plan. 04SMZK examination consists of two parts - wri- tessment for course 04SM3.Oral examination follows the written part. Spanish for Advanced Students Examination e examination as given by the study plan. Examination 04SPZK consists of two parts, nam-	ation. Students a oral examinatior ation. Students a tten and oral; to l nely oral and writ	are given instruct n testing the known re given instruct be eligible for the ten. The prerequ	ZK wledge and skills acqu tions by the teacher. ZK e written part, students ZK isite for admission to o	uired in R2 4 s will have 5
- RM3. Students are eligi O4RPZK The course content is the - RP3. Students are eligit O4RZZK The course content is the - RZ5. Students are eligit O4SMZK The course content is the obtained non-graded ass O4SPZK The course content is the having passed the writter	e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RP3 and a successful written examin Russian for Beginners Examination e examination as given by the study plan. The course is completed by taking a written and ble for the oral examination only after a prior pass in RZ5 and a successful written examin Spanish for Intermediate Students Examination e examination as given by the study plan. 04SMZK examination consists of two parts - write sessment for course 04SM3.Oral examination follows the written part. Spanish for Advanced Students Examination	ation. Students a oral examinatior ation. Students a tten and oral; to l nely oral and writ	are given instruct n testing the known re given instruct be eligible for the ten. The prerequ	ZK wledge and skills acqu tions by the teacher. ZK e written part, students ZK isite for admission to o	uired in R2 4 s will have 5

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

Code of the group: BSVOLPREDM Name of the group: BS - volitelné p edm ty Requirement credits in the group: Requirement courses in the group:

Credits in the group: 0 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
12AUX	Administration of UNIX System Milan Ši or Milan Ši or Milan Ši or (Gar.)	КZ	2	2+0	L	V
01ALG	Algebra Pavel Š oví ek	ZK	4	4+0	Z	V
01ALGE	Algebra Zuzana Masáková Zuzana Masáková Zuzana Masáková (Gar.)	Z,ZK	6	4+1		V
11ANEL	Linear Circuit Analysis Pavel Jiroušek Pavel Jiroušek Pavel Jiroušek (Gar.)	Z,ZK	4	4	Z	V
15CHEM	Analytical Calculations and Chemometry Principals Ji í Zima Ji í Zima Ji í Zima (Gar.)	ZK	2	2+0	Z	V
04ABZK	English - State Examination Jana Ková ová	ZK	5	2	L	V
04AM1	English for Intermediate Students M1 Jana Ková ová	Z	1	0+2	Z	V
04AM2	English for Intermediate Students M2 Jana Ková ová	Z	1	0+2	L	V
04AM3	English for Intermediate Students M3 Jana Ková ová Hana ápová (Gar.)	Z	1	0+2	Z	V
04AP1	English for Advanced Students P1	Z	1	0+2	Z	V
04AP2	English for Advanced Students P2	Z	1	0+2	L	V
04AP3	English for Advanced Students P3	Z	1	0+2	Z	V
16APLB	Application of Ionizing Radiation in Analytical Methods	ZK	5	4+0	L	V
12APL	Application of Lasers Helena Jelínková, Alexandr Jan árek Helena Jelínková Helena Jelínková (Gar.)	Z,ZK	2	2+0	z	V
11APLG	Applications of Group Theory in Solid State Physics Zden k Pot ek Zden k Pot ek Zden k Pot ek (Gar.)	ZK	2	2	Z	V
02AMS	Atomic and Molecular Spectroscopy Svatopluk Civiš Svatopluk Civiš Svatopluk Civiš (Gar.)	Z,ZK	4	2+2	Z	V
04CESM1	Czech for foreigners - Intermediate Jana Ková ová	Z	1	0+2	Z	V
04CESM2	Intermediate Czech 2 Jana Ková ová	Z	1	0+2	L	V
04CESM3	Intermediate Czech 3 Jana Ková ová Jana Ková ová (Gar.)	Z	1	0+2	Z	V
04CESP1	Czech for Foreign Students - Advanced Examination Jana Ková ová	Z	1	0+2	Z	V
04CESP2	Czech for Foreigners - Advanced Jana Ková ová	Z	1	0+2	L	V
04CESP3	Czech for Foreigners - Advanced Jana Ková ová	Z	1	0+2	Z	V
15DALCH	History of Alchemy and Chemistry Vladimír Karpenko Vladimír Karpenko Vladimír Karpenko (Gar.)	ZK	2	2+0	Z	V
02DEF1	History of Physics 1 Igor Jex, Miroslav Myška Miroslav Myška Igor Jex (Gar.)	Z	2	2+0	Z	V
02DEF2	History of Physics 2 Igor Jex Miroslav Myška Igor Jex (Gar.)	Z	2	2+0	L	V
01DEM	History of Mathematics Lubomíra Dvo áková Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	Z	1	0+2	L	V
02DRG	Differential Equations, Symmetries and Groups Libor Šnobl Martin Štefa ák Libor Šnobl (Gar.)	Z	4	2+2	Z	V
01DIM1	Discrete Mathematics 1 Lubomíra Dvo áková, Edita Pelantová, Zuzana Masáková Lubomíra Dvo áková Zuzana Masáková (Gar.)	Z	2	2P+0C	Z	V
01DIM2	Discrete Mathematics 2 Edita Pelantová, Zuzana Masáková Zuzana Masáková Zuzana Masáková (Gar.)	Z	2	2P+0C	L	V
01DIM3	Discrete Mathematics 3 Lubomíra Dvo áková	Z	2	2+0	Z	V
00EKOT	Economy in Technology Jana Ková ová	Z	1	2+0		V
11ELEA	Instrumentation and Measurement Pavel Jiroušek Pavel Jiroušek Pavel Jiroušek (Gar.)	Z,ZK	2	2	L	V
14ELMI	Electron Microscopy	Z,ZK	3	2+0		V
12EGS1	English Graduate Standard 1 Ivan Procházka	KZ	4	0+4	L	V

18ESPG1	European Computer Driving Licence 1	Z	2	0+2	Z	V
18ESPG2	European Computer Driving Licence 2	Z	2	0+2	L	V
16EPAM	Exact Methods in Research of Historic Monuments Ladislav Musílek Ladislav Musílek Ladislav Musílek (Gar.)	ZK	2	2+0	Z	V
02EXF1	Experimental Physics 1 Jan epila	Z	2	2+0	L	v
02EXF2	Experimental Physics 2	ZK	2	2+0	Z	v
17ENF	Experimental Neutron Physics Jan Rataj	KZ	2	2+1	L	v
04FM1	French for Intermediate Students M1	Z	1	0+2	Z	v
04FM2	French for Intermediate Students M2 V ra Šlechtová	Z	1	0+2	L	v
04FM3	French for Intermediate Students M3	Z	1	0+2	Z	v
04FP1	French for Advanced Students P1 Michal Beneš	Z	1	0+2	Z	v
04FP2	French for Advanced Students P2	Z	1	0+2	L	v
04FP3	French for Advanded Students P3	Z	1	0+2	Z	v
04FZ1	French for Beginners Z1	Z	1	0+4	L	v
04FZ2	French for Beginners Z2 Michal Beneš	Z	1	0+4	Z	v
04FZ3	French for Beginners Z3 V ra Šlechtová	Z	1	0+4	L	v
04FZ4	French for Beginners Z4 V ra Šlechtová (Gar.)	Z	1	0+4	Z	v
04FZ5	French for Beginners Z5 V ra Šlechtová V ra Šlechtová (Gar.)	Z	1	0+4	L	v
01FKP	Functions of Complex Variable Severin Pošta, Pavel Š oví ek Pavel Š oví ek Pavel Š oví ek (Gar.)	ZK	2	2+0	Z	v
01FKPB	Functions of Complex Variable B Pavel Š oví ek	Z	2	2+0	Z	v
01FAN1	Functional Analysis 1 Pavel Šoví ek Pavel Šoví ek Pavel Šoví ek (Gar.)	Z,ZK	4	2+2		v
01FA1	Functional Analysis 1 Pavel Š oví ek	Z,ZK	3	2+1	Z	v
01FA2	Functional Analysis 2 Pavel Š oví ek Pavel Š oví ek Pavel Š oví ek (Gar.)	Z,ZK	4	2+2	L	v
02PRA1	Experimental Laboratory 1 Libor Škoda, Katarína K ížková Gajdošová, Barbara Antonina Trzeciak, Jaroslav Biel ík 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 Martin Štefa ák Vojt ch Svoboda (Gar.)	Z	2	0+2	Z	v
02FYS2	Physical Seminar 2 Jan epila	Z	2	0+2	L	v
01GTDR	Geometric Theory of Ordinary Differential Equations Michal Beneš Michal Beneš Michal Beneš (Gar.)	Z	2	0+2	Z	v
12INS1	Information Systems 1	Z,ZK	2	2	Z	v
12INS2	Information Systems 2 Antonín Novotný	Z,ZK	2	2	L	v
16ZJTB	Nuclear Energy Facilities and Accelerators Kamil Augsten, Tomáš echák Kamil Augsten Tomáš echák (Gar.)	ZK	2	2+0	Z	v
17JARE	Nuclear Reactors Tomáš Bílý Tomáš Bílý Tomáš Bílý (Gar.)	ZK	2	2	L	v
01JEPR	Simple Compilers Zden k ulík Zden k ulík Zden k ulík (Gar.)	Z	2	2	L	v
16KPR	Clinical Propaedeutic Jana Votrubová Jana Votrubová Jana Votrubová (Gar.)	ZK	2	2+0	Z	v
04AKS	English Conversation Jana Ková ová Jana Ková ová (Gar.)	Z	1	0+2	L	v
02KF	Quantum Physics Filip Petrásek Martin Štefa ák Libor Šnobl (Gar.)	Z,ZK	3	2P+1C	Z	v
02LCF1	Experimental Laboratory 1 Jaroslav Biel ík Jaroslav Biel ík (Gar.)	Z	2	0+2	Z	v
02LCF2	Experimental Laboratory 2 Jaroslav Biel ík Jaroslav Biel ík (Gar.)	Z	2	0+2	L	v
12LT1	Laser Technique 1 Václav Kube ek Václav Kube ek Václav Kube ek (Gar.)	Z,ZK	3	2+1	Z	v
12LT2	Laser Technique 2 Helena Jelínková	Z,ZK	2	2+0	L	v

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12LAS	Laser Systems Václav Kube ek Václav Kube ek (Gar.)	Z,ZK	3	2+1	L	V
01LIP	Linear Programming Jan Volec estmír Burdík Jan Volec (Gar.)	Z,ZK	3	2+1	Z	V
18MAK1	Macroeconomics 1 Quang Van Tran Quang Van Tran Quang Van Tran (Gar.)	Z,ZK	4	2+2	L	V
18MAK2	Macroeconomics 2 Quang Van Tran Quang Van Tran Quang Van Tran (Gar.)	Z,ZK	4	2+2	Z	V
01MAPR	Markov processes	Z,ZK	4	2+2		V
18EKO1	Jan Vybíral Jan Vybíral Jan Vybíral (Gar.) Mathematical Economics 1	Z,ZK	5	2+2	Z	v
18EKO2	Mathematical Economics 2	Z,ZK	5	2+2	L	V
01MASC	Mathematical Statistics - Seminar Tomáš Hobza Tomáš Hobza Tomáš Hobza (Gar.)	Z	2	0+2		V
00MAM1	Essentials of High School Course 1 David B e Martin Stefa ák	Z	1	0+1		V
00MAM2	Essentials of High School Math Course 2 Lukáš Heriban Severin Pošta Lukáš Heriban (Gar.)	Z	1	0+1		V
01MMPV	Mathematical Models of Groundwater Flow	KZ	2	2+0	L	V
01MMF	Ji í Mikyška Ji í Mikyška Ji í Mikyška (Gar.) Methods of Mathematical Physics	7.74	6	4+2		
	Pavel Š oví ek	Z,ZK	6		L	V
18MIK1	Microeconomics 1 Quang Van Tran Quang Van Tran (Gar.)	Z,ZK	5	2P+2C	Z	V
18MIK2	Microeconomics 2 Quang Van Tran Quang Van Tran (Gar.)	Z,ZK	5	2P+2C	L	V
11MIK	Logical Circuits and Microprocessors Pavel Jiroušek, Petr Levinský Pavel Jiroušek Pavel Jiroušek (Gar.)	Z,ZK	4	4	L	V
12MPR1	Microprocessors 1 Miroslav ech Miroslav ech (Gar.)	ZK	4	4+0	Z	V
12MPR2	Microprocessors 2 Miroslav ech Miroslav ech (Gar.)	ZK	2	2+0	L	V
12MOF	Molecular Physics Jan Proška, Martin Michl Martin Michl Jan Proška (Gar.)	ZK	2	2+0	L	v
12NT	Nanotechnology Jan Proška, Eduard Hulicius Jan Proška Eduard Hulicius (Gar.)	ZK	2	2+0	Z	V
02NSAD	Simulations and Data Analysis Tools	Z	2	2+0		V
04NM1	German for Intermediate Students M1	Z	1	0+2	Z	V
04NM2	German for Intermediate Students M2 Miloslava echová Miloslava echová (Gar.)	Z	1	0+2	L	V
04NM3	German for Intermediate Students M2 Miloslava echová Miloslava echová Gar.)	Z	1	0+2	Z	V
04NP1	German for Advanced Students P1	Z	1	0+2	Z	V
04NP2	German for Advanced Students P2	Z	1	0+2	L	V
04NP3	Miloslava echová German for Advanced Students P3	Z	1	0+2	Z	v
01NME2	Miloslava echová Miloslava echová (Gar.) Numerical Methods 2	KZ	2	2+0		V
15CH1	Michal Beneš Michal Beneš Michal Beneš (Gar.) General Chemistry 1	Z	3	2+1	 Z	v
15CH2	Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.) General Chemistry 2	Z,ZK	3	2+1	 	v
02OR	Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.) General Relativity	Z,ZK	3	3+0		V
020K 01POPJ1	Old ich Semerák Borís Tomášik Boris Tomášik (Gar.)	ZR			 Z	
01POPJ1 01POPJ2	Computers and Natural Language 1	Z	2	0+2 0+2	L	V V
	Computers and Natural Language 2 Computer Algebra			+		
12POAL	Richard Liska Richard Liska Richard Liska (Gar.)	KZ	2	2	Z	V
01POGR1	Pavel Strachota Pavel Strachota Pavel Strachota (Gar.)	Z	2	2	Z	V
01POGR2	Computer Graphics 2 Pavel Strachota Pavel Strachota Pavel Strachota (Gar.)	Z	2	2	L	V
01SITE1	Computer Networks 1 Miroslav Minárik Miroslav Minárik Miroslav Minárik (Gar.)	Z	2	1+1	Z	V
01SITE2	Computer Networks 2 Miroslav Minárik Miroslav Minárik Miroslav Minárik (Gar.)	Z	2	1+1	L	V
01POPR	Advanced Probability Tomáš Hobza	Z	2	2+0		V
12PEL1	Practical Electronics 1	Z,ZK	2	2+0	L	V
12PEL2	Practical Electronics 2	Z,ZK	2	2+0	Z	V

12PIN1	Practical Informatics for Technics 1 Richard Liska, Milan Kucha ík Milan Kucha ík (Gar.)	Z	2	1+1	L	V
12PIN2	Practical Informatics for Technics 2 Milan Ši or Milan Ši or (Gar.)	Z	2	1+1	Z	V
12PIN3	Practical Informatics for Technics 3 Milan Ši or Milan Ši or Milan Ši or (Gar.)	Z	2	1+1	L	V
15INPR	Laboratory Practice in Instrumental Methods	KZ	4	0+4	L	V
01PRA1	Probability and Mathematical Statistics 1	Z,ZK	6	4+2	Z	V
01PRA2	Probability and Mathematical Statistics 2 Václav K s	ZK	2	2+0	L	V
01PRST	Probability and Statistics Tomáš Hobza Tomáš Hobza (Gar.)	Z,ZK	4	3+1	Z	V
01PRSTB	Probability and Statistics B Tomáš Hobza Tomáš Hobza Tomáš Hobza (Gar.)	KZ	4	3+1	Z	V
16UAZB	Principles of Ionizing-Radiation Applications Ladislav Musílek Kamil Augsten Ladislav Musílek (Gar.)	ZK	2	2+0	Z	V
16FNZB	Problems of Non-ionizing Radiation	ZK	2	2+0	Z	V
12PSEM	Problem Seminary	Z	2	0+4	L	V
01PROP	Programmer's Practicum Jakub Klinkovský Jakub Klinkovský Jakub Klinkovský (Gar.)	Z	2	0+2	Z	V
01PERI	Programming of Peripherals Devices Zden k ulík Zden k ulík (Gar.)	Z	2	2+0	Z	V
01PW	Windows Programming Zden k ulík Zden k ulík Zden k ulík (Gar.)	Z	2	2+0	Z	V
18PRC1	Programming in C++ 1 Vladimír Jarý, Miroslav Virius Miroslav Virius (Gar.)	Z	4	2+2	Z	V
18PRC2	Programming in C++ 2 Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.)	ΚZ	4	2+2	L	V
18PJ	Programming in Java Miroslav Virius Miroslav Virius (Gar.)	Z,ZK	5	2P+2C	Z	V
18MTL	Programming in MATLAB	Z,ZK	5	2+2	Z	V
18MPT	Programming in MATLAB	KZ	5	0+4	Z	V
18PAS	Pascal Programming Miroslav Virius	Z	4	2+2	L	V
12PDR1	Data Communication and Interfaces 1	Z	2	2+0	Z	V
12PDR2	Data Communication and Interfaces 2 Josef Blažej	Z	2	2+0	L	V
01PSL	LaTeX - Publication Instrument Petr Ambrož Petr Ambrož Petr Ambrož (Gar.)	Z	2	0+2	L	V
00RET	Rhetoric Jana Ková ová Jana Ková ová	Z	1	0+2		V
01RMF	The Equations of Mathematical Physics Václav Klika Václav Klika Václav Klika (Gar.)	Z,ZK	6	4+2	Z	V
02RQGP1	Seminar on Quark-Gluon Plasma 1 Jaroslav Biel ík	Z	1	2+0		V
02RQGP2	Seminar on Quark-Gluon Plasma 2 Jaroslav Biel ík	Z	1	2+0		V
04RM1	Russian for Intermediate Students M1 Michal Beneš	Z	1	0+2	Z	V
04RM2	Russian for Intermediate Students M2 Miloslava echová	Z	1	0+2	L	V
04RM3	Russian for Intermediate Students M3 Zhanna Isaeva (Gar.)	Z	1	0+2	Z	V
04RP1	Russian for Advanced Students P1 Michal Beneš	Z	1	0+2	Z	V
04RP2	Russian for Advanced Students P2 Miloslava echová	Z	1	0+2	L	V
04RP3	Russian for Advanced Students P3 Zhanna Isaeva (Gar.)	Z	1	0+2	Z	V
04RZ1	Russian for Beginners Z1 Miloslava echová	Z	1	0+4	L	V
04RZ2	Russian for Beginners Z2 Michal Beneš	Z	1	0+4	Z	V
04RZ3	Russian for Beginners Z3 Miloslava echová	Z	1	0+4	L	V
04RZ4	Russian for Beginners Z4 Zhanna Isaeva (Gar.)	Z	1	0+4	Z	V
04RZ5	Russian for Beginners Z5 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	1	0+4	L	V
01RSWP	Project Management of Software Projects	KZ	2	0+2	Z	V

02SMF	Seminar of Mathematical Physics	Z	2	0+2	Z	
	Martin Štefa ák Ladislav Hlavaťý (Gar.)		2	-		V
01SSM1	Seminar of Contemporary Mathematics 1 Mat j Tušek Edita Pelantová (Gar.)	Z	2	0+2	Z	V
01SSM2	Seminar of Contemporary Mathematics 2 Václav Klika	Z	2	0+2	L	V
16SED1	Dosimetry Seminar 1 Kate ina Pila ová Kate ina Pila ová (Gar.)	Z	2	0+2		V
16SED2	Dosimetry Seminar 2 Kate ina Pila ová	Z	2	0+2		v
01SMB1	Seminar on Calculus B1 Milan Krbálek	Z	2	0+2	Z	V
01SMB2	Seminar on Calculus B2 Milan Krbálek	Z	2	0+2	L	V
01SOS1	Software Seminar 1	z	2	0+2	Z	V
01SOS2	Zden k ulík Zden k ulík Zden k ulík (Gar.) Software Seminar 2	Z	2	0+2	L	V
02SPRA1	Zden k ulík Zden k ulík Zden k ulík (Gar.) Special Practicum 1	КZ	6	0+4	Z	V
02SPRA2	Lukáš Novotný, Jan epila Jan epila Jan epila (Gar.) Special Practicum 2	КZ	6	0+4	L	V
01STR	Jan epila Jan epila Jan epila (Gar.) Statistical Decision Theory	ZK				
	Václav K s Václav K s Václav K s (Gar.) Structure and Function of Biomolecules		2	2+0	L	V
11SFBM	Petr Kolenko, Tomáš Kova Petr Kolenko Petr Kolenko (Gar.)	Z,ZK	3	2+1	Z	V
04SM1	Spanish for Intermediate Students M1	Z	1	0+2	Z	V
04SM2	Spanish for Intermediate Students M3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	1	0+2	L	V
04SM3	Spanish for Intermediate Students M3 Beatriz Vadillo Gonzalo (Gar.)	Z	1	0+2	Z	V
04SP1	Spanish for Advanced Students P1	Z	1	0+2	Z	V
04SP2	Spanish for Advanced Students P2	Z	1	0+2	L	V
04SP3	Spanish for Advanced Students P3 Beatriz Vadillo Gonzalo (Gar.)	Z	1	0+2	Z	v
04SZ1	Spanish for Beginners Z1	Z	1	0+4	L	V
04SZ2	Spanish for Beginners Students Z2	Z	1	0+4	Z	v
04SZ3	Spanish for Beginners Z3	Z	1	0+4	L	v
04SZ4	Beatriz Vadillo Gonzalo (Gar.) Spanish for Beginners Z3	Z	1	0+4	Z	V
04SZ5	Beatriz Vadillo Gonzalo (Gar.) Spanish for Beginners Z5	Z	1	0+4	L	V
14TM	Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.) Engineering Mechanics	Z,ZK	4	2+2	3	v
14TEM	Ji í Kunz, Aleš Materna Ji í Kunz Ji í Kunz (Gar.) Engineering Mechanics	Z,ZK	6	4	5	V
	Ji í Kunz Ji í Kunz Ji í Kunz (Gar.)				-	
12TAIS TV-1	Ion Beam Techniques and Applications.	ZK Z	3	3+0	L Z	V
TV-2	Physical Education	Z	1			V V
TV-3	Physical Education	Z	1	0+2	Z	v
TV-3	Physical education	Z	1	0+2	2 	v
02TEF1	Physical education Theoretical Physics 1	Z,ZK	4	2+2	Z	v
02TEF2	Petr Novotný Petr Novotný Igor Jex (Gar.) Theoretical Physics 2	Z,ZK	4	2+2	L	v
01DYSY	Filip Petrásek, Petr Novotný Josef Schmidt Petr Novotný (Gar.) Theory of Dynamic Systems	Z,ZK	3	3+0	L	v
	Branislav Rehák Branislav Rehák Branislav Rehák (Gar.) Theory of Codes					
	Edita Pelantová, Jan Volec Edita Pelantová Jan Volec (Gar.) Heat and Molecular Physics	ZK	2	2P+0C	L .	V
02TER	Filip Petrásek Petr Novotný Petr Jizba (Gar.)	Z,ZK	4	2+2	L	V
02TSFA	Thermodynamics and Statistical Physics Igor Jex, Jaroslav Novotný Antonín Hoskovec Igor Jex (Gar.)	Z,ZK	4	2+2	L	V
01TOP	Topology estmír Burdík estmír Burdík estmír Burdík (Gar.)	ZK	2	2+0	Z	V
16MCRB	Transport of Ionizing Radiation and Monte Carlo Method	Z,ZK	4	2+2	L	V
	Development of internet applications	KZ	4	2P+2C	L	v
18INTA	Jakub Klinkovský, Dana Majerová Dana Majerová Dana Majerová (Gar.)					

16ZIVB	Introduction to Ecology Hana Pr šová Hana Pr šová Hana Pr šová (Gar.)	KZ	2	2+0	Z	V
02UFEC	Introduction to Elementary Particle Physics Jaroslav Biel ik, Marek Matas Jaroslav Biel ik Jaroslav Biel ik (Gar.)	Z	2	2+0	Z	V
11UFPLN	Introduction to Solid State Physics Petr Kolenko, Ivo Kraus Petr Kolenko Ivo Kraus (Gar.)	ZK	2	2+0	L	V
17UINZ	Introduction to Engineering	Z,ZK	3	2+1	Z	V
02UKP	Introduction to Curves and Surfaces	Z	2	1+1	L	v
12ULT	Introduction to Laser Technique	Z,ZK	3	2+1	Z	V
12UMF	Introduction to Modern Physics Jan Pšikal Jan Pšikal Jan Pšikal (Gar.)	Z	3	2+1	L	V
18UOA	Introduction into Object Oriented Architecture Rudolf Pecinovský Rudolf Pecinovský	Z,ZK	4	2P+2C	Z	V
00UPRA	Introduction to Law Martin ech Jana Ková ová	Z	1	0+2		V
00UPSY	Introduction to Psychology Jakub Haif ek Jana Ková ová	Z	1	0+2		V
01UTIZ	Introduction to Theoretical Informatics Petr Ambrož	ZK	2	2+0		V
11UVOD	Introduction to Specialization	Z	2	0+2	Z	V
12VAK	Vacuum Physics and Technology Richard Švejkar Richard Švejkar (Gar.)	KZ	4	2+2	Z	V
12PYTH	Scientific Programming in Python Pavel Váchal, Jakub Urban Pavel Váchal Pavel Váchal (Gar.)	Z	2	0+2	L	V
12VTV	Scientific and Technical Computing Ivan Procházka Ivan Procházka Ivan Procházka (Gar.)	Z	2	1+1	L	V
12VFT	High Frequency and Impulse Circuitry Jaroslav Pavel Jaroslav Pavel Jaroslav Pavel (Gar.)	Z,ZK	2	2+0	L	V
17VYR	Research Reactors	ZK	2	2	L	V
12EPR1	Basic Electronics Practicum 1 Ivan Procházka, Jaroslav Pavel Ivan Procházka Ivan Procházka (Gar.)	KZ	3	0+2	Z	v
12EPR2	Basic Electronics Practicum 2 Ivan Procházka, Jaroslav Pavel Ivan Procházka Ivan Procházka (Gar.)	KZ	3	0+2	L	V
12ZPLT	Basic Laser Technique Laboratory Václav Kube ek, Josef Blažej Josef Blažej Václav Kube ek (Gar.)	KZ	6	0+4	L	V
12ZPOP	Basic Optical Laboratory Alexandr Jan árek Alexandr Jan árek (Gar.)	KZ	6	0+4	L	V
18ZALG	Vladimír Jarý Miroslav Virius, Petr Pauš, František Vold ich, Zuzana Pet í ková, František Gašpar Vladimír Jarý Miroslav Virius (Gar.)	Z,ZK	4	2+2	L	V
16AMMB	Fundamentals of Analytical Measurement Methods Hana Pr šová Hana Pr šová Hana Pr šová (Gar.)	ZK	2	2+0	L	V
16ZBAF1	Fundamentals of Human Biology, Anatomy and Physiology 1 Alena Doubková, Šimon Vaculín, Zde ka Polívková, Josef Stingl Alena Doubková Alena Doubková (Gar.)	Z,ZK	4	2+2	Z	v
16ZBAF2	Fundamentals of Human Biology, Anatomy and Physiology 2 Alena Doubková, Šimon Vaculín, Josef Stingl Alena Doubková Alena Doubková (Gar.)	Z,ZK	4	2+2	L	V
16ZDOZ2	Fundamentals of Radiation Dosimetry 2 Tomáš Trojek Tomáš Trojek Tomáš Trojek (Gar.)	ZK	2	2+0	L	V
16ZDOZ1	Fundamentals of Radiation Dosimetry 1 Tomáš Trojek Tomáš Trojek Tomáš Trojek (Gar.)	Z,ZK	4	2+2		V
17ZEH	Basics of Economic Assessment	ZK	2	2+0	Z	V
17ZEL	Basics of Electronics Martin Kropík Martin Kropík (Gar.)	KZ	3	2+2	Z	V
12ZEL1	Basic Electronics 1 Jaroslav Pavel Jaroslav Pavel Jaroslav Pavel (Gar.)	Z,ZK	3	2+1	Z	V
12ZEL2	Basic Electronics 2 Jaroslav Pavel Jaroslav Pavel Jaroslav Pavel (Gar.)	Z,ZK	3	2+1	L	V
02ZFM1	Foundations of Physical Measurements 1	Z	2	2+0	Z	V
02ZFM2	Foundations of Physical Measurements 2	Z	2	0+2	L	V
11ZFPL	Basic to Solid State Physics Ladislav Kalvoda, Eva Mihóková Eva Mihóková Ladislav Kalvoda (Gar.)	KZ	2	26P+0C	Z	V
12ZFP	Principles of Plasma Physics Ji í Limpouch, Martin Jirka Martin Jirka Ji í Limpouch (Gar.)	Z,ZK	4	3+1	L	V
02ZJF	Nuclear Physics Vladimír Wagner Martin Štefa ák Vladimír Wagner (Gar.)	Z,ZK	6	3+2	Z	V
02ZJFB	Nuclear Physics B Vladimír Wagner Martin Štefa ák Vladimír Wagner (Gar.)	KZ	3	3+0	Z	v

15ZKJE	Nuclear Power Plants Design and Operation Tomáš Bílý, Lenka Frýbortová, ubomír Sklenka Lenka Frýbortová Tomáš Bílý (Gar.)	ZK	3	2+0	L	v
16MEZB	Fundamentals of Ionizing-Radiation Metrology Tomáš echák	Z,ZK	4	2+1	Z	V
01ZOS	Introduction to Operating Systems Zden k ulík Zden k ulík Zden k ulík (Gar.)	Z	2	2+0	L	V
12ZAOP	Fundamentals of Optics Ivan Richter, Pavel Kwiecien Ivan Richter Ivan Richter (Gar.)	Z,ZK	2	2+0	Z	V
01ZPB1	Introduction to Computer Security 1 Petr Voká Petr Voká Petr Voká (Gar.)	Z	2	1+1		v
16ZPSP	Basic Work with PC Kamil Augsten Kamil Augsten (Gar.)	Z	2	0+2	1	v
18ZPRO	Basics of Programming Maksym Dreval, Vladimír Jarý, Miroslav Virius, Jakub Klinkovský, Petr Pauš, František Vold ich, Jan Tomsa, Zuzana Pet í ková Miroslav Virius Miroslav Virius (Gar.)	Z	4	4C	Z	v
16ZRAO	Basics of Radiation Protection Aneta Dušková Aneta Dušková (Gar.)	Z	2	2+0		v
02ZSM	Introduction to the Standard Model Zden k Hubá ek Zden k Hubá ek Zden k Hubá ek (Gar.)	ZK	2	2+0		V
16ZEDB	Basics of Experimantal Data Processing Kate ina Pila ová Kate ina Pila ová Kate ina Pila ová (Gar.)	ZK	2	2+0	Z	V
14ZZKS	Testing and Processing of Metals and Alloys	KZ	4	4	6	V
12ZDP	Data Processing for Publishing Antonín Novotný Antonín Novotný Antonín Novotný (Gar.)	Z	2	2	Z	V
12ZMD	Measurement and Data Processing	KZ	2	1+1	Z	v
Characteristics of the	courses of this group of Study Plan: Code=BSVOLPREDM National Code=BSVOLPREDM Nationa	me=BS - voli	telné n e	dm tv	<u>I</u>	1
	story of Physics 1		iteme p e		Z	2
	system of sciences. The relationship of man and nature. Natural sciences in ancient Or	ientand Greece,	Greek natur	al philosoph	ers, Aristotle	. Physics in
	Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano E	Bruno. Copernicu:	s, Kepler, G	alileo, Huyg	ens. The birth	of physics
as experimental science. Ne						
	at and Molecular Physics				,ZK	4
	ials, heat transfer; stationary and non-stationary heat conduction, heat transfer and per ms: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials;					•
	sics of Programming	Kinetic theory. W			7	4
	ly for students with little or no experience in programming. It familiarizes the students v	with the basic cor	cepts in pro	 oramming a	← and with the F	-
programming language.	······································			.g		,
02PRA1 Ex	perimental Laboratory 1				KZ	6
Lecture is intended especial	ly for students who intend to study some of the physical specializations of FNSPE(bran	ich Physical Engi	neering, Nu	clear Engine	eering). But it	can be also
-	ed in the otherspecializations. In Experimental laboratory students learn how to prepare for		-		-	-
	e of different experimental procedures and routines), willteach writing the records of me	easurement, proc	essing and	evaluation o	f results. At th	ne same time
	dge gained in lectures on physics.				1/7	
	perimental Laboratory 2 ly for students who intend to study some of the physical specializations of FNSPE(bran	ch Dhysical Engi	nooring Nu	1	KZ	6 can be also
	ed in the otherspecializations. In Experimental laboratory students learn how to prepare for		-	-		
	e of different experimental procedures and routines), willteach writing the records of me		-		-	-
practically extendthe knowle	dge gained in lectures on physics.		0			
02LCF1 Ex	perimental Laboratory 1				Z	2
· · · · ·	ticity. Thermal capacities. Electric measurements, Acoustic. Oscillations.					
	perimental Laboratory 2				Z	2
	nicrowaves, Xray and gamma rays, geometric optics					4
	eoretical Physics 1 h to analytical mechanics. The students acquire knowledge of the basic concepts of the L	agrange and Ha	miltonian for		.,ZK	4
	Newton's, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these					
problem, the motion of a sys	tem of constrained mass points, and of a rigid body. Advanced parts of the course cover classical theoretical physics (02TEF1, 02TEF2).			-	-	-
	eoretical Physics 2			7	.ZK	4
	in physics. Mechanics of point mass, rigid body and continuum. The special theory of	relativity: relativis	tic mechani	1	· I	-
Minkowski space-time. Class	sical electrodynamics: Maxwell's equations in the Minkowski space-time, electromagnet	tic waves in diele	ctric media,	electromagi	netic radiatior	n in the dipole
approximation.				1		
	ermodynamics and Statistical Physics				,ZK	4
	ics and statistical physics. Thermodynamic potential, the Joule Thomson effect, condition otionfrom a statistical point of view (classical and quasiclassical regime within the frame					
	ly radiation). The Boltzmann equation is used to discusses simple transport phenomena		nu yranu-Ce	anonical ens		gas, mouels
	antum Physics			7	,ZK	3
	tion, postulates of quantum mechanics, Born s statistical interpretation, expectation va	alues, Schrödinge	er equation,		· .	-
	entum, solution of simple systems, hydrogen atom.	5	. ,	5	21	
01MMF Me	thods of Mathematical Physics			Z	,ZK	6
The course provides an intro	duction to the theory of distributions with applications to solutions of partial differential	equations with co	netant cooff	intente furth		
		•				
	f a continuous kernel on a compact set as well as Sturm-Liouville operators on bounde dary value problems and mixed problems.	•				

01NME2	Numerical Methods 2	KZ	2			
	o numerical solution of boundary-value problems and intial-boundary-value problems for ordinary and partial differential equation	-	thods converting			
01PRST	ms to initial-value problems and finite-difference methods for elliptic, parabolic and first-order hyperbolic partial differential equ Probability and Statistics	Lations.	4			
	probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition a	· ·	-			
definition. The notions as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit theorems are stated and proved.						
	eory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testing are exp		1			
01RMF	The Equations of Mathematical Physics	Z,ZK	6			
-	rse is solving integral equations, theory of generalized functions, classification of partial differential equations, theory of integr tions (boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).	al transformations	s, and solution of			
12VAK	Vacuum Physics and Technology	KZ	4			
	concepts and relations; flow of rarefied gas. Interaction of gas with surface of solid surface; sorption, desorption; evaporation	, condensation; g	as transport			
	acuum generation. Pumping process. Pumps. Vacuum measurements: vacuum gauges of total and partial pressure; pumping	speed; gas flow, o	conductivity,			
12ZFP	Iterials and vacuum instalation parts. Practical exercises. Principles of Plasma Physics	Z,ZK	4			
	principles of Flasma Flysics emperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants,		-			
	ctromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and par	-	-			
	duction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas are introduced.					
02ZJFB	Nuclear Physics B	KZ	3			
	sents formidable challenges both experimentally and theoretically, simply because we are dealing with the submicroscopic do behaviour of objects fails us. The lecture is a basic introduction to very interesting regions of subatomic physics.	main, where muc	h of our classical			
00EKOT	Economy in Technology	Z	1			
	the basics of micro- and macroeconomics.	-				
00RET	Rhetoric	Z	1			
	on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the	-				
	bal aspects. Stylistics exercises, strategies for coping with stage-fright and a short excursion into the history of rhetoric are ar	<u> </u>				
00UPRA	Introduction to Law	Z	1			
00UPSY 12AUX	Introduction to Psychology	Z	1 2			
	Administration of UNIX System	KZ	2			
01ALG	Algebra	ZK	4			
	to the set theory standard algebraic structures are dealt with: groups, rings, fields, modules, linear algebras, lattices, Boolean a	1	polynomials over			
commutative fields.	T					
01ALGE	Algebra	Z,ZK	6			
	ns are treated in detail. Elements of the set theory cover only: equivalence and subvalence, the Cantorov-Bernstein theorem, t of ordinals and cardinals. Further standard algebraic structures are addressed: semigroups, monoids, groups, rings, integral d		-			
	dent chapters are devoted to divisibility in integral domains and to finite fields.	ornanio, principal	laour aornamo,			
11ANEL	Linear Circuit Analysis	Z,ZK	4			
	duction to the linear electronics for physicists. In the first part it describes basic methods of linear circuit analysis. It is especia	lly oriented to the	understanding			
	ds of analysis. The second part gives a short list of most commonly used circuits in experimental equipment.	714				
15CHEM	Analytical Calculations and Chemometry Principals	ZK asic data distribut	ions one- and			
	testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, s					
-	ometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in po		-			
	I separation methods, solving of complex forming equilibria.		_			
04ABZK	English - State Examination	ZK	5			
	he examination as given by the study plan. Student is eligible for the State language examination (level C1 or B2 of CEFR) or I examinations (04AP3KK, 04APAK, 04API, and 04APRK). From its first semester, part of the APIN programme covers also e					
	comply with respective rules and regulations for state language examinations.	· · · · · · · · · · · · · · · · · · ·				
04AM1	English for Intermediate Students M1	Z	1			
-	for students who have successfully completed the full secondary school English language course at least at the A2 level of the		-			
-	ages (CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into fundamentals rritten communication situations. Thus it covers topics related to the student's life and needs as well as topics of subtechnical	=				
	ge of grammar issues used in EAP.	Interest. Attentior				
04AM2	English for Intermediate Students M2	Z	1			
	ects the student to have completed the 04AM1 course. It develops their skills for work with subtechnical texts, focusing also more					
and lexical items typica revision is included.	I of ESP and EAP (e.g., definition, existence and classification of phenomena, object descriptions). Part of the course is also gui	ided writing. If nec	essary, grammar			
04AM3	English for Intermediate Students M3	Z	1			
	e skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtect	1	-			
understanding of profe	ssional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communicatio	n and their appro	priate Czech			
	e also includes studying abstracts and rules for writing them as well as basic rules for preparing and giving a short presentation	on on a chosen to	pic related to the			
student's field.	English for Advanced Students P1	Z	1			
	English for Advanced Students P1	1				
-	ages - CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into the fundame	-				
	ical of professional oral and written communication situations (fundamentals of terms in mathematics and physics, definitions	- · ·	-			
	I and written communication on topics related to the undergraduate's life and needs. It develops skills for free professional writing	g (writing a CV, let	ter of application,			
Police request). Il neces	ssary, revision of selected grammar topics is included.					

04AP2	English for Advanced Students P2	Z	1			
The 04AP2 course is ba	sed on 04AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of chos	en branches of sci	ence. According			
	concentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typical rhe					
types of descriptions, and, if possible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading of linguistically more demanding						
	ttends the student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focused	on formal writing	including the			
	n structure, linking, cohesion and coherence in texts.					
04AP3	English for Advanced Students P3 and an 04AP2 and expecte the student to work without any guidenes with authoritic professional materials and to interpret the	Z Z	1 training and and			
	sed on 04AP2 and expects the student to work without any guidance with authentic professional materials and to interpret th skills and functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summariz		-			
	a project on a given or chosen topic and presenting it. The course places emphasis on distinguishing levels of formal and in					
written communication.		ionna languago s				
16APLB	Application of Ionizing Radiation in Analytical Methods	ZK	5			
	of ionizing radiation in analytical methods is devoted to radioanalytical methods and the use of radionuclides and ionizing radi	I I				
of technological process						
12APL	Application of Lasers	Z,ZK	2			
	ndustrial technologies, medicine, remote sensing, energetics, telecommunication, military, entertainment and other branches	I ' I				
11APLG	Applications of Group Theory in Solid State Physics	ZK	2			
	system symmetry allows, without any quantitative calculations, rigorously and precisely determine how many energy states	there are and what	at interactions			
and transitions between	them may occur. Therefore, the main purpose of this course is to describe the methods by which we can extract the information of the second seco	tion on the object	that symmetry			
alone will provide. The a	pplication of these methods is illustrated by an example of molecular orbitals, inner orbitals of ions in the crystal field environ	ment, normal mor	des of molecular			
	rules for optical absorption transitions.					
02AMS	Atomic and Molecular Spectroscopy	Z,ZK	4			
The lecture is devoted to	o atomic and molecular spectroscopy.					
04CESM1	Czech for foreigners - Intermediate	Z	1			
The course is focused of	n correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending th	ie student's vocab	ulary for various			
social situations.						
04CESM2	Intermediate Czech 2	Z	1			
The course develops the	e topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and rea	ading skills and tra	ins the student			
in understanding comm	on abbreviations, abbreviated words, and mathematical terms and formulas.					
04CESM3	Intermediate Czech 3	Z	1			
The last course revises	morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is espec	cially focused on s	tylistics and			
	oping the student's writing skills.					
04CESP1	Czech for Foreign Students - Advanced Examination	Z	1			
The prerequisite of the c	ourse is very good knowledge of the Czech language, i.e., communicative competences at least at level B2 of the Common E	uropean Framewo	rk of Reference.			
It is focused partly on re	vision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of	science. Students	are taught the			
-	e of engineering and professional communication, both in spoken and written form. The topics include University Studies and	Student Life. Writ	ten practice			
	with teachers and faculty administrators.					
04CESP2	Czech for Foreigners - Advanced	Z	1			
	student's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with technical a	ind specialist texts	placing greater			
emphasis on individual		7	- 1			
04CESP3	Czech for Foreigners - Advanced		l accentation of the			
	e student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation are trained.	on, and, finally, pre	esentation of the			
	g skills necessary for professional communication are trained.	71/				
15DALCH	History of Alchemy and Chemistry e overview of crafts with chemical and/or metallurgical basis. Development of alchemy from ancient times in China, India, and	ZK ZK	2			
	s dedicated to Alchemy in Arabic world and various aspects of alchemy in Latin Europe. The influence of alchemical approact					
advancement is illustrat		iles development	Unio crans			
02DEF2	History of Physics 2	Z	2			
-	al mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. E	I I				
	n, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzmar					
-	Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclear e					
	ncept of Nature and Universe of today.					
01DEM	History of Mathematics	Z	1			
	n of regular seminars where the members of the department of mathematics, but also invited speakers - specialists in the field	I I				
from the history of math		g				
02DRG	Differential Equations, Symmetries and Groups	Z	4			
	ure is to teach students computation of symmetries of the differential equations.					
01DIM1	Discrete Mathematics 1	Z	2			
	to elementary number theory and applications. It includes individual problem solving.	· – I	-			
01DIM2	Discrete Mathematics 2	Z	2			
	to recurrence relations. It includes individual problem solving.		2			
01DIM3	Discrete Mathematics 3	Z	2			
	o elementary proofs of non-trivial combinatoriwal identities and to generating functions and their applications. In the seminar	-	_			
solution chosen from the						
11ELEA	Instrumentation and Measurement	Z,ZK	2			
	uction to the instrumentation and measurement for physicists.	۲ اے, ک	~			
14ELMI		Z,ZK	3			
	Electron Microscopy hts are introduced to the microscopic methods used for the characterization of materials, thin layers or nanoparticles. The int	· · ·	-			
	tron microscopy and to various types of microscopes. An important part of the course is given to the interaction of different t					
	ns and tools used in microscopy and to the description of particular parts of the microscopes. Introduction to kinematic and d					
	on and imaging techniques are also covered. A particular attention is given to analytical methods and imaging techniques in					

405004	English Overlugte Stendard 4	1/7	4
12EGS1	English Graduate Standard 1	KZ	4
Improving the knowledge	ge in English, English Presentation, English Discussions, creation of the technical text, structures of important documents, Pr	oceedings to be p	oublished
18ESPG1	European Computer Driving Licence 1	Z	2
Spreadsheet calculator	s are an important tool, especially for students and graduates in Software engineering in economics. The winter semester intro	duces the studen	ts also into other
	is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA languag		
and user functions will I			
18ESPG2		Z	2
	European Computer Driving Licence 2	1	
	s are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows		
VBA programming topic	cs (charts, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathema	itics, operational r	esearch, and
computer science.			
16EPAM	Exact Methods in Research of Historic Monuments	ZK	2
Aims and methods of his	, storic monument investigations, methods of age determination (radiocarbon, thermoluminescence and related methods, further rad	, diation methods, de	endrochronology,
	nalytical methods for determination of origin and production technologies of artefacts (activation analysis, X-ray fluorescence		
photogrammetry.			
			0
02EXF1	Experimental Physics 1	Z	2
Lecture represents an i	ntroductory course in experimental physics. Students will learn methods of measurement of basic physical quantities and me	thods of measure	ment evaluation.
02EXF2	Experimental Physics 2	ZK	2
Lecture represents an i	ntroductory course in experimental physics. Students will learn methods of measurement of basic physical quantities and me	thods of measure	ment evaluation.
17ENF			2
	Experimental Neutron Physics	KZ	
-	r focused on detailed characterisation of neutron properties, characteristics of neutron (reactor and non reactor) sources, pro		-
neutrons, neutron detec	ction methods, neutron induced nuclear reactions, modification and adjustment of neutron field, science and industry neutron	applications. Las	t lecture deals
with experimental data	processing and analysis. The lectures are supplemented with experimental practices in the field of neutron detection, determina	tion of delayed ne	utron properties,
study of neutron diffusion	on in various materials, preparation and characterisation of photo-neutron source and neutron source calibration. Experimental	practices will be ru	unning at training
reactor VR-1 and in the	neutron laboratory.		
04FM1	French for Intermediate Students M1	Z	1
	I		•
	M The objective of this three-semester course is to improve and further develop communication in the French language in bo		
	icate in social interaction and in academic, scientific and professional environment. They will be able to use the language to the	-	
information and to solve	e problems. 04FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises, s	systemizes and ex	pands language
skills gained in previous	s study. The following topics are covered: University studies in our country and in France, writing of transactional letters, CV, pe	rsonal statement,	request, answer
to an advert, French cu	Iture and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts, work	based on these t	exts.
04FM2	French for Intermediate Students M2	Z	1
	FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science	-	ical for tochnical
	(passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French sci	ence and technol	ogy, French
scientists, artists and a	rchitects. Description of an object, device, shapes, dimensions, material.		
04FM3	French for Intermediate Students M3	Z	1
The course is focused of	, n improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures (subordinate and i	nfinitive clauses.
	mpound tenses). Text summaryStudents prepare a written paper which will be delivered in form of an oral presentation in-c		
	specialisation or to their interest and generally covers a technical /applied science topic. It is not a translation but a creative w		
	Ige/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesion and	-	
04FP1	French for Advanced Students P1	Z	1
04FP advanced course	The objective of this three-semester course is to improve and further develop communication in the French language in both	written and oral f	orm. Students
will be able to communi	icate in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit	general and tech	nical information
and to solve problems.	04FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topi	cs are repeated a	nd expanded:
	osé-imparfait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of t		
	swer to an advert, environmental issues, success of French science and technology, chosen topics from French regional cultu		-
		ire, Falis. Topics (or specialization.
	physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation.		
04FP2	French for Advanced Students P2	Z	1
With the link to P1 cont	ents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication c	n given topics. Fe	atures typical of
technical and scientific	communication are stressed (passive voice, nominalization, word formation).		
04FP3	French for Advanded Students P3	Z	1
	I		I Internet Created
	on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in		-
	rter texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally co	vers a technical /a	ipplied science
topic. It is a creative wo	rk compiled from 3 French sources. Preparation of several set topics for oral examination.		
04FZ1	French for Beginners Z1	Z	1
French for beginners Th	, he objective of this 5-level course is to be able to communicate in French orally and in writing in situations of everyday life , in	socializing and in	professional life.
-	ench for specific / technical communication and reading of popular science and scientific texts. 04FZ1 The objective is to be a	-	-
	knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Pravd		-
			-
	áte ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4 : introductions	-	-
giving the directions, sil	mple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronuncia	tion and grammar	
04FZ2	French for Beginners Z2	Z	1
The course is linking up	, with 04FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 (, of the textbook: Pr	avda - Pravdová
	Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreer		
-	p of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm	-	
			opioo 0046160.
	work? A few expressions concerning the study. Name of University and Faculty.	_	
04FZ3	French for Beginners Z3	Z	1
The course builts upon	04FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda	 Pravdová: Freno 	ch for Beginners.
Topics, functions and si	tuations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for in	nformation and lou	ud as part of
	Reading covers short adapted texts of general interest first, and later popular science texts.		
04FZ4	French for Beginners Z4	Z	1
-			-
	n 04FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The strength for Regimera, and is expanded with tables and functions from other metacials. Reading is developed from the la		-
	xtbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the le		
	ourse covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sho	pping, weather, u	niversity in our
country and in France,	how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.		

04FZ5 French for Beginners Z5		1
All four skills acquired in FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topi	ic. 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	erials. Topics: on physics	from lecture
notes, success of French science and technology, information about France. Grammar is systemized and complemented with syntax (subordir	nate clauses, typical con	junctions,
subjunctive clauses, gerund, passive.		
01FKP Functions of Complex Variable	ZK	2
The course develops advanced properties of systems of holomorphic functions, Ascoli-Vitali's theorem, advanced properties of conformal map	pings, transcendental a	nd meromorphic
functions. Basic properties of complex functions of several complex variables together with improper line integrals and its applications are pres	sented.	
01FKPB Functions of Complex Variable B	Z	2
The course develops advanced properties of systems of holomorphic functions, Ascoli-Vitali's theorem, advanced properties of conformal map	pings, transcendental a	nd meromorphic
functions. Basic properties of complex functions of several complex variables together with improper line integrals and its applications are pres		·
01FAN1 Functional Analysis 1	Z,ZK	4
Basic notions and results are addressed concerning successively topological spaces, metric spaces, topological vector spaces, normed and E		
01FA1 Functional Analysis 1	Z,ZK	3
Continuing course of mathematical analysis and algebra introduction to the basics of functional analysis. There are the concepts that students	1 1 1	-
and technical disciplines.		various priyoloai
01FA2 Functional Analysis 2	Z,ZK	4
The course aims to present selected fundamental results from functional analysis including basic theorems of the theory of Banach spaces, cl	1 1	-
Hilbert-Schmidt operators, spectral decomposition of bounded self-adjoint operators.		r spectrum,
	Z	2
		_
The seminar is devoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of Mechanics. The problems are chosen, studied and presented by the students themselves, with the possibility to use PC and physical laborator		e course or
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02FYS2 Physical Seminar 2	Z	2
The seminar is devoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of		
Electricity and Magnetism. The problems are chosen studied and presented by the students themselves, with the possibility to use PC and physical students themselves are chosen studied and presented by the students themselves.	vsical laboratory equipm	
01GTDR Geometric Theory of Ordinary Differential Equations	Z	2
The seminar consists of the qualitative theory of ODEs dealing with the geometric and topological properties of the solution. In this context, we re-	-	ted basic results
of the existence and uniqueness, continuous dependence on parameters and initial conditions. Main part is devoted to the autonomous system		
12INS1 Information Systems 1	Z,ZK	2
Information technology, architecture of the databases, network databases, cloud application Google, Microsoft, information managament, aproac	ches to solve task of info	rmation systems
12INS2 Information Systems 2	Z,ZK	2
Graduation of Information systems 1 is required. In more details: Information technology, architecture of the databases, network databases, cli	oud application Google,	Microsoft,
information managament, aproaches to solve task of information systems		
16ZJTB Nuclear Energy Facilities and Accelerators	ZK	2
Basic scheme of nuclear reactor and nuclear power plant, chain fission reaction development, main components of nuclear energetic reactor,	most important reactor t	ypes, linear
high-voltage accelerators, linear high-frequency accelerators, accelerators based on cyclotron, microtron, betatron, electron and proton synch	rotrons, electron and ior	sources for
appelerators torgets		
accelerators, targets.		
	ZK	2
	I I	2
17JARE Nuclear Reactors	fety systems, containme	2 nt. Classification
17JARE Nuclear Reactors Introduction. World power issue. Previous evolution of power reactor. Nuclear fission reactors, fuel assemblies, active core, control systems, safety and the systems of the syst	fety systems, containme tives. Pressurized water	2 nt. Classification reactors (PWR).
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18MAK2	Macroeconomics 2	Z,ZK	4
	ends theoretical knowledge acquired from Macroeconomics I of its students with the latest knowledge of contemporary macro	-	
e	cially those with an emphasis on the role of human capital and technological progress. Furthermore, it introduces students to onomic models derived from microeconomic behavior of subjects and economics and their rational expectations. It also provide:		
of labor market modelin		s students with the	dem kilowiedge
01MAPR	Markov processes	Z,ZK	4
18EKO1	Mathematical Economics 1	Z,ZK	5
	selected models and methods for economic decision making. The main attention is given to optimization models of linear prog	· · ·	lities of their real
applications and their s	olving by means of the current software products.		
18EKO2	Mathematical Economics 2	Z,ZK	5
	selected models and methods for economic decision making. The main attention is given to optimization models in graphs, pr	roject managemer	nt, inventory
01MASC	ministic and stochastic demand, queuing theory and simulation models.	Z	2
	Mathematical Statistics - Seminar to practical use of statistical methods studied in the course Mathematical Statistics 01MAS. The tutorial deals with calculatior		
-	g unbiased estimators with minimal variance, parameter estimation by method of moments and method of maximum likelihoo		
hypothesis testing using	the Neyman-Pearson lemma and likelihood ratio, calculation of confidence intervals and non-parametric density estimation.		-
00MAM1	Essentials of High School Course 1	Z	1
00MAM2	Essentials of High School Math Course 2	Z	1
Review of basics of hig			
01MMPV	Mathematical Models of Groundwater Flow	KZ	2
	overview of computational methods for selected groundwater flow problems. The first part of the course is devoted to mathe part is aimed at selected numerical methods, emphasizing implementation issues related to these methods.	matical formulatio	ns of these
18MIK1	Microeconomics 1	Z,ZK	5
	t of theories, which help us to understand processes by which the scarce resources are allocated among alternative uses. M	· · ·	-
	nese processes, and makes more clear behaviour of the economic agents. This course of Microeconomics I consist of introdu		
Consumer Theory.			
18MIK2	Microeconomics 2	Z,ZK	5
	t of theories, helping us to understand process by which scarce resources are allocated among alternative uses. Microecono	-	ole of prices and
	and make clear economic agents behaviour. The lectures of Microeconomics II are oriented on Theory of Firm and Industria	-	4
11MIK	Logical Circuits and Microprocessors luction to the digital electronic for physicists. It describes the function principles of combination circuits, simple sequential cir	Z,ZK	4 c circuits like
	nicrocomputer architecture and principles of interfacing is shown.		
12MPR1	Microprocessors 1	ZK	4
	crocomputer, microprocessor types, memory types CPU, memory, Input output. Code and data, addressing modes(direct, in	direct, register, rel	ative,, stack
	s, IO devices - program control, interrupt. Microprocessor Microchip PIC16F877A, Instruction codes- Assembler and Macroas	sembler, program	ming languages.
RISC processors - prine		714	2
12MPR2	Microprocessors 2	ZK	2
12MPR2 Architecture IA-32. Data	Microprocessors 2 a types and addressing. Memory segmentation and paging. Real and privileged mode. Instruction set, Assembler. description		
12MPR2 Architecture IA-32. Data 12MOF	Microprocessors 2 a types and addressing. Memory segmentation and paging. Real and privileged mode. Instruction set, Assembler. description Molecular Physics	ZK	2
12MPR2 Architecture IA-32. Data 12MOF Basic ideas on multi-ato	Microprocessors 2 a types and addressing. Memory segmentation and paging. Real and privileged mode. Instruction set, Assembler. description Molecular Physics pmic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular structure deter	ZK mination.	2
12MPR2 Architecture IA-32. Data 12MOF Basic ideas on multi-ato 12NT	Microprocessors 2 a types and addressing. Memory segmentation and paging. Real and privileged mode. Instruction set, Assembler. description Molecular Physics	ZK mination. ZK	2
12MPR2 Architecture IA-32. Data 12MOF Basic ideas on multi-ato 12NT Lectures will introduce different technologies (I	Microprocessors 2 a types and addressing. Memory segmentation and paging. Real and privileged mode. Instruction set, Assembler. description Molecular Physics omic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular structure deter Nanotechnology students mainly to modern technological methods of preparation of semiconductor, metal and dielectric nanostructures. Phys MBE, MOVPE, EBL, sol-gel and colloidal solution) will be explained. Substantive attention will be devoted to epitaxial technological	ZK mination. ZK ical and chemical ogies which are so	2 2 fundaments of ubstantial for
12MPR2 Architecture IA-32. Data 12MOF Basic ideas on multi-ato 12NT Lectures will introduce different technologies (I nanostructure preparati	Microprocessors 2 a types and addressing. Memory segmentation and paging. Real and privileged mode. Instruction set, Assembler. description Molecular Physics omic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular structure deter Nanotechnology students mainly to modern technological methods of preparation of semiconductor, metal and dielectric nanostructures. Phys MBE, MOVPE, EBL, sol-gel and colloidal solution) will be explained. Substantive attention will be devoted to epitaxial technolo on. Particular emphasis will be focused on detail characterization of "in situ" and "ex situ" techniques, their applications for he	ZK mination. ZK ical and chemical ogies which are se eterostructure and	2 2 fundaments of ubstantial for nanostructure
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12MPR2 Architecture IA-32. Data 12MOF Basic ideas on multi-ato 12NT Lectures will introduce a different technologies (I nanostructure preparati growths will be discusse as well as soldering and	Microprocessors 2 a types and addressing. Memory segmentation and paging. Real and privileged mode. Instruction set, Assembler. description Molecular Physics pmic molecules and molecular matter, and on structure-to-physical properties relations. Methods of molecular structure deter Nanotechnology students mainly to modern technological methods of preparation of semiconductor, metal and dielectric nanostructures. Phys MBE, MOVPE, EBL, sol-gel and colloidal solution) will be explained. Substantive attention will be devoted to epitaxial technolo on. Particular emphasis will be focused on detail characterization of "in situ" and "ex situ" techniques, their applications for he ad as well. Some supportive technical methods - lithography, diffusion, evaporation, ion implantation, contact and dielectric la d encasement.	ZK mination. ZK ical and chemical ogies which are so eterostructure and yer preparation w	2 fundaments of ubstantial for nanostructure ill be mentioned
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04NP3	German for Advanced Students P3	Z	1
	3 main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a v	ariety of less comr	non situations
	r accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the v	-	
nuclear power engineer	ing, the environment, computer science, and car technology, will also be extended. Only authentic professional texts are use	d. By means of a	presentation,
students are trained to p	process information gained from their reading of complex and difficult texts and present it to the class in a simplified oral form. T	he course also inc	ludes translation
practice to and from Ge	rman.		
15CH1	General Chemistry 1	Z	3
	cepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practiv	cal use are illustra	ted by examples
solved in exercises.			
15CH2	General Chemistry 2	Z,ZK	3
The subject is the conti	nuation of the course General chemistry I. The main attention is paid to general principles governing chemical processes. Us	ing various examp	les, the fact that
the validity of these prir	ciples is not restricted only to chemical processes is documented. The significance and practical use of explained principles	are illustrated by e	examples solved
in exercises.			
02OR	General Relativity	ZK	3
Introduction to general	herright of relativity: principle of equivalence and principle of general covariance, parallel transport and geodesic equation, gra	vitational redshift.	Curvature and
Einstein's gravitational	aw. Schwarzschild solution of the Einstein equations, homogeneous and isotropic cosmological models.		
01POPJ1	Computers and Natural Language 1	Z	2
	ational processing and understanding of natural languages. Automatic methods of morphological and syntactic analysis inclu	uding modern stati	
	n will be discussed. Two-level morphology, tagging and language models, Viterbi algorithm, grammars, chart parsing, probabi	-	
01POPJ2	Computers and Natural Language 2	Z	2
	is to get acquainted with the broad topic of machine translation (MT). Machine translation is a challenging task that can serve	1 – 1	
-	as natural languages. We cover several rather different approaches to the task as well as issues related to automatic and ma		-
quality.			
12POAL	Computer Algebra	KZ	2
	basic objects (integers, rational and algebraic numbers, polynomials, rational functions, radicals, algebraic functions), arithmetic	1 1	_
	tion, series summation, integration, ordinary differential equations, factorization, equations solving, quantifier elimination, su		
	graphics, Maple - detailed introduction and solving of practical examples, applications, overview of other systems (Axiom, Ma		
01POGR1	Computer Graphics 1	Z	2
		1 – 1	_
	semester "Computer Graphics" course is devoted to the specifics of digital display devices spanning from history up to the sta		-
-	problems in 2D computer graphics is given together with their solutions. Focus is put on mathematical description of problems ar	-	
	edge previously obtained in a variety of subjects available at FNSPE. The final part of the course covers the applications of c	Simputer graphics	approacties in
	g scientific documents and presentations.		
01POGR2	Computer Graphics 2	Z	2
	two-semester "Computer Graphics" course begins with a brief introduction to signal theory in the context of aliasing - a phen	-	-
	I structured survey of fundamental problems in 3D computer graphics is given together with their solutions, from the descript		
	on mathematical description of problems and explanation of the corresponding algorithms using knowledge previously obtained		-
-	n implementation aspect such as data structures design etc. is also a matter of concern. In the last lecture, a number of theo	retical concepts al	re demonstrated
	-source 3D modeling and rendering software instrument.		
01SITE1	Computer Networks 1	Z	2
-	bry and present network (LAN, WAN, use the principles and technologies). Architecture of reference model ISO/OSI. Network		
	s. Internet services - mail, remote access, www. Secure communication, tunneling. Directory services, certificates, certification a		-
	letwork security - firewalls (packet filters, proxies, gateways, NAT, DMZ), practical exercises. (According to the interest - the s		
01SITE2	Computer Networks 2	Z	2
Understanding the histo	ry and present network (LAN, WAN, use the principles and technologies). Architecture of reference model ISO/OSI. Network	protocols, practica	al exercises with
	s. Internet services - mail, remote access, www. Secure communication, tunneling. Directory services, certificates, certification a		
(PKI). Use in practice. N	letwork security - firewalls (packet filters, proxies, gateways, NAT, DMZ), practical exercises. (According to the interest - the s	erial control lines,	modems)
01POPR	Advanced Probability	Z	2
The subject is devoted	to advanced Theory of probability and statistics on measure-theoretic level for general distributions of random variables. We	deal with sample a	and integral
characteristics of rando	m variables and convergence criteria. Further, the theory of statistical model estimation and testing is extended for parametr	ic and nonparame	tric cases.
12PEL1	Practical Electronics 1	Z,ZK	2
Recapitulation of basics	s electronic, mathematical analyses of circuit solving. Measurement in electronic, measurement of frequency and phase. Ana	logue to digital co	nverters and
digital signal processing	g. Function of voltmeter, ampermeter, oscilloscope, spectral analyser and logical analyser.		
12PEL2	Practical Electronics 2	Z,ZK	2
	ronics, low noise electronics system design. Noise measurement. Time measurement. Printed circuit design.	_,	_
12PIN1	Practical Informatics for Technics 1	Z	2
	g systems. Personal computer, workstation and supercomputers. Processor, memory, bus, devices, hard disk, network interfa	1 – 1	
	ystems. Requirements on operating system for research and technical computing. Operating system UNIX. Basic principles, kern		
	s, working with files. Text editors: vi, emacs. Command interpreter (shell) sh, csh and its programming (scripts). Controlling pro-		
	s. Standard tools. Graphical user interface X-windows. Computer networks. Local computer networks. Global computer networks		
	ork configutation of a computer. Network services: hardware sharing, mail, ftp, etc. Network applications		
12PIN2	Practical Informatics for Technics 2	Z	2
	e semester course of basics and applications of informatics for science and engineering included as obligatory alternative of	1 – 1	
-	s. The second part of the course is "Introduction to computer algebra systems?.		- 3.1.10 100/1200
12PIN3	Practical Informatics for Technics 3	Z	2
	e semester course of basics and applications of informatics for science and engineering included as obligatory alternative of	1 1	
-	s. The third part of the course is "Introduction to scientific computing?.		Part is realized
			4
15INPR	Laboratory Practice in Instrumental Methods	KZ	4
-	dents in the use of selected modern instrumental methods and techniques for solving some physico-chemical analytical and		ne training is
	tories of Czech Academy of Sciences (Institute of Physical Chemistry) and partly in laboratory at the Department of Nuclear		
01PRA1	Probability and Mathematical Statistics 1	Z,ZK	6
-	to the introduction to Theory of probability and statistics on measure-theoretic level for discrete models, continuous distribution	-	
	eal with sample an integral characteristics of random variables and variants of limit theorems are derived (LLN, CLT). This kr	nowledge is furthe	r applied to the
statistical processing of	observations and statistical parametric model estimation.		

01PRA2 Probability and Mathematical Statistics 2	ZK	2
The subject is devoted to the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihout and the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihout as the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihout as the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihout as the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihout as the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihout as the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihout as the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihout as the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihout as the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihout as the statistical techniques for estimation and testing within parametric and nonparametric models such as the statistical techniques for estimation and testing within parametric and nonparametric and nonparametric models such as the statistical techniques for estimation and testing within parametric and nonparametric and nonparametric models such as the statistical techniques for estimation and testing within parametric and nonparametric an	ood principle, Uniform	ly most powerful
tests, Goodness of fitness tests of models, confidence regions, etc. We focus on real practical applications of these statistical techniques in fram	e of the specific exam	ples.
01PRSTB Probability and Statistics B	KZ	4
It is a basic course of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definitio	-	- 1
definition. The notions as random variable, distribution function of random variable and characteristics of random variable are treated and basic li		ted and proved.
On the basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testing are		
16UAZB Principles of Ionizing-Radiation Applications	ZK	2
Historical outline of applications, review of interaction of radiation with a matter, radiation sources, detectors and instrumentation, evaluation of ra penetration and scattering of radiation beams, selected radioanalytical methods, tracer methods, radionuclide dating, further possibilities for the		
		2
16FNZB Problems of Non-ionizing Radiation Subject is focused on biological effects of non-ionizing radiation and its use in physical praxis. Information about principles, biological effects and	ZK	_
resonance and ultrasound as applied in various types of technical or medical equipment are given as well.	memous used in new	us of magnetic
12PSEM Problem Seminary	7	2
25 seminaries with topics from the region of solid materials engineering, physical electronics, materials science, nuclear reactors, dosimetry and	· · · ·	
01PROP Programmer's Practicum		2
The purpose of this course is to acquire good programming habits which will help in writing of clean code, i.e. such that is easy to comprehend b	· · ·	_
functionality. Using specific examples, the students get familiar with naming conventions, and continue through writing project documentation, pri	-	-
debugging, up to creating object-oriented design, design patterns and refactoring.		orogrammig,
01PERI Programming of Peripherals Devices	Z	2
Memory organization, input and output ports, computer bus. Software libraries for computer peripherals, 3D graphic libraries. Principles of periph	· · ·	2
01PW Windows Programming	Z	2
Simple graphical programs for MS Windows. Basic editing controls. File input and output. User defined components, dynamic type identification a	1 1	2
	1	4
18PRC1 Programming in C++ 1	Z	4
This course covers mainly the C programming language and non-object oriented features of the C++ language.	1/7	4
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 Temp		
18PJ Programming in Java	Z,ZK	5
This course is devoted to the Java platform and to the development of the basic types of applications for this platform.		
18MTL Programming in MATLAB	Z,ZK	5
Introducing Matlab environment as efficient tool for computation in complex arrays and symbolic variables, namely for linear algebra, mathematic	; analysis, statistics, a	algorithmization
and geometric representation of results.		
18MPT Programming in MATLAB	KZ	5
The subject acquaints students with various programming techniques in the Matlab environment. The emphasis is placed on the differences in placed on the differen	ogramming methodo	logy in Matlab
compared to classical languages.		
18PAS Pascal Programming	Z	4
This lecture is intended mainly for students, with little or no experience in programming. It familiarizes the students with the basic concepts in programming language	gramming and with th	ne Pascal
programming language.		
12PDR1 Data Communication and Interfaces 1	Z	2
Principles of computer networks, networks architectures and data transfer. Specification of existing network architectures.		
12PDR2 Data Communication and Interfaces 2	Z	2
Principles of Ethernet standards and basics of protocol suite TCP/IP.		
01PSL LaTeX - Publication Instrument	Z	2
The course is devoted to the basics and facilities of computer typography, particularly to the system LaTeX		
02RQGP1 Seminar on Quark-Gluon Plasma 1	Z	1
The aim of the seminar is discuss the selection of the most fundamental articles in heavy ion physics.		
02RQGP2 Seminar on Quark-Gluon Plasma 2	Z	1
The aim of the seminar is discuss the selection of the most fundamental articles in heavy ion physics.		
04RM1 Russian for Intermediate Students M1	Z	1
The course is designed for students with previous knowledge of Russian from secondary schools. Students are supposed to know the Russian alp		
basic vocabulary for communication in everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday need,		
they can use basic grammar structures (verbal and nominal forms, irregular verbs, pronouns). The initial knowledge corresponds to the achiever		course. The
contents and scope of the course correspond approximately to the RZ3 course, but for half of the time allotted in the timetable.		4
04RM2 Russian for Intermediate Students M2	Z	1
The course is based on the RM1 course, its contents and scope correspond roughly to RZ4, however, for half of the time allotted in the timetable		
04RM3 Russian for Intermediate Students M3	Z	1
The course develops the knowledge and skills acquired in RM1 and RM2 and its contents and scope are roughly at the same level as those of RZ	5, however, for half of	the time allotted
in the timetable.		
04RP1 Russian for Advanced Students P1		1
The entrance requirement for the course is to achieve the B1 CEFR level. The objective of the course is revision of standard language structures		
structures understanding the fundamentals of technical language and training writing akilla		cuit grammar
structures, understanding the fundamentals of technical language and training writing skills.	, practicing more diffi	
04RP2 Russian for Advanced Students P2	, practicing more diffie	1
04RP2 Russian for Advanced Students P2 The course is based on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passiv	, practicing more diffie	1
04RP2 Russian for Advanced Students P2 The course is based on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passiv structures). Stress is put on independent oral and written communication.	, practicing more diffience difference diffe	1 ecific syntactic
04RP2 Russian for Advanced Students P2 The course is based on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passive structures). Stress is put on independent oral and written communication. 04RP3 Russian for Advanced Students P3	, practicing more diffiend to the second sec	1 ecific syntactic
04RP2 Russian for Advanced Students P2 The course is based on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passive structures). Stress is put on independent oral and written communication. 04RP3 Russian for Advanced Students P3 The course is based on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written parapara)	, practicing more diffiend to the second sec	1 ecific syntactic 1 The RP1 - RP3
04RP2 Russian for Advanced Students P2 The course is based on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passive structures). Stress is put on independent oral and written communication. 04RP3 Russian for Advanced Students P3 The course is based on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written parap courses require good previous knowledge of general language at secondary level (listening, reading, correct communication in everyday situation)	, practicing more diffiend to the second sec	1 ecific syntactic 1 The RP1 - RP3 elop and expand
04RP2 Russian for Advanced Students P2 The course is based on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passive structures). Stress is put on independent oral and written communication. 04RP3 Russian for Advanced Students P3 The course is based on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraproverse require good previous knowledge of general language at secondary level (listening, reading, correct communication in everyday situation these skills. Further study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral	, practicing more diffiend Z ves, verb aspects, spe Z hrasing, translation). ns). The courses deve and written interpreta	1 ecific syntactic 1 The RP1 - RP3 elop and expand ttion). Students
04RP2 Russian for Advanced Students P2 The course is based on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passive structures). Stress is put on independent oral and written communication. 04RP3 Russian for Advanced Students P3 The course is based on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written parap courses require good previous knowledge of general language at secondary level (listening, reading, correct communication in everyday situation)	, practicing more diffiend Z ves, verb aspects, spe Z hrasing, translation). ns). The courses deve and written interpreta	1 ecific syntactic 1 The RP1 - RP3 elop and expand ttion). Students

04RZ1 Russian for Beginners Z1 The course represents the first stage of the five-semester programme, its final aim being reading and understanding professional texts written in R	7	4
	Z	1
	-	-
the Russian alphabet (for both reading and writing skills) and fundamentals of grammar necessary for everyday communication (listening and spectrum)	aking). Students wil	be able to read
a short text with marked stress, understand its contents and summarize it.		
04RZ2 Russian for Beginners Z2	Z	1
The second semester of the programme is designed to teach skills for basic communication in everyday situations and for reading easy and shor	subtechnical texts.	Students will be
able to communicate using short sentences and appropriate structures, and read aloud with confidence a short text without marked stress. They we	vill also develop thei	r vocabulary and
master further grammatical structures. They will have mastered with confidence the Russian alphabet and will be able to use it in writing.		
04RZ3 Russian for Beginners Z3	Z	1
The course is based on RZ2 and includes further everyday topics, develops understanding of short compact texts on new subtechnical topics (for t	aining various forms	of reading skills
and listening) and introduces new grammar. Students will be trained to distinguish intonation patterns while listening to spoken language. They wi	I be able to respond	so as to be
understood, and to express their opinion. Writing skills will be trained on guided writing tasks and note-taking.		
04RZ4 Russian for Beginners Z4	7	1
The course is based on 04RZ3. It improves and expands the knowledge of general language in all four skills (reading and understanding longer to		•
unfamiliar words, oral communication in everyday situations, writing longer texts). Students are trained to use grammar structures effectively (e.g.	-	-
patterns from Czech, modality, imperatives, conditionals). They practice and develop communication skills for everyday situations (food, travelling,	-	
written communication on more specific topics (environment, addictions, the green movement). They become acquainted with various geographic	<i>,</i>	
fill in forms, look up the information from the timetable, learn about Russian holidays and typical meals.		,,
04RZ5 Russian for Beginners Z5	7	1
The course expects the student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. underst		I and summarizing
information from a specialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts		-
everyday topics. Studying grammar is based on professional and technical texts and only includes items typically used in professional communica		
passive voice). Students develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, polite rec	· ·	es, par licipies,
01RSWP Project Management of Software Projects	KZ	2
The course Project management of software projects is dedicated to an explanation of general ideas, rules and procedures which are common to ma		
The course structure corresponds to a lifecycle of typical projects including many other aspects which have to be taken into account in the course of	their management.	Specific attention
is paid to software project management and to IT projects in general. Interdisciplinary view of project management is emphasized.		
02SMF Seminar of Mathematical Physics	Z	2
The purpose of the seminar is to iluminate mathematical physics by virtue of solved examples. It is supposed that the teachers of the physics dep	artment will present	simple tasks
concerning their scientific activities that could become the topics of the student?s bachelor theses in the next year		
01SSM1 Seminar of Contemporary Mathematics 1	Z	2
This seminar provides a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of bas	ic courses of mathe	matics.
01SSM2 Seminar of Contemporary Mathematics 2	Z	2
This seminar provides a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of bas	ic courses of mather	matics.
16SED1 Dosimetry Seminar 1	7	2
The seminary is supposed to motivate the student's interest in the field of dosimetry, especially in medical physics. Introductory lectures will be do	evoted to support for	future writing of
a bachelor's thesis. The following lectures are given by the former students of DDAIR, who are currently employed in various organizations (SÚR		
MI, Hospital Na Homolce, FN v Motole, PTC Czech s.r.o.).		
16SED2 Dosimetry Seminar 2	Z	
Dosimetry Seminary 2 follows-up SED1. In this seminary students will listen to the lectures of the older students of DDAIR. The older students give		2
	lectures about their	2 progress on the
research topic of their theses. The course also introduces the principles of creating good presentation and advice for working with scientific literat		
research topic of their theses. The course also introduces the principles of creating good presentation and advice for working with scientific literat	ure.	progress on the
01SMB1 Seminar on Calculus B1		
01SMB1 Seminar on Calculus B1 The course is devoted to support the lectures of Calculus B3.	ure.	progress on the
01SMB1 Seminar on Calculus B1 The course is devoted to support the lectures of Calculus B3. 01SMB2 Seminar on Calculus B2	ure.	progress on the
01SMB1 Seminar on Calculus B1 The course is devoted to support the lectures of Calculus B3. 01SMB2 Seminar on Calculus B2 The course is devoted to support the lectures of Calculus B4.	ure. Z	progress on the 2 2
01SMB1 Seminar on Calculus B1 The course is devoted to support the lectures of Calculus B3. 01SMB2 Seminar on Calculus B2 The course is devoted to support the lectures of Calculus B4. 01SOS1 Software Seminar 1	ure.	progress on the
01SMB1 Seminar on Calculus B1 The course is devoted to support the lectures of Calculus B3. 01SMB2 Seminar on Calculus B2 The course is devoted to support the lectures of Calculus B4. 01SOS1 Software Seminar 1 Java, Java Beans, Assembly language programming for microprocessors Intel 80x86	ure. Z Z Z	progress on the 2 2 2 2
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04SM3	Spanish for Intermediate Students M3		1
	upplemented with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of acad		-
0	het in Spanish and search for information of their specialization or field of interest. Students will use the information to write s	short articles and	summaries. The
	me, general Spanish course based on course books, covers presentations and, finally, a written and oral examination.	7	4
04SP1	Spanish for Advanced Students P1	Z	
of CEFR.	more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communicat	ion. Course prere	quisites: level B2
	Spanish for Advanced Students D2	7	4
04SP2	Spanish for Advanced Students P2 and part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and sy		
written communication.	to part of the advanced Spanish course, extending spanish for specific purposes topics, it comprises more grammar and sy	max and locuses	on independent
	Consists for Advanced Students D2	7	4
	Spanish for Advanced Students P3	Z	
based on what students	I part of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is will need in their second in their second.	locused on writter	Communication
r		7	4
04SZ1	Spanish for Beginners Z1	Z	1
	t stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fun	-	
	ate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Spanic		-
	Spanish for Beginners Students Z2	Z	1
	on course 04SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structure		
	stand short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries are also included.	ries and others su	ch as the Czech
	ish-speaking countries are also included.	_	
	Spanish for Beginners Z3		1
	course SZ2, and develops the student's vocabulary and grammar structure. The course covers realia (history and culture) o		-
	attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperativ	e). It includes writ	ten and oral
	en general topic, for which the student is trained by reading texts or listening to them.	_	
04SZ4	Spanish for Beginners Z3	Z	1
	course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spani		-
	o further grammar topics (perífrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of	the imperative, an	d subjunctive),
	nunication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them.		
04SZ5	Spanish for Beginners Z5	Z	1
The course books are se	upplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanis	h for specific purp	oses. In its final
part, the general Spanis	h course based on the course book will end with presentations and, finally, a written and oral examination.		
14TM	Engineering Mechanics	Z,ZK	4
The course represents a	Ink-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain and	alysis of real struc	ture parts.
14TEM	Engineering Mechanics	Z,ZK	6
Abstract: The course rep	presents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and stra	in analysis of real	structure parts
(elasticity, plasticity, frac	ture mechanics, etc.). Principles of statics, kinematics, and dynamics and their application.		
121AIS	Ion Beam Techniques and Applications.	ZK	3
12TAIS Production and forming	Ion Beam Techniques and Applications. of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications.	ZK	3
Production and forming	of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications.		-
Production and forming TV-1	of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications. Physical Education	Z	1
Production and forming TV-1 TV-2	of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications. Physical Education Physical Education	Z Z	1
Production and forming TV-1 TV-2 TV-3	of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications. Physical Education Physical Education Physical education	Z Z Z	1 1 1
Production and forming TV-1 TV-2 TV-3 TV-4	of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications. Physical Education Physical Education	Z Z Z Z	1 1 1 1
Production and forming TV-1 TV-2 TV-3	of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications. Physical Education Physical Education Physical education	Z Z Z	1 1 1
Production and forming TV-1 TV-2 TV-3 TV-4 01DYSY	of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applications. Physical Education Physical Education Physical education Physical education	Z Z Z ZK	1 1 1 1 3
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11UFPLN Introduction to Solid State Physics	ZK	2
The purpose of this lecture is to introduce the undergraduate students to the study of the solid state physics.		2
17UINZ Introduction to Engineering	Z,ZK	3
The course is devoted to an introduction to the engineering profession. Students will gradually learn the characteristics and specialties of engineering	· · ·	-
the basics of selected engineering disciplines, such as the basics of materials science, manufacturing technology, quality control and assurance		
focus on some issues of R&D activities organization and on selected parts of technical drawings and the work with AutoCAD code.	3,,	
02UKP Introduction to Curves and Surfaces	7	2
The goal of the lecture is an introduction to the differential geometry of simple manifolds - curves and two-dimensional surfaces. The basic conce		
Frenets formulae are explained. In the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essenti	-	
calculated by students		·
12ULT Introduction to Laser Technique	Z,ZK	3
Overview of electromagnetic radiation sources; laser principle; classification of lasers; characterization and rough application of various types of l	· · · ·	
12UMF Introduction to Modern Physics	7	3
The course is intended to be a concise introduction to modern / nonclassical physics for students who have already had basic classical physics co		-
in a computational laboratory.		
18UOA Introduction into Object Oriented Architecture	Z,ZK	4
01UTIZ Introduction to Theoretical Informatics	ZK	2
	Z	
11UVOD Introduction to Specialization	Z	2
The purpose of this lecture is to introduce the undergraduate students to the physical master degree study programmes.	7	0
12PYTH Scientific Programming in Python		2
The aim of this course is to learn the fundamentals of the modern Python programming language with a focus on scientific computing. Emphasis		
problems. The course is performed in an interactive form of practical exercises, whose topics can be tailored to the content of other subjects or st involved in ongoing research. In the introductory part of the course, students learn the basic features of Python?from basic types to object orienter		
greater part of the course focuses on specific features of Python for scientific programming. Presented are the main numerical libraries NumPy, S		-
library. We show how to generate efficient code, how to combine Python with other languages, what tools are available.		ino grapinos
12VTV Scientific and Technical Computing	Z	2
The students get familiar with methods of solving of computational problems in the scientific and technical practice, and with methods of their pro-		
mainly to programming in the Fortran language.	gramming. The cours	ie is offerfied
12VFT High Frequency and Impulse Circuitry	Z,ZK	2
The goals of course is to collect advanced knowledge in high frequency technics and high speed events. The course is focused on Maxwell equa	1 1	
frequency technics, microwaves guidelines, striplines, oscillators, amplifiers and pulse generators.		diodes, nigh
	ZK	2
	1 1	_
Course is devoted to research reactors and their applications for the need of research and industry. Students get familiar with research reactor typ along with experimental equipment needed for particular applications and their specifics. The course is supported by technical visit to research reactor to be a constructed by technical visit.		intai programme
12EPR1 Basic Electronics Practicum 1	KZ	3
The aim of the practicum is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formu	1	-
consists of blocks lasting 4 hours.	alloff of the results. I	ne practicum
	V7	3
12EPR2 Basic Electronics Practicum 2 The aim of the practicum is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formu	KZ	-
consists of blocks lasting 4 hours.	alloff of the results. I	ne practicum
	KZ	6
12ZPLT Basic Laser Technique Laboratory Lasers, solid state Nd:YAG laser, laser crystal, laser discharge lamp, laser cavity, resonator, free-running, Q-switching, laser amplifier. second ha		-
diode, diode pumped Nd:YAG laser, CO2 laser marking, laser materials properties, non-linear transmission, laser beam transverse profile, acous		ischarges, laser
		6
12ZPOP Basic Optical Laboratory The practical laboratories give advanced practical skills by experimental work in optics and optoelectronics. Laboratory records must be elaborated	KZ	6
		4
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		-
16AMMB Fundamentals of Analytical Measurement Methods	ZK	2
Basic principles, technical performance and utilization of methods of chemical analysis. Basic methodology of analytical determination, gravimetr		-
polarography, refractometry, polarimetry, UV-VIS spectroscopy, atomic emission and absorption spectroscopy, infrared and Raman spectroscopy,	X-ray structural analy	ysis, nuclear
magnetic and electron spin resonance, mass spectrometry, thermometric methods, gas and liquid chromatography.		
16ZBAF1 Fundamentals of Human Biology, Anatomy and Physiology 1	Z,ZK	4
Organization of living systems, non-cellular and cellular organisms, prokaryotic and eukaryotic cell. Molecular and cell biology. Biopolymers. Mole	•	
their regulation. General human anatomy. Basics of medical terminology. Overview of tissues. Skeleton. Muscle anatomy in general. Digestive sys	item and its physiolog	gy. Respiratory
system and physiology of respiration. Excretory and genital tract.		
16ZBAF2 Fundamentals of Human Biology, Anatomy and Physiology 2	Z,ZK	4
Heart and physiology of cardiac activity. General anatomy of blood vessels, main arteries of the body, overview of veins and physiology of blood,	-	ew of nerves.
CNS. Visual system and physiology of the visual system. Auditory and vestibular system and physiology of hearing and balance. Skin, endocrine	-	
16ZDOZ2 Fundamentals of Radiation Dosimetry 2	ZK	2
Fundamentals of biological effects of ionizing radiation. Quantities and units used in radiation protection. Recommendations of ICRP and ICRU. Prin	cipies and methods of	r measurements
in dosimetry. Determination of activity and neutron source emission. Measurements of absorbed dose and exposure.		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, ic	nizations, energy trar	nster and
absorption. Fundamentals of the effects of ionizing radiation.		
17ZEH Basics of Economic Assessment	ZK	2
The course focuses on the economic evaluation of Nuclear power plants. Introductory lectures are concerned with an introduction to economy an	-	
microeconomics. Lectures continued with insight into the business and managerial economics, explanation of the concepts of incomes, expenses,	etc. and their applicat	ions in electrical
energy resources evaluation. Second part of lectures is focused on evaluation of nuclear power plants - the fuel cycle and operations of NPP.		

	of Electronics	KZ	3
	of electronics. In the beginning, lectures are devoted to passive components - resistors, capacitors, inductors and		
	conductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor compo		
	general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analog/d	igital converters.	_ectures are
completed with electronic laborator			
	ectronics 1	Z,ZK	3
	ledge of circuit theory concerning principles of electronic circuits in both stationary and harmonic stable state. Circ	-	
	lex method are explained. Proper circuit analysis is also lectured. The subject's final part deals with transient effect		
	ectronics 2	Z,ZK	3
	ic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic t		
	tions of Physical Measurements 1	Z	2
-	s of physical specializations (Experimental particle physics, Physical engineering,Nuclear engineering), however, i		-
basic habits of work in a physics la	ture is to introducethe basics of physical measurements, the methods of processing and evaluation of acquired da	ata on a PC. Stude	entslearn the
		7	2
	tions of Physical Measurements 2	Z	2
-	to the essentials of measurements of the most important physical quantities. It is especially recommended to thos sical engineering and Nuclear engineering. Also the methods of evaluation of statistical data using PC and practical		
	es connected with experimental work in physical laboratory.	a work with meas	diement devices
	Solid State Physics	KZ	2
	jes of solids following the regular long distance ordering of atoms in a crystal lattice. Based on the introduced bond	1	
	their properties are defined. The model of crystalline lattice dynamics in harmonic approximation is described and b	-	
	of the crystal lattice is introduced and its relation to the following model describing the energetic state of electrons		
	al consequences of band approach to the physical properties of solids are elucidated. The aim of the course is to		
	I basis of physical properties of crystalline solids		
02ZJF Nuclear	Physics	Z,ZK	6
	able challenges both experimentally and theoretically, simply because we are dealing with the submicroscopic dor	,	of our classical
-	objects fails us. The lecture is a basic introduction to very interesting regions of subatomic physics.	,	
15ZKJE Nuclear	Power Plants Design and Operation	ZK	3
I I	nowledge of physics of nuclear reactors utilizing fission. Further explains arrangement of nuclear fuel, purpose, techr	nological and mate	rial construction
-	of all components are defined wit regard to nuclear physics, physics of shielding, theory of regulation, material scie	-	
dosimetry. Creates knowledge for e	valuation of nuclear safety and radiation protection in nuclear energy, reliability and economy for comparison with	other sources of	energy, to
environment and to strategic import	ancy of nuclear sources of energy. Gives basic knowledge of construction, operation and decommissioning of nucl	lear power station	s. Informs about
high level nuclear waste and spent	fuel and their management.		
16MEZB Fundam	entals of Ionizing-Radiation Metrology	Z,ZK	4
The course summarizes the basic of	bjectives and content of ionizing radiation metrology. It deals with the interpretation of radiation quantities and uni	its in metrology. It	summarizes the
theoretical and experimental found	ations of metrology, the determination of basic parameters of radiation. Lectures are supplemented with basic sun	nmary of relevant	legislation and
regulations.			
	tion to Operating Systems	Z	2
Introduction to structure of operatin	g systems. Processes, thread, memory management. Synchronization of multi=threaded applications. Memory m	apped files.	
12ZAOP Fundam	ientals of Optics	Z,ZK	2
	of optics - electromagnetic theory, linear optical physics and material effects, basics of nonlinear effects, and geor		0
	elor level, broad and general information on optics, giving an essential orientation in the field, especially with resp		
	aborated during departmental masters program. The lecture stems from the electrodynamic notion of plane waves		
	nedium. It explains basics of linear and nonlinear response in material medium and dispersion properties. It next i		
	isses induced by boundary conditions at interfaces. It also discusses the consequences of statistics on interference pplications in interferometers. Based on the Fresnel diffraction integral, diffraction processes are presented in a grap		
	diffraction principle, basic functioning of holography is clarified. Finally, the lecture unravels the geometrical optics li		•
	ema of a paraxial imaging system, and optical aberrations. It shows fundamentals of imaging in optical instrument		ongeometrical
	tion to Computer Security 1	Z	2
		Z	2
1	ork with PC t students with the basic skills related to working on a personal computer. The introductory part of the course is de	- 1	_
	rague and the FNSPE. Emphasis is placed on effective handling of work with office productivity software (text edit		-
	ce. The practical content focuses mainly on further use during studies (laboratory reports, research work, bachelo	-	
,			,
			of independent
home exercises and participation in	Iministration, companies). Other sections summarize basic information about computer hardware, software, and se		of independent
	Iministration, companies). Other sections summarize basic information about computer hardware, software, and se exercises above 60% is a necessary condition for passing the course.	ecurity. Completion	
16ZRAO Basics of	Iministration, companies). Other sections summarize basic information about computer hardware, software, and se exercises above 60% is a necessary condition for passing the course. of Radiation Protection	ecurity. Completion	2
16ZRAO Basics of The aim of the course is to familiaria	Iministration, companies). Other sections summarize basic information about computer hardware, software, and se exercises above 60% is a necessary condition for passing the course.	Completion Z concepts, in orde	2 r to allow critical
16ZRAO Basics of The aim of the course is to familiaria orientation in this field. The course	Iministration, companies). Other sections summarize basic information about computer hardware, software, and se a exercises above 60% is a necessary condition for passing the course. of Radiation Protection ze students with the general principles of radiation protection. The main emphasis is put on basic mechanisms and	Concepts, in orde	2 r to allow critical or people, what
16ZRAO Basics of The aim of the course is to familiarit orientation in this field. The course is the meaning of protective units (f	Iministration, companies). Other sections summarize basic information about computer hardware, software, and se a exercises above 60% is a necessary condition for passing the course. of Radiation Protection ze students with the general principles of radiation protection. The main emphasis is put on basic mechanisms and provides answers to the cardinal questions: What is ionizing radiation (IR), where it comes from, whether and how Gray, Sievert), how to prevent malicious effect of IR and many others. The content of the lectures does not require	Z concepts, in orde v it is dangerous fo any prior knowle	2 r to allow critical or people, what dge.
16ZRAOBasics ofThe aim of the course is to familiaritorientation in this field. The courseis the meaning of protective units (figure 02ZSMIntroduct	Iministration, companies). Other sections summarize basic information about computer hardware, software, and se a exercises above 60% is a necessary condition for passing the course. of Radiation Protection ze students with the general principles of radiation protection. The main emphasis is put on basic mechanisms and provides answers to the cardinal questions: What is ionizing radiation (IR), where it comes from, whether and how	Z concepts, in orde v it is dangerous fo any prior knowle ZK	2 r to allow critical or people, what dge. 2
16ZRAOBasics ofThe aim of the course is to familiaritorientation in this field. The courseis the meaning of protective units (figure 02ZSMIntroduct	Iministration, companies). Other sections summarize basic information about computer hardware, software, and se a exercises above 60% is a necessary condition for passing the course. of Radiation Protection ze students with the general principles of radiation protection. The main emphasis is put on basic mechanisms and provides answers to the cardinal questions: What is ionizing radiation (IR), where it comes from, whether and how Gray, Sievert), how to prevent malicious effect of IR and many others. The content of the lectures does not require tion to the Standard Model s, mesons, symmetry, symmetry group, quarks, gluons, partons, standard model of electroweak and strong interaction the standard model of electroweak and strong interaction.	Z concepts, in orde v it is dangerous fo any prior knowle ZK	2 r to allow critical or people, what dge. 2
16ZRAO Basics of The aim of the course is to familiarity orientation in this field. The course is the meaning of protective units (field 02ZSM Introduce 02ZSM Introduce Particles, leptons, hadrons, baryon (QCD), cross section, scattering cross	Iministration, companies). Other sections summarize basic information about computer hardware, software, and se a exercises above 60% is a necessary condition for passing the course. of Radiation Protection ze students with the general principles of radiation protection. The main emphasis is put on basic mechanisms and provides answers to the cardinal questions: What is ionizing radiation (IR), where it comes from, whether and how Gray, Sievert), how to prevent malicious effect of IR and many others. The content of the lectures does not require tion to the Standard Model s, mesons, symmetry, symmetry group, quarks, gluons, partons, standard model of electroweak and strong interac- poss section.	Z concepts, in orde v it is dangerous fo any prior knowled ZK ctions, quantum c	2 r to allow critical or people, what dge. 2 hromodynamics
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12ZMD	Measurement and Data Processing	KZ	2
Basic knowledge for the	e measurements and data processing and result interpretation: errors, precision, accuracy, normal distribution and its propeti	es, data fitting, se	paration of the
signal from the noise.			

List of courses of this pass:

	Name of the course	Completion	Credits
00EKOT	Economy in Technology	Z	1
	The course introduces the basics of micro- and macroeconomics.		
00ETV	Ethics of Science and Technology	Z	1
00MAM1	Essentials of High School Course 1	Z	1
00MAM2	Essentials of High School Math Course 2 Review of basics of high school mathematics.	Z	1
00PT	Preparatory Week	Z	2
00RET	Rhetoric	Z	1
The course is focu	sed on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the d	composition of put	blic speech
as well as to its r	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
01ALG	Algebra	ZK	4
After an introduction	into the set theory standard algebraic structures are dealt with: groups, rings, fields, modules, linear algebras, lattices, Boolean algebras, commutative fields.	oras, rings of polyr	omials ove
01ALGE	Algebra	Z,ZK	6
statements, definiti	tioms are treated in detail. Elements of the set theory cover only: equivalence and subvalence, the Cantorov-Bernstein theorem, the a on of ordinals and cardinals. Further standard algebraic structures are addressed: semigroups, monoids, groups, rings, integral doma fields, lattices. Independent chapters are devoted to divisibility in integral domains and to finite fields.	ains, principal idea	al domains,
01DEM	History of Mathematics	Z	1
The subject has the	form of regular seminars where the members of the department of mathematics, but also invited speakers - specialists in the field - gi	ve their talks on va	aroius topics
	from the history of mathematics.	7 71/	4
01DIFR	Differential Equations s introduction in the solution of ordinary differential equations. It contains a survey of equation types solvable analytically, basics of th	Z,ZK	4
	linear types of equations and introduction in the theory of boundary-value problems.	e existence theory	, 501011011 0
01DIM1	Discrete Mathematics 1	Z	2
	The seminar is devoted to elementary number theory and applications. It includes individual problem solving.	2	-
01DIM2	Discrete Mathematics 2	Z	2
	The seminar is devoted to recurrence relations. It includes individual problem solving.	_	-
01DIM3	Discrete Mathematics 3	Z	2
01DIM3 The subject is devo	Discrete Mathematics 3 ted to elementary proofs of non-trivial combinatoriwal identities and to generating functions and their applications. In the seminar stu	—	-
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	Geometric Theory of Ordinary Differential Equations	Z	2
01GTDR The seminar cons	ists of the qualitative theory of ODEs dealing with the geometric and topological properties of the solution. In this context, we mention su		1
	of the existence and uniqueness, continuous dependence on parameters and initial conditions. Main part is devoted to the autonomou	is systems.	
01JEPR	Simple Compilers Lexical and syntax analysis, code generation, simple optimizations, development environments, reflection.	Z	2
01LA1	Linear Algebra 1 The subject summarizes the most important notions and theorems related to the study of vector spaces.	Z	1
01LAA2	Linear Algebra A2	Z,ZK	6
-	devoted to the theory of linear operators on vector spaces (mainly equipped with scalar product). In the same time we introduce the co		-
01LAB2	Linear Algebra B2	Z,ZK	4
-	ummarizes the most important notions and theorems related to the matrix theory, to the study of vector spaces with a scalar product a		
01LAL	Linear Algebra 1	Z	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 theorem.	near mappings. 7	. Frobenius
01LALA	Linear Algebra A 1, Examination	ZK	5
01LALB	Linear Algebra B 1, Examination	ZK	3
01LAP	Linear Algebra Plus	Z,ZK	5
	The subject summarizes the most important notions and theorems related to the study of vector spaces.	,	1
01LAZ	Linear Algebra 1, Examination	ZK	2
	The content of this subject is the exam in Linear Algebra 1.		
01LIP We study special	Linear Programming problems about constrained extremum problems for multivariable functions (the function is linear and the constraint equations are given inequalities).	Z,ZK by linear equation	3 ns and linea
01LNA1	Linear Algebra 1 The subject summarizes the most important notions and theorems related to the study of vector spaces.	Z	2
01MA1	Calculus 1 Basic course of real analysis (functions of one real variable, differential calculus).	Z	4
01MAA2	Calculus A2	Z,ZK	10
	ubject is devoted mainly to the integral calculus of the real functions with one real variable and to the theory of the number series and		1
01MAA3	Calculus A3 Function sequences and series, foundation of topology, and differential calculus of several variables.	Z,ZK	10
01MAA4	Calculus A4 Integration of functions of several variables, measure theory, foundation of differential and integral calculus on manifolds and complex	Z,ZK k analysis.	10
01MAB2	Calculus B2 Basic calculus (real analysis, indefinite and definite integrals and series).	Z,ZK	7
01MAB3	Calculus B3	Z,ZK	7
	vited to functional sequences and series, theory of ordinary differential equations, theory of quadratic forms and surfaces, and general the and prehilbert?s spaces.		ices, normed
01MAB4	Calculus B4	Z,ZK	7
		Z,ZN	is studied.
The course is c	levoted properties of functions of several variables, differential and integral calculus. Furthermore, the measure theory and theory of Levoted properties of functions of several variables, differential and integral calculus.	,	
01MAN	evoted properties of functions of several variables, differential and integral calculus. Furthermore, the measure theory and theory of Le Calculus 1 Basic calculus (real analysis, functions of one real variable, differential calculus).	,	4
	Calculus 1 Basic calculus (real analysis, functions of one real variable, differential calculus). Calculus A 1, Examination	,	4
01MAN	Calculus 1 Basic calculus (real analysis, functions of one real variable, differential calculus). Calculus A 1, Examination Examination of knowledge about stuff lectured in the 01MAN course. Calculus B 1, Examination	ebesgue integral i Z	4
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01MAN 01MANA 01MANB 01MAP 01MAPR	Calculus 1 Basic calculus (real analysis, functions of one real variable, differential calculus). Calculus A 1, Examination Examination of knowledge about stuff lectured in the 01MAN course. Calculus B 1, Examination Examination of knowledge about stuff lectured in the 01MAN course. Calculus B 1, Examination Examination of knowledge about stuff lectured in the 01MAN course. Calculus Plus Markov processes	Z ZK ZK ZK ZK ZK Z,ZK	4 6 4 6 4
01MAN 01MANA 01MANB 01MAP 01MAPR 01MASC	Calculus 1 Basic calculus (real analysis, functions of one real variable, differential calculus). Calculus A 1, Examination Examination of knowledge about stuff lectured in the 01MAN course. Calculus B 1, Examination Examination of knowledge about stuff lectured in the 01MAN course. Calculus B 1, Examination Examination of knowledge about stuff lectured in the 01MAN course. Calculus Plus Markov processes Mathematical Statistics - Seminar	Z ZK ZK ZK ZK ZK Z,ZK Z	4 6 4 6 4 2
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01POGR1	Computer Graphics 1	Z	2
The first part of the	two-semester "Computer Graphics" course is devoted to the specifics of digital display devices spanning from history up to the state of	f the art technolog	es. Further,
a survey of fundame	ental problems in 2D computer graphics is given together with their solutions. Focus is put on mathematical description of problems and ex	planation of the co	rresponding
algorithms using k	nowledge previously obtained in a variety of subjects available at FNSPE. The final part of the course covers the applications of com	puter graphics app	roaches in
	the process of authoring scientific documents and presentations.		
01POGR2	Computer Graphics 2	Z	2
•	f the two-semester "Computer Graphics" course begins with a brief introduction to signal theory in the context of aliasing - a phenom	•	· ·
	a well structured survey of fundamental problems in 3D computer graphics is given together with their solutions, from the description		
-	put on mathematical description of problems and explanation of the corresponding algorithms using knowledge previously obtained in		
at FNSPE. The algo	prithm implementation aspect such as data structures design etc. is also a matter of concern. In the last lecture, a number of theoretic	al concepts are de	monstrated
	using Blender, an open-source 3D modeling and rendering software instrument.	7	0
01POPJ1	Computers and Natural Language 1 mputational processing and understanding of natural languages. Automatic methods of morphological and syntactic analysis includir	Z a modern statistic	2
	isambiguation will be discussed. Two-level morphology, tagging and language models, Viterbi algorithm, grammars, chart parsing, pro	-	
01POPJ2			2
	Computers and Natural Language 2 urse is to get acquainted with the broad topic of machine translation (MT). Machine translation is a challenging task that can serve as		
-	mplex as natural languages. We cover several rather different approaches to the task as well as issues related to automatic and man		- 1
or systems as co	quality.		ansiation
01POPR	Advanced Probability	Z	2
	evoted to advanced Theory of probability and statistics on measure-theoretic level for general distributions of random variables. We de	-	
	f random variables and convergence criteria. Further, the theory of statistical model estimation and testing is extended for parametric		e e
01PRA1	Probability and Mathematical Statistics 1	Z,ZK	6
-	voted to the introduction to Theory of probability and statistics on measure-theoretic level for discrete models, continuous distributions	· · · ·	
-	We deal with sample an integral characteristics of random variables and variants of limit theorems are derived (LLN, CLT). This know	-	
	statistical processing of observations and statistical parametric model estimation.		
01PRA2	Probability and Mathematical Statistics 2	ZK	2
The subject is devol	ted to the statistical techniques for estimation and testing within parametric and nonparametric models such as Maximum likelihood prin	I I	
tests, Goodne	ess of fitness tests of models, confidence regions, etc. We focus on real practical applications of these statistical techniques in frame	of the specific exar	nples.
01PROP	Programmer's Practicum	Z	2
The purpose of this	s course is to acquire good programming habits which will help in writing of clean code, i.e. such that is easy to comprehend by other	s and suitable for a	adding new
functionality. Using	g specific examples, the students get familiar with naming conventions, and continue through writing project documentation, principle	s of defensive prog	gramming,
	debugging, up to creating object-oriented design, design patterns and refactoring.		
01PRST	Probability and Statistics	Z,ZK	4
It is a basic course	of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition and	continuing till the K	olmogorov
definition. The notion	ons as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit the	orems are stated a	ind 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.	
01PRSTB	Probability and Statistics B	KZ	4
	of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition and	-	-
	ons as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit the		ind proved.
	e basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testir	ng are explained.	
01PSL	LaTeX - Publication Instrument	Z	2
	The course is devoted to the basics and facilities of computer typography, particularly to the system LaTeX		
01PW	Windows Programming	Z	2
	graphical programs for MS Windows. Basic editing controls. File input and output. User defined components, dynamic type identificat		
01RMF	The Equations of Mathematical Physics	Z,ZK	6
The subject of this	course is solving integral equations, theory of generalized functions, classification of partial differential equations, theory of integral trip partial differential equations (boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).	ansformations, and	solution of
		KZ	
01RSWP	Project Management of Software Projects management of software projects is dedicated to an explanation of general ideas, rules and procedures which are common to many pro	I I	2 e character
	e corresponds to a lifecycle of typical projects including many other aspects which have to be taken into account in the course of their m		
	is paid to software project management and to IT projects in general. Interdisciplinary view of project management is emphasi		
01SITE1	Computer Networks 1	Z	2
	history and present network (LAN, WAN, use the principles and technologies). Architecture of reference model ISO/OSI. Network pro	I I	
-	tions. Internet services - mail, remote access, www. Secure communication, tunneling. Directory services, certificates, certification author	-	
	actice. Network security - firewalls (packet filters, proxies, gateways, NAT, DMZ), practical exercises. (According to the interest - the se		
01SITE2	Computer Networks 2	Z	2
	history and present network (LAN, WAN, use the principles and technologies). Architecture of reference model ISO/OSI. Network pro		
-	tions. Internet services - mail, remote access, www. Secure communication, tunneling. Directory services, certificates, certification author	-	
(PKI). Use in pra	actice. Network security - firewalls (packet filters, proxies, gateways, NAT, DMZ), practical exercises. (According to the interest - the security - firewalls (packet filters, proxies, gateways, NAT, DMZ), practical exercises.	erial control lines, n	nodems)
01SMB1	Seminar on Calculus B1	Z	2
·	The course is devoted to support the lectures of Calculus B3.		
01SMB2	Seminar on Calculus B2	Z	2
	The course is devoted to support the lectures of Calculus B4.		
01SOS1	Software Seminar 1	Z	2
	Java, Java Beans, Assembly language programming for microprocessors Intel 80x86		
01SOS2	Software Seminar 2	Z	2
Graphical libraries	GTK+ and Qt. Development of graphical user interface using C and C++ programming languages. Portable applications for Unix like	operating systems	, especially
	for Linux systems. Portability to Microsoft Windows.	· · · · ·	
01SSM1	Seminar of Contemporary Mathematics 1	Z	2
This seminar p	rovides a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of basic	courses of mather	matics.

			· · · · · ·
01SSM2	Seminar of Contemporary Mathematics 2	Z	2
01STR	rovides a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of basic Statistical Decision Theory	ZK	2
1	ted to the statistical techniques for general decision procedures based on optimization of suitable stochastic criterion, their mutual cor properties and applicability.		1
01TKO	Theory of Codes Algebraic methods used in error detecting and error correcting codes.	ZK	2
01TOP	Topology The aim of lecture is the systematization and deepening the knowledge of general topology.	ZK	2
01UTIZ	Introduction to Theoretical Informatics	ZK	2
01VYMA	Selected Topics in Mathematics	Z,ZK	4
1	blete orthogonal systems, expansion of functions into Fourier series, trigonometric Fourier series and their convergence. Complex anal functions, integral, Cauchy's theorem, Cauchy's integral formula, singularities, Laurent series, residue theorem.		
01ZOS Introduct	Introduction to Operating Systems ion to structure of operating systems. Processes, thread, memory management. Synchronization of multi=threaded applications. Me	Z mory mapped file	2 s.
01ZPB1	Introduction to Computer Security 1	Z	2
02AMS	Atomic and Molecular Spectroscopy The lecture is devoted to atomic and molecular spectroscopy.	Z,ZK	4
02BPTF1	Bachelor Thesis 1	Z	5
	t is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the proj regular meetings and discussions.	_	-
02BPTF2	Bachelor Thesis 2	Z	10
1	t is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the proj		-
02DEF1	regular meetings and discussions.	Z	2
Physics and its pla	History of Physics 1 ice in the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural philo	sophers, Aristotle	. Physics in
Helenistic period,	Archimed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galileo, H as experimental science. Newton and his work.	Huygens. The birth	n of physics
02DEF2	History of Physics 2	Z	2
•	classical mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. E		
-	anism, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzmann.		-
and relativistic pl	hysics, Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclear er	ergy, Elementary	particles,
00000	standard model. The concept of Nature and Universe of today.	7	4
02DRG	Differential Equations, Symmetries and Groups The purpose of the lecture is to teach students computation of symmetries of the differential equations.	Z	4
02ELMA	Electricity and Magnetism	Z,ZK	6
-	ulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors anddielectrics. Electric current and circuits, cond Electrodynamic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, ac currents. Electromagnetic waves, N	-	the relativity
02EXF1	Experimental Physics 1	Z	2
	an introductory course in experimental physics. Students will learn methods of measurement of basic physical quantities and method		-
02EXF2	Experimental Physics 2	ZK	2
	an introductory course in experimental physics. Students will learn methods of measurement of basic physical quantities and method		1
	Physical Seminar 1 evoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of physical The students to deeper understanding of fundamentals of physical students to deeper understanding of students to deeper understanding of students to deeper understanding of students to		2 course of
	nics. The problems are chosen, studied and presented by the students themselves, with the possibility to use PC and physical labora	atory equipments.	0
	Physical Seminar 2 evoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of physics Magnetism. The problems are chosen studied and presented by the students themselves, with the possibility to use PC and physica	-	
02KF	Quantum Physics		1
-	, wave function, postulates of quantum mechanics, Born s statistical interpretation, expectation values, Schrödinger equation, Heise quantization of angular momentum, solution of simple systems, hydrogen atom.	Z,ZK nberg uncertainty	principle,
02KVAN	Quantization of angular momentum, solution of simple systems, hydrogen atom.	Z,ZK	6
	es the birth of quantum mechanics and description of one particle and more particles by elements of the Hilbert space as well as its includes description of observable quantities by operators in the Hilbert space and calculation of their spectra.		-
02LCF1	Experimental Laboratory 1	Z	2
02LCF2	Cavendish experiment. Elasticity.Thermal capacities. Electric measurements, Acoustic. Oscillations. Experimental Laboratory 2	Z	2
02MECH	Electric and magnetic field, microwaves, Xray and gamma rays, geometric optics Mechanics	Z	4
ntroduction to physi	cs, physical quantities and units. Particle kinematics, basic types of motion and theirsuperposition. Particle dynamics, one-dimension eld, forces innoninertial reference frames. Mechanics of system of free particles, two-body problem, collisions. Mechanics ofrigid bod		
02MECHZ	continuum mechanics, elasticity, hydrodynamics. Sound. Mechanics - Examination The content of the subject is the examination according to the plan of studies.	ZK	2
02NSAD	Simulations and Data Analysis Tools	Z	2
02OR	Data analysis and simulations of high energy elementary particle collisions. ROOT and Pythia programs. General Relativity	ZK	3
Introduction to gen	eral theory of relativity: principle of equivalence and principle of general covariance, parallel transport and geodesic equation, gravita Einstein's gravitational law. Schwarzschild solution of the Einstein equations, homogeneous and isotropic cosmological mode		irvature and

02PRA1	Experimental Laboratory 1	KZ	6
Lecture is intended	d especially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear Engineering)	ngineering). But it o	can be also
attended by students interested in the otherspecializations. In Experimental laboratory students learn how to prepare for experiments (including work with theliterature), the implementation			
of the measuremer	It (acquire of different experimental procedures and routines), willteach writing the records of measurement, processing and evaluation	on of results. At the	e same time
000040	practically extend the knowledge gained in lectures on physics.	1/7	<u> </u>
02PRA2	Experimental Laboratory 2 d especially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear Er	KZ	6 can be also
	ts interested in the otherspecializations. In Experimental laboratory students learn how to prepare for experiments (including work with the		
	t (acquire of different experimental procedures and routines), willteach writing the records of measurement, processing and evaluation		
	practically extend the knowledge gained in lectures on physics.		
02RQGP1	Seminar on Quark-Gluon Plasma 1	Z	1
	The aim of the seminar is discuss the selection of the most fundamental articles in heavy ion physics.	-	
02RQGP2	Seminar on Quark-Gluon Plasma 2	Z	1
	The aim of the seminar is discuss the selection of the most fundamental articles in heavy ion physics.		
02SMF	Seminar of Mathematical Physics	Z	2
The purpose of the	ne seminar is to iluminate mathematical physics by virtue of solved examples. It is supposed that the teachers of the physics departm concerning their scientific activities that could become the topics of the student?s bachelor theses in the next year	ient will present sir	nple tasks
02SPRA1	Special Practicum 1	KZ	6
	ent focused on instrumental techniques that are mainly used in physics and technical professions. Topics of each parts are chosen s	1	-
i nyoloo meacaren	with advanced pats of experimental physics and metrology.		
02SPRA2	Special Practicum 2	KZ	6
Physics measurem	ent focused on instrumental techniques that are mainly used in physics and technical professions. Topics of each parts are chosen s	o that students car	n familiarize
	with advanced pats of experimental physics and metrology.		
02TEF1	Theoretical Physics 1	Z,ZK	4
	troduction to analytical mechanics. The students acquire knowledge of the basic concepts of the Lagrange and Hamiltonian formalism		
-	lynamics (Newton's, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these methods is illustrated on elementary		
problem, the moti-	on of a system of constrained mass points, and of a rigid body. Advanced parts of the course cover differential and integral principles the first part of the course of classical theoretical physics (02TEF1, 02TEF2).	of mechanics. The	e subject is
02TEF2	Theoretical Physics 2	Z,ZK	4
	sformations in physics. Mechanics of point mass, rigid body and continuum. The special theory of relativity: relativistic mechanics and		
	me. Classical electrodynamics: Maxwell's equations in the Minkowski space-time, electromagnetic waves in dielectric media, electron		-
	approximation.		
02TER	Heat and Molecular Physics	Z,ZK	4
-	of materials, heat transfer; stationary and non-stationary heat conduction, heat transfer and penetration; 1st and 2nd thermodynami		-
entropy: non-chemi	cal systems: dialactric and magnetic materials: Maxwell relations and thermodynamic potentials: kinetic theory: Maxwell's velocity dist		
	cal systems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials; kinetic theory: Maxwell's velocity dist		
02TJNS	Transport Phenomena / Nonequilibrium Systems	KZ	2
02TJNS	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis	KZ	2
02TJNS The course introduc	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis and approaches are applied specifically to problems of plasma physics.	KZ scussed. The gene	2 ral concepts
02TJNS The course introduc 02TSFA	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis and approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics	KZ scussed. The gene Z,ZK	2 ral concepts 4
02TJNS The course introduce 02TSFA Foundation of therm	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis and approaches are applied specifically to problems of plasma physics.	KZ scussed. The gene Z,ZK er principle. Statist	2 ral concepts 4 tical entropy.
02TJNS The course introduce 02TSFA Foundation of therm	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis and approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chateli	KZ scussed. The gene Z,ZK er principle. Statist	2 ral concepts 4 tical entropy.
02TJNS The course introduce 02TSFA Foundation of therm	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis and approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelia dy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical	KZ scussed. The gene Z,ZK er principle. Statist	2 ral concepts 4 tical entropy.
02TJNS The course introduc 02TSFA Foundation of therm Basics of many boo 02UFEC	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis and approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelia dy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena.	KZ scussed. The gene Z,ZK er principle. Statist ensemble, Fermi g Z	2 ral concepts 4 tical entropy. gas, models 2
02TJNS The course introduce 02TSFA Foundation of therm Basics of many boo 02UFEC The course 02UFU	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis and approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chateli dy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Introduction to Elementary Particle Physics se provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su Introduction to Nuclear Fusion	KZ scussed. The gene Z,ZK er principle. Statist ensemble, Fermi Z ubject are presente Z,ZK	2 ral concepts 4 iical entropy. gas, models 2 ed. 4
02TJNS The course introduce 02TSFA Foundation of therm Basics of many boo 02UFEC The course 02UFU Criteria for fusion	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are disting and approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelid dy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Introduction to Elementary Particle Physics se provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su Introduction to Nuclear Fusion n ignition, fusion in stars, priniciples of plasma confinement in magnetic field (mirrors, pinches, stellarators, tokamaks), principles of ir	KZ scussed. The gene Z,ZK er principle. Statist ensemble, Fermi Z ubject are presente Z,ZK nertial plasma con	2 ral concepts 4 iical entropy. gas, models 2 ed. 4
02TJNS The course introduce 02TSFA Foundation of therm Basics of many boo 02UFEC The course 02UFU Criteria for fusion alterna	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are disting and approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chateling dy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Introduction to Elementary Particle Physics se provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the sum of the second statist, priniciples of plasma confinement in magnetic field (mirrors, pinches, stellarators, tokamaks), principles of in titve concepts, present fusion research facilities and project (including ITER), plasma heating and control, fusion technology, future futor	KZ scussed. The gene Z,ZK er principle. Statist ensemble, Fermi Z ubject are presente Z,ZK nertial plasma con ision power plants	2 ral concepts 4 iical entropy. gas, models 2 ed. 4 finement,
02TJNS The course introduce 02TSFA Foundation of therm Basics of many boo 02UFEC The cours 02UFU Criteria for fusio alterna 02UKP	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are distand approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelidy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Introduction to Elementary Particle Physics see provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su Introduction to Nuclear Fusion n ignition, fusion in stars, priniciples of plasma confinement in magnetic field (mirrors, pinches, stellarators, tokamaks), principles of in titve concepts, present fusion research facilities and project (including ITER), plasma heating and control, fusion technology, future fur Introduction to Curves and Surfaces	KZ scussed. The gene Z,ZK er principle. Statist ensemble, Fermi bject are presente Z,ZK nertial plasma con ision power plants Z	2 ral concepts 4 lical entropy. gas, models 2 ed. 4 finement, 2
02TJNS The course introduce 02TSFA Foundation of therm Basics of many boo 02UFEC The cours 02UFU Criteria for fusion alterna 02UKP The goal of the let	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis and approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chateli dy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Introduction to Elementary Particle Physics se provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su Introduction to Nuclear Fusion n ignition, fusion in stars, priniciples of plasma confinement in magnetic field (mirrors, pinches, stellarators, tokamaks), principles of i tive concepts, present fusion research facilities and project (including ITER), plasma heating and control, fusion technology, future fu Introduction to Curves and Surfaces acture is an introduction to the differential geometry of simple manifolds - curves and two-dimensional surfaces. The basic concepts for	KZ scussed. The gene Z,ZK er principle. Statist ensemble, Fermi z ubject are presente Z,ZK nertial plasma con ision power plants Z or the curves are in	2 ral concepts 4 iical entropy. gas, models 2 ed. 4 finement, 2 ntroduced
02TJNS The course introduce 02TSFA Foundation of therm Basics of many boo 02UFEC The cours 02UFU Criteria for fusion alterna 02UKP The goal of the let	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are distand approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelidy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Introduction to Elementary Particle Physics see provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su Introduction to Nuclear Fusion n ignition, fusion in stars, priniciples of plasma confinement in magnetic field (mirrors, pinches, stellarators, tokamaks), principles of in titve concepts, present fusion research facilities and project (including ITER), plasma heating and control, fusion technology, future fur Introduction to Curves and Surfaces	KZ scussed. The gene Z,ZK er principle. Statist ensemble, Fermi z ubject are presente Z,ZK nertial plasma con ision power plants Z or the curves are in	2 ral concepts 4 iical entropy. gas, models 2 ed. 4 finement, 2 ntroduced
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02TJNS The course introduce 02TSFA Foundation of therm Basics of many boo 02UFEC The cours 02UFU Criteria for fusion alterna 02UKP The goal of the le Frenets formulae and 02VOAF	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are distand approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical Physics Intermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelidy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Introduction to Elementary Particle Physics see provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su Introduction to Nuclear Fusion n ignition, fusion in stars, priniciples of plasma confinement in magnetic field (mirrors, pinches, stellarators, tokamaks), principles of in titve concepts, present fusion research facilities and project (including ITER), plasma heating and control, fusion technology, future fur Introduction to the differential geometry of simple manifolds - curves and Surfaces acture is an introduction to the differential geometry of simple manifolds - curves and two-dimensional surfaces. The basic concepts for the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essential part of the surface theory we introduce first and second fundamental forms and mean and Gaus	KZ scussed. The gene Z,ZK ier principle. Statist ensemble, Fermi bject are presente Z,ZK nertial plasma com sion power plants Z or the curves are in of the lecture are th Z,ZK	2 ral concepts 4 lical entropy. gas, models 2 ed. 4 finement, 2 ntroduced ne examples 6
02TJNS The course introduce 02TSFA Foundation of therm Basics of many boo 02UFEC The cours 02UFU Criteria for fusion alterna 02UKP The goal of the le Frenets formulae and 02VOAF Wave phenomena	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis and approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelidy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Introduction to Elementary Particle Physics see provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su Introduction to Nuclear Fusion n ignition, fusion in stars, priniciples of plasma confinement in magnetic field (mirrors, pinches, stellarators, tokamaks), principles of in titive concepts, present fusion research facilities and project (including ITER), plasma heating and control, fusion technology, future fu Introduction to Curves and Surfaces acture is an introduction to the differential geometry of simple manifolds - curves and two-dimensional surfaces. The basic concepts for explained. In the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essential part calculated by students Waves, Optics and Atomic Physics	KZ scussed. The gene Z,ZK ier principle. Statist ensemble, Fermi ubject are presente Z,ZK nertial plasma com sion power plants Z or the curves are in of the lecture are th Z,ZK tion, interference,	2 ral concepts 4 iical entropy. gas, models 2 ed. 4 finement, 2 ntroduced ne examples 6 diffraction,
02TJNS The course introduce 02TSFA Foundation of therm Basics of many boo 02UFEC The cours 02UFU Criteria for fusion alterna 02UKP The goal of the le Frenets formulae an 02VOAF Wave phenomena coherence. Geo	Transport Phenomena / Nonequilibrium Systems ces the students to the field of transport phenomena. The concept of a distribution function, Boltzmann equation, and H theorem are dis and approaches are applied specifically to problems of plasma physics. Thermodynamics and Statistical Physics nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelidy descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Introduction to Elementary Particle Physics se provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su Introduction to Nuclear Fusion n in ginition, fusion in stars, priniciples of plasma confinement in magnetic field (mirrors, pinches, stellarators, tokamaks), principles of in titive concepts, present fusion research facilities and project (including ITER), plasma heating and control, fusion technology, future fur Introduction to Curves and Surfaces waves, Optics and Atomic Physics Waves, Optics and Atomic Physics a in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polariza metrical optics. Introduction toquantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Bro equation, stationary states and spectra of finite systems.	KZ scussed. The gene Z,ZK ier principle. Statist ensemble, Fermi g ubject are presente Z,ZK nertial plasma com sion power plants Z or the curves are in of the lecture are th Z,ZK tion, interference, iglie waves, the Sch	2 ral concepts 4 iical entropy. gas, models 2 ed. 4 finement, 2 ntroduced ne examples 6 diffraction, nrodinger
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02ZSM	Introduction to the Standard Model	ZK	2
	hadrons, baryons, mesons, symmetry, symmetry group, quarks, gluons, partons, standard model of electroweak and strong interactio	I I	
	(QCD), cross section, scattering cross section.	ns, quantum chion	louynannics
		71/	-
04ABZK	English - State Examination	ZK	5
	ent is the examination as given by the study plan. Student is eligible for the State language examination (level C1 or B2 of CEFR) only		
respective courses	s and examinations (04AP3KK, 04APAK, 04API, and 04APRK). From its first semester, part of the APIN programme covers also examinations	nination subjects. A	s requirea,
0.4.1/(0	examination conditions comply with respective rules and regulations for state language examinations.		
04AKS	English Conversation	L Z	1
	evelop the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral communication		
-	or various communication situations and will master their communication strategy. They will also practise their listening skills in order t		participate
	liscussions. The student will be trained to express their ideas clearly and according to current English usage, and become a more cor	ifident speaker.	
04AM1	English for Intermediate Students M1	Z	1
	gned for students who have successfully completed the full secondary school English language course at least at the A2 level of the C	-	
of Reference for La	anguages (CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into fundamentals of	vocabulary and sty	le typical of
professional oral a	and written communication situations. Thus it covers topics related to the student's life and needs as well as topics of subtechnical int	erest. Attention is a	lso paid to
	extending the knowledge of grammar issues used in EAP.		
04AM2	English for Intermediate Students M2	Z	1
The 04AM2 course	e expects the student to have completed the 04AM1 course. It develops their skills for work with subtechnical texts, focusing also more of	on specific gramma	r, functions,
and lexical items ty	pical of ESP and EAP (e.g., definition, existence and classification of phenomena, object descriptions). Part of the course is also guided	writing. If necessar	y, grammar
	revision is included.		
04AM3	English for Intermediate Students M3	Z	1
The course develop	os the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtechnic	al vocabulary and ir	dependent
understanding of	f professional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communication	and their appropria	te Czech
equivalents. The co	purse also includes studying abstracts and rules for writing them as well as basic rules for preparing and giving a short presentation o	n a chosen topic re	lated to the
	student's field.		
04AMZK	English for Intermediate Students Examination	ZK	4
The course conter	t is the examination as given by the study plan. The examination covers the 04AM1, 04AM2, and 04AM3 courses and consists of two	parts - written (10	0 min) and
oral (2	0-30 min). The student is expected to master the AM syllabus and demonstrate the ability to apply their knowledge gained in the three	e English courses.	
04AP1	English for Advanced Students P1	Z	1
The course is desi	gned for students who have successfully completed the full secondary school English language course (at least the B1 level of the C	ommon European I	- ramework
of Reference for	Languages - CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into the fundamen	tals of vocabulary, f	unctions,
grammar, and sty	le typical of professional oral and written communication situations (fundamentals of terms in mathematics and physics, definitions, g	raph descriptions, e	etc). It also
covers professiona	I oral and written communication on topics related to the undergraduate's life and needs. It develops skills for free professional writing (w	riting a CV, letter of	application,
	polite request). If necessary, revision of selected grammar topics is included.		
04AP2	English for Advanced Students P2	Z	1
The 04AP2 course	is based on 04AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of chosen b	pranches of science	. According
	needs it concentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typical rhet		- 1
	tions, and, if possible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading of lin		
	urse extends the student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focused o	• •	
	sentence and paragraph structure, linking, cohesion and coherence in texts.	Ū	°,
04AP3	English for Advanced Students P3	7	1
	is based on 04AP2 and expects the student to work without any guidance with authentic professional materials and to interpret the te	ext. It includes traini	ng oral and
	cation skills and functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summarizin		•
	paring a project on a given or chosen topic and presenting it. The course places emphasis on distinguishing levels of formal and infor		, .
. ,	written communication.	0 0	
04APZK	English for Advanced Students Examination	ZK	5
	ent is the examination as given by the study plan. The student is supposed to demonstrate mastering the 04AP3 syllabus and the abi		
	ee 04AP courses. The examination consists of 2 parts - written (110 min) and oral (30 min) and includes also oral presentation of a to		-
	study.		
04CESM1	Czech for foreigners - Intermediate	Z	1
	sed on correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending the s		
	social situations.	iddeni 3 vocabulary	
04CESM2	Intermediate Czech 2	Z	1
	pps the topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and readir		
The course develo	in understanding common abbreviations, abbreviated words, and mathematical terms and formulas.	iy skills and trains t	ne sludeni
04050140		7	4
04CESM3	Intermediate Czech 3	Z	1
I ne last course l	revises morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is especial	ally focused on styli	stics and
	lexicology and on developing the student's writing skills.	— •••	
04CESMZK	Czech for Intermediate Students Examination	ZK	4
The course conten	t is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04CE	SM1,2,3 courses a	nd can only
	be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.		
04CESP1	Czech for Foreign Students - Advanced Examination	Z	1
	the course is very good knowledge of the Czech language, i.e., communicative competences at least at level B2 of the Common Europ		
	v on revision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of sci		-
basics of function	nal style of engineering and professional communication, both in spoken and written form. The topics include University Studies and S	Student Life. Writter	n practice
0.407677	includes communication with teachers and faculty administrators.	· · ·	
04CESP2	Czech for Foreigners - Advanced	Z	1
This course extend	Is the student's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with technical and	specialist texts plac	ing greater
	emphasis on individual work.		
04CESP3	Czech for Foreigners - Advanced	Z	1
The course develo	ps the student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation,	and, finally, present	ation of the
	student's project. Writing skills necessary for professional communication are trained.		

	Czech for Foreign Students - Advanced Examination	ZK	5
The course conten	is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04CE be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.	SP1,2,3 courses a	nd can only
04FM1	French for Intermediate Students M1	Z	1
French - intermedia	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		
	solve problems. 04FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises, syst	•	
skills gained in prev	vious study. The following topics are covered: University studies in our country and in France, writing of transactional letters, CV, persor	nal statement, requ	iest, answer
	French culture and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts, wo	ork based on these	texts.
04FM2	French for Intermediate Students M2	Z	1
	on FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science text		
and scientific lar	guage (passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French scie scientists, artists and architects. Description of an object, device, shapes, dimensions, material.	nce and technolog	y, French
04FM3	French for Intermediate Students M3	Z	1
	ed on improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures (sub		•
	es, compound tenses). Text summaryStudents prepare a written paper which will be delivered in form of an oral presentation in-classical structures and the structure of the s		
field of students' fu	ture specialisation or to their interest and generally covers a technical /applied science topic. It is not a translation but a creative work	compiled from Fre	nch articles
and one	e's own knowledge/experience Longer monologues on topics /situations set for the examination are prepared. Text structure, cohesi	on and coherence.	
04FMZK	French for Intermediate Students Examination	ZK	4
The content is the	e examination as given by the study programme. The whole French programme is ended with an examination covering the contents o		amination
	consists of a written and oral part and is organized according to Examination Instructions, a document available on the web		
04FP1	French for Advanced Students P1	Z	1
	ourse The objective of this three-semester course is to improve and further develop communication in the French language in both w		
	municate in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit ger ems. 04FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topics		
	omposé-imparfait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of tran-		
	, answer to an advert, environmental issues, success of French science and technology, chosen topics from French regional culture,		
<i>,</i> ,	mathematics, internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interp		
04FP2	French for Advanced Students P2	Z	1
With the link to P1	contents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication on g	iven topics. Feature	es typical of
	technical and scientific communication are stressed (passive voice, nominalization, word formation).		
04FP3	French for Advanded Students P3	Z	1
The course is focus	ed on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in eng	gineering environm	ent. Special
skill - translation o	f shorter texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally cover	s a technical /appli	ed science
	topic. It is a creative work compiled from 3 French sources. Preparation of several set topics for oral examination.		
04FPZK	French for Intermediate Students Examination	ZK	5
I ne whole Frencr	program is ended with an examination covering the contents of FP1-FP3. The examination consists of a written and/or an oral part a Examination Instructions, a document available on the web. Assessment of the presentation is included into the examination gra	and is organized ad	ccording to
		adina	0
0/E71		-	_
04FZ1 French for beginne	French for Beginners Z1	Z	1
French for beginne		Z ializing and in profe	1 essional life.
French for beginne The course include	French for Beginners Z1 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	Z ializing and in profe to communicate at	1 essional life. elementary
French for beginne The course include level, actively u (Francouzština pro	French for Beginners Z1 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 s French for specific / technical communication and reading of popular science and scientific texts. 04FZ1 The objective is to be able using the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Pravd za áte ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4 : introductions, pe	Z ializing and in profe to communicate at lová, French for be rsonal information,	1 essional life. elementary ginners asking and
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French for beginne The course include level, actively u (Francouzština pro giving the o 04FZ2 The course is linkir : French for Begin	French for Beginners Z1 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 s French for specific / technical communication and reading of popular science and scientific texts. 04FZ1 The objective is to be able ising the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Pravd za áte ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4 : introductions, pe tirections, simple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronu French for Beginners Z2 ig up with 04FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of the ners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreements)	Z ializing and in profe to communicate at dová, French for be rrsonal information, nciation and gramm Z e textbook: Pravda ent - disagreement	1 elementary ginners , asking and nar. 1 a - Pravdová , apology,
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04NM2 The course introduc	German for Intermediate Students M2 ces other more complex grammatical structures and their application in communication based on technical texts, such as the relation be	Z etween technology	and societ
	beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and o		
ractise reading for	information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systemati phenomena important for professional discourse (participles, relative clauses).	cally revises other	grammatio
04NM3	German for Intermediate Students M2	Z	1
	ces other more complex grammatical structures and their application in communication based on technical texts, such as the relation be	-	and socie
the world at the b	beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and o	car technology etc	. Students
ractise reading for	information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systematic	cally revises other	grammatio
04NMZK	phenomena important for professional discourse (participles, relative clauses). German for Intermediate Students Examination	ZK	4
	t is the examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examination of		1
	er the courses 04NM1 - 04NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessm is to be obtained from the teacher.	• ·	
04NP1	German for Advanced Students P1	Z	1
-	es good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be level	-	-
	se is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for de	-	
nore difficult gramm	nar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on practice i.e., telephoning.	ctical everyday con	nmunicatio
04NP2	German for Advanced Students P2	Z	1
-	is the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending	their general and	subtechni
bo	t introduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and pra oth written and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indi		nmunicatio
04NP3	German for Advanced Students P3	Z	1
	sts of 3 main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a varie	-	
-	nd car accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the voca		
	gineering, the environment, computer science, and car technology, will also be extended. Only authentic professional texts are used. d to process information gained from their reading of complex and difficult texts and present it to the class in a simplified oral form. The c practice to and from German.		
04NPZK	German for Advanced Students Examination	ZK	5
-	t is the examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination of		-
	rer the courses 04NM1 - 04NM3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungrad	• 1	
	information is to be obtained from the teacher.		
04RM1	Russian for Intermediate Students M1	Z	1
The course is desid	, ned for students with previous knowledge of Russian from secondary schools. Students are supposed to know the Russian alphabet (' i i
		both printed and h	nandwritte
asic vocabulary fo	r communication in everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday need, asking	the way and giving	g direction
asic vocabulary fo	r communication in everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday need, asking sic grammar structures (verbal and nominal forms, irregular verbs, pronouns). The initial knowledge corresponds to the achievement l	the way and giving evel of the RZ2 co	g direction
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04RZ3	Russian for Beginners Z3	Z	1
	ed on RZ2 and includes further everyday topics, develops understanding of short compact texts on new subtechnical topics (for training		°
and listening) ar	nd 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
04RZ4		7	1
	Russian for Beginners Z4 ased on 04RZ3. It improves and expands the knowledge of general language in all four skills (reading and understanding longer texts	with a certain perc	
	oral communication in everyday situations, writing longer texts). Students are trained to use grammar structures effectively (e.g., irreg		-
	zech, modality, imperatives, conditionals). They practice and develop communication skills for everyday situations (food, travelling, free		
written communic	cation on more specific topics (environment, addictions, the green movement). They become acquainted with various geographical dat	a (e.g., Siberia), le	arn how to
	fill in forms, look up the information from the timetable, learn about Russian holidays and typical meals.		
04RZ5	Russian for Beginners Z5	Z	1
	is the student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understandir specialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Comr		- 1
	Specialized text) and speaking, and to a certain extent, while about the professional mornation obtained by reading the texts. Com Studying grammar is based on professional and technical texts and only includes items typically used in professional communication of		
	ve voice). Students develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, po		santisipiee,
04RZZK	Russian for Beginners Examination	ZK	3
The course conte	nt 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 acqui	ired in RZ1
- RZ5. Stud	dents are eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instr	uctions by the teac	her.
04SM1	Spanish for Intermediate Students M1	Z	1
	signed for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-semest		
	bays attention to further grammar topics (e.g., perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative) to written and are communication on a given evendow or easy subtechnical topic for which the students are trained by reading to		
04SM2	e), to written and oral communication on a given everyday or easy subtechnical topic, for which the students are trained by reading tex Spanish for Intermediate Students M3		1
	ops the students' knowledge from the previous course (SM1). Students are gradually acquainted with fundamentals of Spanish for sp	ecific purposes in a	order to be
	able to work with specialized texts on the Internet.		
04SM3	Spanish for Intermediate Students M3	Z	1
	are supplemented with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of academi	c style. They will be	e competent
enough to use the	Internet in Spanish and search for information of their specialization or field of interest. Students will use the information to write sho		maries. The
	final part of the programme, general Spanish course based on course books, covers presentations and, finally, a written and oral ex		
04SMZK	Spanish for Intermediate Students Examination	ZK	4
The course conte	ent is the examination as given by the study plan. 04SMZK examination consists of two parts - written and oral; to be eligible for the w obtained non-graded assessment for course 04SM3.Oral examination follows the written part.	ritten part, students	s will have
04SP1	Spanish for Advanced Students P1	Z	1
	tes on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communication.	. – .	es: level B2
	of CEFR.		
04SP2	Spanish for Advanced Students P2	Z	1
Course SP2 is the	second part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and synta	x and focuses on ir	ndependent
	written communication.		
04SP3	Spanish for Advanced Students P3	Z	1
Course 04SP3 is th	he 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	nmunication
048071	based on what students will need in their career.	ZK	F
04SPZK	Spanish for Advanced Students Examination ent is the examination as given by the study plan. Examination 04SPZK consists of two parts, namely oral and written. The prerequisit	I I	5 oral part is
	aving passed the written test. Examination content is based on syllabi of courses SP1, SP2, and SP3 or on an individual study plan of		
04SZ1	Spanish for Beginners Z1	Z	1
	he first stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundan	nental grammar stru	uctures and
will be able	to communicate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Space	anish and will devel	lop it.
04SZ2	Spanish for Beginners Students Z2	Z	1
	based on course 04SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structures a		
to enable them to	understand short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries	and others such as	s the Czech
04SZ3	Republic. Realia of Spanish-speaking countries are also included.	Z	1
	Spanish for Beginners Z3 ed on course SZ2, and develops the student's vocabulary and grammar structure. The course covers realia (history and culture) of th		n countries
	It pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative		
	communication on a given general topic, for which the student is trained by reading texts or listening to them.		
04SZ4	Spanish for Beginners Z3	Z	1
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	s, mainly of
Spain. It pays atte	ention to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the		ubjunctive),
0.4075	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.	
04SZ5	Spanish for Beginners Z5] In its first
	are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish for part, the general Spanish course based on the course book will end with presentations and, finally, a written and oral examination of the course book will end with presentations and finally.		s. in its iinai
04SZZK	Spanish for Beginners Examination	ZK	3
	ent is the examination as given by the study plan. Examination consists of two parts - written and oral. Student can register for oral ex	I I	
	passed the written examination test.		
11ANEL	Linear Circuit Analysis	Z,ZK	4
	introduction to the linear electronics for physicists. In the first part it describes basic methods of linear circuit analysis. It is especially	oriented to the und	erstanding
	of the computer methods of analysis. The second part gives a short list of most commonly used circuits in experimental equipr		
11APLG	Applications of Group Theory in Solid State Physics	ZK	2
	atomic system symmetry allows, without any quantitative calculations, rigorously and precisely determine how many energy states the		
and transitions be	tween them may occur. Therefore, the main purpose of this course is to describe the methods by which we can extract the informatio	i on the object that	symmetry

	vibrations, and selection rules for optical absorption transitions.		
11ELEA	Instrumentation and Measurement The course is the introduction to the instrumentation and measurement for physicists.	Z,ZK	2
11MIK The course is the	Logical Circuits and Microprocessors introduction to the digital electronics for physicists. It describes the function principles of combination circuits, simple sequential circ	Z,ZK uits and complex c	4 ircuits like
	microprocessors. The microcomputer architecture and principles of interfacing is shown.	-	
11SFBM Knowledge of macro	Structure and Function of Biomolecules omolecular structure is crucial for the understanding of its function. The subject is focused on the introduction to building blocks of ma	Z,ZK cromolecules, over	3 all structur
	and its structure:function relationship including macromolecular complexes.		
11UFPLN	Introduction to Solid State Physics The purpose of this lecture is to introduce the undergraduate students to the study of the solid state physics.	ZK	2
11UVOD	Introduction to Specialization The purpose of this lecture is to introduce the undergraduate students to the physical master degree study programmes.	Z	2
11ZFPL	Basic to Solid State Physics	KZ	2
	amental properties of solids following the regular long distance ordering of atoms in a crystal lattice. Based on the introduced bonding	-	
are derived. The pe	s of crystals and their properties are defined. The model of crystalline lattice dynamics in harmonic approximation is described and basi eriodic potential of the crystal lattice is introduced and its relation to the following model describing the energetic state of electrons in plained. The special consequences of band approach to the physical properties of solids are elucidated. The aim of the course is to s interpret a broad phenomenological basis of physical properties of crystalline solids	n solids by means	of electron
12APL	Application of Lasers	Z,ZK	2
	plication of lasers in industrial technologies, medicine, remote sensing, energetics, telecommunication, military, entertainment and of		
12AUX	Administration of UNIX System Basic and more advanced administration of Unix operating system	KZ	2
12EGS1	English Graduate Standard 1	KZ	4
	nowledge in English, English Presentation, English Discussions, creation of the technical text, structures of important documents, Pr		
12EPR1 The aim of the pra	Basic Electronics Practicum 1 acticum is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formulation consists of blocks lasting 4 hours.	KZ of the results. The	3 practicum
12EPR2	Basic Electronics Practicum 2	KZ	3
1	acticum is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formulation consists of blocks lasting 4 hours.	of the results. The	practicum
12INS1	Information Systems 1	Z,ZK	2
	ogy, architecture of the databases, network databases, cloud application Google, Microsoft, information managament, aproaches to so	lve task of informat	ion systems
	had a more at land Or water ward of the	7 71/	<u> </u>
12INS2	Information Systems 2	Z,ZK	2 Aicrosoft
-	Information Systems 2 formation systems 1 is required. In more details: Information technology, architecture of the databases, network databases, cloud ap information managament, aproaches to solve task of information systems	, ,	
-	formation systems 1 is required. In more details: Information technology, architecture of the databases, network databases, cloud ap	, ,	
Graduation of Inf 12LAS Pulsed solid state	formation systems 1 is required. In more details: Information technology, architecture of the databases, network databases, cloud ap information managament, aproaches to solve task of information systems Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. C	plication Google, N Z,ZK Optical parametric g	Aicrosoft, 3 generators
Graduation of Inf 12LAS Pulsed solid state and raman lasers. S	formation systems 1 is required. In more details: Information technology, architecture of the databases, network databases, cloud ap information managament, aproaches to solve task of information systems Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. O Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultravi power continuous lasers. Infrared high power lasers. Submilimeter lasers. Lasers with high degree of coherence. Free electron I	plication Google, N Z,ZK Dptical parametric g olet lasers. X-ray la asers.	Aicrosoft, 3 generators asers. High
Graduation of Inf 12LAS Pulsed solid state and raman lasers. S 12LT1	formation systems 1 is required. In more details: Information technology, architecture of the databases, network databases, cloud ap information managament, aproaches to solve task of information systems Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. C Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultravi power continuous lasers. Infrared high power lasers. Submilimeter lasers. Lasers with high degree of coherence. Free electron I Laser Technique 1	plication Google, N Z,ZK pptical parametric g olet lasers. X-ray la asers. Z,ZK	Aicrosoft, 3 generators asers. High 3
Graduation of Inf 12LAS Pulsed solid state and raman lasers. S 12LT1 Open resonators. S mode. ABCD me	formation systems 1 is required. In more details: Information technology, architecture of the databases, network databases, cloud ap information managament, aproaches to solve task of information systems Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. C Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultrav power continuous lasers. Infrared high power lasers. Submilimeter lasers. Lasers with high degree of coherence. Free electron I Laser Technique 1 tability. Transverse and Longitudinal Modes. Elements of Open Resonators. Threshold of laser oscillations. Gausian beam as an app thod. Optical radiation propagation in resonant medium. Two-level approximation. Equations for polarisation and inversion, dispersio	Dilication Google, N Z,ZK Diptical parametric g olet lasers. X-ray la asers. Z,ZK roximation of the fin, saturation. Cohe	Aicrosoft, 3 generators asers. High 3 undamenta
Graduation of Inf 12LAS Pulsed solid state and raman lasers. S 12LT1 Open resonators. S mode. ABCD me	formation systems 1 is required. In more details: Information technology, architecture of the databases, network databases, cloud ap information managament, aproaches to solve task of information systems Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. Of Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultrav power continuous lasers. Infrared high power lasers. Submilimeter lasers. Lasers with high degree of coherence. Free electron I Laser Technique 1 tability. Transverse and Longitudinal Modes. Elements of Open Resonators. Threshold of laser oscillations. Gausian beam as an app ethod. Optical radiation propagation in resonant medium. Two-level approximation. Equations for polarisation and inversion, dispersio on-coherent pulse propagation. Optical solitons. Photon echo. Superradiation. Amplified spontaneous emission Lasers without optic	plication Google, N Z,ZK optical parametric g olet lasers. X-ray la asers. Z,ZK roximation of the fi n, saturation. Cohe al resonator.	Aicrosoft, 3 generators asers. High 3 undamenta erent and
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12PEL1	Described Electronics 4	774	<u> </u>
	Practical Electronics 1	Z,ZK	2
Recapitulation of	basics electronic, mathematical analyses of circuit solving. Measurement in electronic, measurement of frequency and phase. Analog	gue to digital conve	erters and
	digital signal processing. Function of voltmeter, ampermeter, oscilloscope, spectral analyser and logical analyser.		
		7 71/	2
12PEL2	Practical Electronics 2	Z,ZK	2
	Noise analyses in electronics, low noise electronics system design. Noise measurement. Time measurement. Printed circuit de	sign.	
12PIN1	Practical Informatics for Technics 1	Z	2
			1
	perating systems. Personal computer, workstation and supercomputers. Processor, memory, bus, devices, hard disk, network interface		
Principles of operati	ng systems. Requirements on operating system for research and technical computing. Operating system UNIX. Basic principles, kernel, ke	ernel services. Doc	cumentation.
File system, file atri	putes, working with files. Text editors: vi, emacs. Command interpreter (shell) sh, csh and its programming (scripts). Controlling proces	ses, process statu	is, computer
load a process p	riorities. Standard tools. Graphical user interface X-windows. Computer networks. Local computer networks. Global computer network	ks: Internet, Addre	sses and
	protocols TCP/IP. Network configutation of a computer. Network services: hardware sharing, mail, ftp, etc. Network applicatio		
12PIN2	Practical Informatics for Technics 2	Z	2
Practically oriented	three semester course of basics and applications of informatics for science and engineering included as obligatory alternative course	se. Constituent par	t is realized
,	in computer classrooms. The second part of the course is "Introduction to computer algebra systems?.		
12PIN3	Practical Informatics for Technics 3	Z	2
Practically oriented	three semester course of basics and applications of informatics for science and engineering included as obligatory alternative course	se. Constituent par	t is realized
	in computer classrooms. The third part of the course is "Introduction to scientific computing?.		
			-
12POAL	Computer Algebra	KZ	2
Lisp, representation	of basic objects (integers, rational and algebraic numbers, polynomials, rational functions, radicals, algebraic functions), arithmetics, si	implification, great	est common
	derivation, series summation, integration, ordinary differential equations, factorization, equations solving, quantifier elimination, subst		
		-	-
algebraic programm	ing, graphics, Maple - detailed introduction and solving of practical examples, applications, overview of other systems (Axiom, Macsynt	na, Mathematica),	miniproject.
12PSEM	Problem Seminary	Z	2
25 seminaries wit	n topics from the region of solid materials engineering, physical electronics, materials science, nuclear reactors, dosimetry and appli	cation of ionizating	radiation
		-	
12PYTH	Scientific Programming in Python	Z	2
The aim of this cou	se is to learn the fundamentals of the modern Python programming language with a focus on scientific computing. Emphasis is place	ed on effective solu	itions to real
	urse is performed in an interactive form of practical exercises, whose topics can be tailored to the content of other subjects or studer		
s	g research. In the introductory part of the course, students learn the basic features of Python? from basic types to object oriented or f		•
greater part of the	e course focuses on specific features of Python for scientific programming. Presented are the main numerical libraries NumPy, SciPy	and the Matplotlib	o graphics
	library. We show how to generate efficient code, how to combine Python with other languages, what tools are available.		
12TAIS		ZK	2
	Ion Beam Techniques and Applications.	1	3
	Production and forming of ion beam, charged particle optics, interaction of ion with solid matter, technological and analytical applied	cations.	
12ULT	Introduction to Laser Technique	Z,ZK	3
	tromagnetic radiation sources; laser principle; classification of lasers; characterization and rough application of various types of laser		
12UMF	Introduction to Modern Physics	Z	3
The course is inten	led to be a concise introduction to modern / nonclassical physics for students who have already had basic classical physics course. A	part of the course	is delivered
	in a computational laboratory.		
		· · · · · · · · · · · · · · · · · · ·	
12VAK	Vacuum Physics and Technology	KZ	4
Rarefied gasses:	basic concepts and relations; flow of rarefied gas. Interaction of gas with surface of solid surface; sorption, desorption; evaporation, of	condensation; gas	transport
-	ter; Vacuum generation. Pumping process. Pumps.Vacuum measurements: vacuum gauges of total and partial pressure; pumping sp	-	-
		, 9000, 900 non, 001	naaotinity,
	searching for leaks. Materials and vacuum instalation parts. Practical exercises.		1
12VFT	High Frequency and Impulse Circuitry	Z,ZK	2
The goals of cour	se is to collect advanced knowledge in high frequency technics and high speed events. The course is focused on Maxwell equation s	olution Gunn's div	
			odes hidh
	fraguanay taghniga migrawayaa guidalinga atriplinga agaillatara amplifiara and pulsa ganaratara	solution, Gunn's uit	odes, nign
	frequency technics, microwaves guidelines, striplines, oscillators, amplifiers and pulse generators.		-
12VTV	frequency technics, microwaves guidelines, striplines, oscillators, amplifiers and pulse generators. Scientific and Technical Computing	Z	odes, nign
	Scientific and Technical Computing	Z	2
	Scientific and Technical Computing amiliar with methods of solving of computational problems in the scientific and technical practice, and with methods of their program	Z	2
The students get	Scientific and Technical Computing amiliar with methods of solving of computational problems in the scientific and technical practice, and with methods of their program mainly to programming in the Fortran language.	Z ming. The course i	2 is oriented
	Scientific and Technical Computing amiliar with methods of solving of computational problems in the scientific and technical practice, and with methods of their program	Z	2
The students get	Scientific and Technical Computing amiliar with methods of solving of computational problems in the scientific and technical practice, and with methods of their program mainly to programming in the Fortran language. Fundamentals of Optics	Z ming. The course i Z,ZK	2 is oriented 2
The students get 12ZAOP The lecture covers	Scientific and Technical Computing amiliar with methods of solving of computational problems in the scientific and technical practice, and with methods of their program mainly to programming in the Fortran language. Fundamentals of Optics the very basics of optics - electromagnetic theory, linear optical physics and material effects, basics of nonlinear effects, and geomet	Z ming. The course i Z,ZK trical optics. The m	2 is oriented 2 nain goal of
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12ZFP	Principles of Plasma Physics	Z,ZK	4
Basic physics of hi	igh temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line		s in plasmas
	f electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and parameters		
lt	comprises brief introduction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas and	re introduced.	
12ZMD	Measurement and Data Processing	KZ	2
Basic knowledge	for the measurements and data processing and result interpretation: errors, precision, accuracy, normal distribution and its propeties,	data fitting, separa	ation of the
	signal from the noise.		
12ZPLT	Basic Laser Technique Laboratory	KZ	6
Lasers, solid state	Nd:YAG laser, laser crystal, laser discharge lamp, laser cavity, resonator, free-running, Q-switching, laser amplifier. second harmonic	, He-Ne glow disch	arges, laser
diode, dio	de pumped Nd:YAG laser, CO2 laser marking, laser materials properties, non-linear transmission, laser beam transverse profile, aco	usto-optic modulate	ors.
12ZPOP	Basic Optical Laboratory	KZ	6
Т	he practical laboratories give advanced practical skills by experimental work in optics and optoelectronics. Laboratory records must b	e elaborated.	I
14ELMI	Electron Microscopy	Z,ZK	3
In this course the	students are introduced to the microscopic methods used for the characterization of materials, thin layers or nanoparticles. The introd	uctory part is dedi	cated to the
analogy of light	and electron microscopy and to various types of microscopes. An important part of the course is given to the interaction of different ty	pes of radiation wi	th matter,
mathematical form	ulations and tools used in microscopy and to the description of particular parts of the microscopes. Introduction to kinematic and dyna	amic theory of diffra	action, types
of contrast	t, and diffraction and imaging techniques are also covered. A particular attention is given to analytical methods and imaging technique	es in atomic resolut	tion.
14NMA	Materials Science	KZ	3
	Introduction to the Materials Science		
14TEM	Engineering Mechanics	Z,ZK	6
Abstract: The cour	rse represents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with stress and strain a	analysis of real stru	ucture parts
	(elasticity, plasticity, fracture mechanics, etc.). Principles of statics, kinematics, and dynamics and their application.		
14TM	Engineering Mechanics	Z,ZK	4
	resents a link-up between the theoretical mechanics of rigid bodies and engineering disciplines dealing with the stress and strain ana		ire parts.
14ZZKS	Testing and Processing of Metals and Alloys	KZ	4
	ests, hardness, impact toughness, technological testing, fatigue testing, creep testing. Light microscopy, preparation of specimens for	1	
	velding, soldering, brazing, powder metallurgy, mechanical machining. Copper alloys, aluminium alloys, titanium alloys, special alloys o		
, , , , , , , , , , , , , , , , , , ,	drawing and CAD.		
15CH1	General Chemistry 1	7	3
	t concepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practical u	use are illustrated b	-
	solved in exercises.		, ,
15CH2	General Chemistry 2	Z,ZK	3
	continuation of the course General chemistry I. The main attention is paid to general principles governing chemical processes. Using		-
	e principles is not restricted only to chemical processes is documented. The significance and practical use of explained principles are		
			ipies solveu
	in exercises.	,	ipies solved
15CHEM		ZK	2
	in exercises. Analytical Calculations and Chemometry Principals h basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basi	ZK	2
Lecture deals with	Analytical Calculations and Chemometry Principals	ZK c data distributions	2 s, one- and
Lecture deals with two-tailed signification	Analytical Calculations and Chemometry Principals h basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basic	ZK c data distributions ninar part consists	2 s, one- and of equation
Lecture deals with two-tailed signification	Analytical Calculations and Chemometry Principals h basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basi ance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, sen	ZK c data distributions ninar part consists	2 s, one- and of equation
Lecture deals with two-tailed signification	Analytical Calculations and Chemometry Principals h basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basi ance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, sen on stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in p	ZK c data distributions ninar part consists	2 s, one- and of equation
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Lecture deals with two-tailed significa solving, titration 15DALCH This course provide	Analytical Calculations and Chemometry Principals h basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basi ance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, sen on stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in p spectrophotometry and separation methods, solving of complex forming equilibria. History of Alchemy and Chemistry	ZK ic data distributions ninar part consists totentiometry, could ZK Hellenistic world is	2 s, one- and of equation ometry, 2 discussed.
Lecture deals with two-tailed significa solving, titration 15DALCH This course provide	Analytical Calculations and Chemometry Principals h basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basis ance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, sen on stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in p spectrophotometry and separation methods, solving of complex forming equilibria. History of Alchemy and Chemistry des the overview of crafts with chemical and/or metallurgical basis. Development of alchemy from ancient times in China, India, and H	ZK ic data distributions ninar part consists totentiometry, could ZK Hellenistic world is	2 s, one- and of equation ometry, 2 discussed.
Lecture deals with two-tailed significa solving, titration 15DALCH This course provide	Analytical Calculations and Chemometry Principals h basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basis ance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, sen on stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in p spectrophotometry and separation methods, solving of complex forming equilibria. History of Alchemy and Chemistry des the overview of crafts with chemical and/or metallurgical basis. Development of alchemy from ancient times in China, India, and F course is dedicated to Alchemy in Arabic world and various aspects of alchemy in Latin Europe. The influence of alchemical approach.	ZK ic data distributions ninar part consists totentiometry, could ZK Hellenistic world is	2 s, one- and of equation ometry, 2 discussed.
Lecture deals with two-tailed significa solving, titration 15DALCH This course provin The last part of the 15INPR	Analytical Calculations and Chemometry Principals h basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basis ance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, sen on stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in p spectrophotometry and separation methods, solving of complex forming equilibria. History of Alchemy and Chemistry des the overview of crafts with chemical and/or metallurgical basis. Development of alchemy from ancient times in China, India, and H course is dedicated to Alchemy in Arabic world and various aspects of alchemy in Latin Europe. The influence of alchemical approace advancement is illustrated.	ZK ic data distributions inar part consists totentiometry, could ZK Hellenistic world is hes development o KZ	2 s, one- and of equation pometry, 2 discussed. into crafts 4
Lecture deals with two-tailed significa solving, titration 15DALCH This course proving The last part of the 15INPR Practical training	Analytical Calculations and Chemometry Principals h basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basis ance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, sen on stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in p spectrophotometry and separation methods, solving of complex forming equilibria. History of Alchemy and Chemistry des the overview of crafts with chemical and/or metallurgical basis. Development of alchemy from ancient times in China, India, and H course is dedicated to Alchemy in Arabic world and various aspects of alchemy in Latin Europe. The influence of alchemical approach advancement is illustrated. Laboratory Practice in Instrumental Methods	ZK ic data distributions ninar part consists notentiometry, could ZK Hellenistic world is nes development o KZ ners problems. The	2 s, one- and of equation pometry, 2 discussed. into crafts 4 training is
Lecture deals with two-tailed significa solving, titration 15DALCH This course proving The last part of the 15INPR Practical training	Analytical Calculations and Chemometry Principals h basic principles of chemometry including errors in classical and instrumental analysis, probability theory, propagation of errors, basic ance testing, hypothesis testing, least squares regression and correlation, calibration and fitting methods, non-parametric testing, sent on stoichiometry of redox, acid-base, complex and precipitation reactions, gravimetric stoichiometry. pH calculations, calculations in propagation of errors, basic prophotometry and separation methods, solving of complex forming equilibria. History of Alchemy and Chemistry des the overview of crafts with chemical and/or metallurgical basis. Development of alchemy from ancient times in China, India, and P course is dedicated to Alchemy in Arabic world and various aspects of alchemy in Latin Europe. The influence of alchemical approach advancement is illustrated. Laboratory Practice in Instrumental Methods of students in the use of selected modern instrumental methods and techniques for solving some physico-chemical analytical and other and the students in the use of selected modern instrumental methods and techniques for solving some physico-chemical analytical and other students in the use of selected modern instrumental methods and techniques for solving some physico-chemical analytical and other students in the use of selected modern instrumental methods and techniques for solving some physico-chemical analytical and other students in the use of selected modern instrumental methods and techniques for solving some physico-chemical analytical and other students in the use of selected modern instrumental methods and techniques for solving some physico-chemical analytical and other students in the use of selected modern instrumental methods and techniques for solving some physico-che	ZK ic data distributions ninar part consists notentiometry, could ZK Hellenistic world is nes development o KZ ners problems. The	2 s, one- and of equation pometry, 2 discussed. into crafts 4 training is
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16MCRB	Transport of Ionizing Radiation and Monte Carlo Method	Z,ZK	4
	nciples of Monte Carlo method and its use for radiation transport simulation, selected concepts of probability theory and mathematica		
	rent types of radiation and their use for stochastic modeling of their substance transport. Model description concepts, geometric mode eling of measured variables and parameters. Statistical evaluation of reliability of modeling results, variance reduction methods, progra	-	-
	g, MCNP program, its possibilities and use. Procedures for the practical use of the program for typical tasks in the field of dosimetry, a		
	detection and detection systems, radiation protection and medical applications.		g radiation,
16MEZB	Fundamentals of Ionizing-Radiation Metrology	Z,ZK	4
The course summa	arizes the basic objectives and content of ionizing radiation metrology. It deals with the interpretation of radiation quantities and units in	n metrology. It sum	marizes the
theoretical and ex	perimental foundations of metrology, the determination of basic parameters of radiation. Lectures are supplemented with basic summ	ary of relevant legi	slation and
	regulations.		
16SED1	Dosimetry Seminar 1 upposed to motivate the student's interest in the field of dosimetry, especially in medical physics. Introductory lectures will be devoted		2
	s. The following lectures are given by the former students of DDAIR, who are currently employed in various organizations (SÚRO, v.v.		
	MI, Hospital Na Homolce, FN v Motole, PTC Czech s.r.o.).	.,	, ,
16SED2	Dosimetry Seminar 2	Z	2
Dosimetry Semina	ry 2 follows-up SED1. In this seminary students will listen to the lectures of the older students of DDAIR. The older students give lectures	es about their prog	ress on the
	search topic of their theses. The course also introduces the principles of creating good presentation and advice for working with scier		
16UAZB	Principles of Ionizing-Radiation Applications	ZK	2
	of applications, review of interaction of radiation with a matter, radiation sources, detectors and instrumentation, evaluation of radional and scattering of radiation beams, selected radioanalytical methods, tracer methods, radionuclide dating, further possibilities for the u		
16ZBAF1	Fundamentals of Human Biology, Anatomy and Physiology 1	Z,ZK	4
-	ving systems, non-cellular and cellular organisms, prokaryotic and eukaryotic cell. Molecular and cell biology. Biopolymers. Molecular	· · ·	
	eneral human anatomy. Basics of medical terminology. Overview of tissues. Skeleton. Muscle anatomy in general. Digestive system a		
-	system and physiology of respiration. Excretory and genital tract.		
16ZBAF2	Fundamentals of Human Biology, Anatomy and Physiology 2	Z,ZK	4
	logy of cardiac activity. General anatomy of blood vessels, main arteries of the body, overview of veins and physiology of blood, blood	-	of nerves.
	S. Visual system and physiology of the visual system. Auditory and vestibular system and physiology of hearing and balance. Skin, en	-	
16ZDOZ1	Fundamentals of Radiation Dosimetry 1	Z,ZK	4
History, develo	pment, and objectives of dosimetry. Quantities and units used for description of sources, fields, interactions of ionizing radiation, ioniz absorption. Fundamentals of the effects of ionizing radiation.	ations, energy tran	ster and
16ZDOZ2	Fundamentals of Radiation Dosimetry 2	ZK	2
	iological effects of ionizing radiation. Quantities and units used in radiation protection. Recommendations of ICRP and ICRU. Principles		
	in dosimetry. Determination of activity and neutron source emission. Measurements of absorbed dose and exposure.		
16ZEDB	Basics of Experimantal Data Processing	ZK	2
	Statistical analysis of experimental data; univariate data; calibration; regression; multivariate data.		
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 envirc	onment and evaluat	e economic
16ZJTB	indicators and sustainable development. Nuclear Energy Facilities and Accelerators	ZK	2
	f nuclear reactor and nuclear power plant, chain fission reaction development, main components of nuclear energetic reactor, most im	I I	
	elerators, linear high-frequency accelerators, accelerators based on cyclotron, microtron, betatron, electron and proton synchrotrons,		
	accelerators, targets.		
16ZPSP	Basic Work with PC	Z	2
	rse is to acquaint students with the basic skills related to working on a personal computer. The introductory part of the course is devot		-
	e at the CTU in Prague and the FNSPE. Emphasis is placed on effective handling of work with office productivity software (text editor, ercises in MS Office. The practical content focuses mainly on further use during studies (laboratory reports, research work, bachelor's		
	ospitals, state administration, companies). Other sections summarize basic information about computer hardware, software, and secur	-	
	home exercises and participation in exercises above 60% is a necessary condition for passing the course.	,	
16ZRAO	Basics of Radiation Protection	Z	2
	rse is to familiarize students with the general principles of radiation protection. The main emphasis is put on basic mechanisms and co	-	
	field. The course provides answers to the cardinal questions: What is ionizing radiation (IR), where it comes from, whether and how it		-
	ng of protective units (Gray, Sievert), how to prevent malicious effect of IR and many others. The content of the lectures does not requ		•
17ENF	Experimental Neutron Physics mainly focused on detailed characterisation of neutron properties, characteristics of neutron (reactor and non reactor) sources, properties	KZ	2 develet h
	a detection methods, neutron induced nuclear reactions, modification and adjustment of neutron field, science and industry neutron at		-
	data processing and analysis. The lectures are supplemented with experimental practices in the field of neutron detection, determination	•	
study of neutron di	ffusion in various materials, preparation and characterisation of photo-neutron source and neutron source calibration. Experimental prac	ctices will be runnin	g at training
	reactor VR-1 and in the neutron laboratory.		-
17JARE	Nuclear Reactors	ZK	2
	l power issue. Previous evolution of power reactor. Nuclear fission reactors, fuel assemblies, active core, control systems, safety syster generations. Standard types of nuclear power reactors: concept, description, layout, previous evolution, world share, perspectives. Pres		
	PWR (Westinghouse, KWU, Framatom). VVER-type reactors, Temelín nuclear power plant. Boiling water reactors. Heavy water react		
	gas cooled reactors. Second nuclear era. reactors of generation III (EPR, AP-1000, VVER 1200). Reactors of generation IV: GIF and		
	selection of proposed systems. Six selected concepts. ICRP scenarios of word evolution, hydrogen power, role of nuclear power in lo		
17UEN	Introduction to Power Engineering	ZK	2
	e of this course is to transmit to our students the basic information about power engineering as the line of economics, about its wide r energetics function. The course is - from the beginning - structured logically from definition of term "energetics? through the power co		-
	and its influence on our environment, to the transformation of fuel power to nobler types of power. This subject describes power plants		
-	r transformation. They are described quite briefly- mostly from the view as their features for connection to energy network, how they in		-
national economy	, etc. It contains also power network features, their managing and structures, described on the power networks of the Czech Republic	. The final part of t	his subject
	is pointed to energy sector of the Czech Republic and the State energy policy.		

17UINZ	Introduction to Engineering	Z,ZK	3
	oted to an introduction to the engineering profession. Students will gradually learn the characteristics and specialties of engineering w		
the basics of selec	ted engineering disciplines, such as the basics of materials science, manufacturing technology, quality control and assurance and ec		e course wil
	focus on some issues of R&D activities organization and on selected parts of technical drawings and the work with AutoCAL		
17VYR	Research Reactors	ZK	2
	to research reactors and their applications for the need of research and industry. Students get familiar with research reactor types and		
along wit	h experimental equipment needed for particular applications and their specifics. The course is supported by technical visit to research	n reactor workpla	ce.
17ZEH	Basics of Economic Assessment	ZK	2
The course focu	ses on the economic evaluation of Nuclear power plants. Introductory lectures are concerned with an introduction to economy and the	e basic compone	nt parts of
microeconomics. L	ectures continued with insight into the business and managerial economics, explanation of the concepts of incomes, expenses, etc. and	d their application	s in electrica
	energy resources evaluation. Second part of lectures is focused on evaluation of nuclear power plants - the fuel cycle and operation	is of NPP.	
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 electrica	l circuits wit
them. Next, lecture	s deal with semiconductor components (standard, Zener, capacitive, LED), bipolar, unipolar transistors and semiconductor componer	nts with more laye	ers (thyristor
and triacs). Lectu	rres continue with general amplifiers and operational amplifiers. Finally, lectures deal with digital circuits, digital/analog and analog/dig	ital converters. L	ectures are
	completed with electronic laboratory exercises.		
18EKO1	Mathematical Economics 1	Z,ZK	5
	ces selected models and methods for economic decision making. The main attention is given to optimization models of linear program		-
	applications and their solving by means of the current software products.	5,1	
18EKO2	Mathematical Economics 2	Z.ZK	5
	duces selected models and methods for economic decision making. The main attention is given to optimization models in graphs, pro	,	1
	management with deterministic and stochastic demand, queuing theory and simulation models.	Joormanayemen	, inventory
1050004		7	0
18ESPG1	European Computer Driving Licence 1	Z	2
-	lators are an important tool, especially for students and graduates in Software engineering in economics. The winter semester introduc		
unice tools. The a	ccent is put on advanced functions of MS Excel (names, functions and expressions, pivot table and graph). Next, the VBA language w	in be introduced	anu macros
	and user functions will be addressed.		
18ESPG2	European Computer Driving Licence 2	Z	2
•	ators are an important tool, especially for students and graduates in Software engineering in economics. Summer semester follows the v		
VBA programmin	g topics (charts, objects, graphical user interface, add-ins programming) and introduces some applications in economics, mathematic	s, operational res	search, and
	computer science.		
18INTA	Development of internet applications	KZ	4
The lectures provid	le an overview of modern technologies for the development of web applications. Students will learn basic web languages and concep	ts (HTML, URL, e	etc.) and the
	le an overview of modern technologies for the development of web applications. Students will learn basic web languages and concep ced to relational database systems. The tutorials are dedicated to practical examples of building web applications, from the simplest t		
		o more advanced	
	ced to relational database systems. The tutorials are dedicated to practical examples of building web applications, from the simplest t	o more advanced	
will also be introdu	ced to relational database systems. The tutorials are dedicated to practical examples of building web applications, from the simplest t is oriented primarily towards backend technologies and using the Python languages, but covers also frontend frameworks and Jav	o more advanced vaScript. Z,ZK	d. The course
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	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 2024-05-19, time 01:12.