Study plan

Name of study plan: Matematické inženýrství - Matematická fyzika

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

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

Code of the group: BSPMIMF1 Name of the group: BS P_MIB MF 1st year Requirement credits in the group: Requirement courses in the group: In this group you have to complete at least 13 courses Credits in the group: 0 Note on the group: Podmínkou skládání zkoušky 01MANZ je získání zápočtu z 01MAN.

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

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
02DEF1	History of Physics 1 Igor Jex Martin Štefa ák Igor Jex (Gar.)	Z	2	2+0	Z	PS
02ELMA	Electricity and Magnetism Iskender Yalcinkaya, Ji í Hrivnák, Goce Chadzitaskos, Josef Schmidt, Jan Vysoký Jan Vysoký Ji í Hrivnák (Gar.)	Z,ZK	6	4+2	L	PS
01LAL	Linear Algebra 1 Petr Ambrož, Lubomíra Dvo áková Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	Z	2	2P+2C		PS
01LALZ	Linear Algebra 1, exam Petr Ambrož, Lubomíra Dvo áková Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	ZK	2	0P+0C		PS
01LAL2	Linear Algebra 2 Petr Ambrož, Lubomíra Dvo áková Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	Z,ZK	4	2P+2C		PS
01MAN	Calculus 1 Pavel Strachota, Miroslav Kolá, Edita Pelantová Pavel Strachota Pavel Strachota (Gar.)	Z	4	4+4		PS
01MANZ	Calculus 1, exam Pavel Strachota, Miroslav Kolá, Edita Pelantová Pavel Strachota Pavel Strachota (Gar.)	ZK	4	0P+0C		PS
01MAN2	Calculus 2 Miroslav Kolá, Edita Pelantová, Maksym Dreval Edita Pelantová Maksym Dreval (Gar.)	Z,ZK	8	4P+4C		PS
02MECH	Mechanics David B e Antonín Hoskovec David B e (Gar.)	Z	4	4+2	Z	PS
02MECHZ	Mechanics - Examination Iskender Yalcinkaya, Goce Chadzitaskos, Stanislav Skoupý, Petr Novotný, David B e , Filip Petrásek, Antonín Hoskovec Antonín Hoskovec David B e (Gar.)	ZK	2	-	Z	PS
00PT	Preparatory Week Petr Ambrož, Milan Krbálek Petr Ambrož Petr Ambrož (Gar.)	Z	2	týden	Z	PS
02TER	Heat and Molecular Physics Filip Petrásek Petr Novotný Petr Jizba (Gar.)	Z,ZK	4	2+2	L	PS

18ZPRO	Basics of Programming Maksym Dreval, Nichita Vatamaniuc, Jan Vondruška, Vladimír Jarý, Miroslav Virius, Jakub Klinkovský, Petr Pauš, František Vold ich, Jan Tomsa, Miroslav Virius Miroslav Virius (Gar.)	Z	4	4C	z	PS
Characteristics of	the courses of this group of Study Plan: Code=BSPMIMF1 Name=	BS P_MIB N	/IF 1st yea	ar		
02DEF1	History of Physics 1				Z	2
Physics and its place in	the system of sciences. The relationship of man and nature. Natural sciences in ancient Ori	entand Greece,	Greek natur	al philosoph	ers, Aristotle	. Physics in
Helenistic period, Archin	ned. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano B	runo. Copernicu	is, Kepler, G	alileo, Huyg	ens. The birth	of physics
as experimental science						
02ELMA	Electricity and Magnetism			Z	Z,ZK	6
Electric charge, Coulom	b's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectric	cs. Electric curre	ent and circui	ts, conducti	vity. Basics of	f the relativity
theory. Electrodynamic f	orces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, RLC circuits.	Electromagnetic	waves, Max	well equation	ons.	
01LAL	Linear Algebra 1				Z	2
1. Vector space. 2. Linea	r dependence and independence. 3. Basis and dimension. 4. Subspaces of vector spaces.	5. Linear mappi	ngs. 6. Matric	es of linear	mappings. 7.	Frobenius
theorem.						
01LALZ	Linear Algebra 1, exam				ZK	2
01LAL2	Linear Algebra 2			Z	Z,ZK	4
Outline: 1. Inverse matrix	k and operator. 2. Permutation and determinant. 3. Spectral theory (eigenvalue, eigenvector	diagonalization). 4. Hermitia	in and quad	Iratic forms. 5	. Scalar
product and orthogonalit	ty. 6. Metric geometry. 7. Riesz theorem and adjoint operator. Outline of the exercises: 1. Me	thods for calcul	ation of inver	se matrices	. 2. Methods	of calculation
	ulation of eigenvalues and eigenvectors. 4. Hermitian and quadratic forms. Canonical form.	5. Scalar produc	t and orthog	onality. Calo	ulation of ort	hogonal
,	try exercises and examples. 7. Adjoint operators.					
01MAN	Calculus 1				Z	4
Basic calculus (real anal	lysis, functions of one real variable, differential calculus).					
01MANZ	Calculus 1, exam				ZK	4
01MAN2	Calculus 2			Z	I,ZK	8
1. Continuation of differe	ential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence	e, operations or	n series, abs	olute and co	onditional con	vergence 3.
Real and complex power	r series, the Cauchy-Hadamard theorem, expansion of function into power series, summatio	n of infinite serie	es. 4. Theory	of integrals:	primitives, de	efinite integral
(Riemann definition), teo	chniques of integration and application of integrals, Generalized Riemann integral					
02MECH	Mechanics				Z	4
	physical quantities and units. Kinematics of a particle, basic types of motion and their super				•	
	, motion in a central force field, forces in non-inertial reference frames. Mechanics of a syste	em of particles,	two-body pro	blems, part	icle collisions	. Mechanics
of a rigid body, rotation.						
	Mechanics - Examination				ZK	2
The content of the subje	ct is the examination according to the plan of studies.					
00PT	Preparatory Week				Z	2
	Heat and Molecular Physics				Z,ZK	4
Thermal expansion of m	aterials, heat transfer; stationary and non-stationary heat conduction, heat transfer and per	etration; 1st and	d 2nd thermo	dynamic pr	inciple, ideal	and real gas,
entropy; non-chemical sy	stems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials;	kinetic theory: N	laxwell's velo	ocity distribu	ition,equiparti	ition theorem.
18ZPRO	Basics of Programming				Z	4
This course is intended	mainly for students with little or no experience in programming. It familiarizes the students w	ith the basic co	ncepts in pro	arammina a	and with the F	Python
programming language.	,			3 . 3		,

Code of the group: BSPMIMF2

Name of the group: BS P_MIB MF 2nd year

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 8 courses Credits in the group: 0

Note on the group:

Předmět 02TEF1 lze absolvovat až po absolvování předmětu 02MECHZ. Předmět 02TEF2 lze absolvovat až po absolvování předmětů 02ELMA a 02TEF1

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 Michal Beneš Michal Beneš Michal Beneš (Gar.)	Z,ZK	4	2P+2C	L	PS
01ANA3	Mathematical Analysis A 3 František Štampach, Radek Fu ík, Mat j Tušek František Štampach František Štampach (Gar.)	Z,ZK	9	4P+4C		PS
01ANA4	Mathematical Analysis A 4 František Štampach František Štampach (Gar.)	Z,ZK	9	4P+4C		PS
01NMA1	Numerical Mathematics 1 Tomáš Oberhuber Tomáš Oberhuber (Gar.)	ZK	4	4+0		PS
02TEF1	Theoretical Physics 1 Petr Novotný Michal Jex Igor Jex (Gar.)	Z,ZK	4	2+2	Z	PS
02TEF2	Theoretical Physics 2 Petr Novotný, Filip Petrásek Josef Schmidt Petr Novotný (Gar.)	Z,ZK	4	2+2	L	PS
02TSFA	Thermodynamics and Statistical Physics Igor Jex, Jaroslav Novotný Antonín Hoskovec Igor Jex (Gar.)	Z,ZK	4	2+2	L	PS
02VOAF	Waves, Optics and Atomic Physics Josef Schmidt Jan Vysoký Ji í Tolar (Gar.)	Z,ZK	6	4+2	Z	PS

Characteristics of the courses of this group of Study Plan: Code=BSPMIMF2 Name=BS P_MIB MF 2nd year				
01DIFR Differential Equations	Z,ZK	4		
The course contains introduction in the solution of ordinary differential equations. It contains a survey of equation types solvable analytically, basics	of the existence th	eory, solution of		
linear types of equations and introduction in the theory of boundary-value problems.				
01ANA3 Mathematical Analysis A 3	Z,ZK	9		
Function sequences and series, introduction to topology and metric spaces, differential calculus of functions of several variables.				
01ANA4 Mathematical Analysis A 4	Z,ZK	9		
Inverse and implicit functions, constrained extrema, measure and integration theory, contour and surface integrals.				
01NMA1 Numerical Mathematics 1	ZK	4		
The course introduces to numerical methods for solving the basic problems arising from technical and research problems. The accent is put on a g	ood understanding	of the root of		
theoretical methods.				
02TEF1 Theoretical Physics 1	Z,ZK	4		
The course is an introduction to analytical mechanics. The students acquire knowledge of the basic concepts of the Lagrange and Hamiltonian formal	isms as well as difer	rent approaches		
to description of dynamics (Newtons, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these methods is illustrated on elemen				
problem, the motion of a system of constrained mass points, and of a rigid body. Advanced parts of the course cover differential and integral princip	les of mechanics. T	The subject is		
the first part of the course of classical theoretical physics (02TEF1, 02TEF2).				
02TEF2 Theoretical Physics 2	Z,ZK	4		
Tensors and transformations in physics. Mechanics of point mass, rigid body and continuum. The special theory of relativity: relativistic mechanics a		-		
Minkowski space-time. Classical electrodynamics: Maxwell's equations in the Minkowski space-time, electromagnetic waves in dielectric media, ele	ctromagnetic radiat	tion in the dipole		
approximation.	r			
02TSFA Thermodynamics and Statistical Physics	Z,ZK	4		
Foundation of thermodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Cl				
Basics of many body description from a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-cano	nical ensemble, Fer	rmi gas, models		
of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena.	r			
02VOAF Waves, Optics and Atomic Physics	Z,ZK	6		
Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction,				
coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de E	sroglie waves, the S	chrodinger		
equation, stationary states and spectra of finite systems.				

Code of the group: BSPMIMF3 Name of the group: BS P_MIB MF 3rd year Requirement credits in the group: Requirement courses in the group: In this group you have to complete at least 12 courses Credits in the group: 0 Zkoušku z předmětu 01RMAF lze skládat až po složení všech zkoušek z Matematické Note on the group:

analýzy a Lineární algebry. Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their Code Completion Credits Scope Semester Role members) Tutors, authors and guarantors (gar.) **Bachelor Thesis 1** 02BPMI1 7 5 0P+5C 7 PS David Krej i ík Libor Šnobl (Gar.) **Bachelor Thesis 2** 02BPMI2 Ζ 10 0P+10C L PS David Krej i ík Libor Šnobl (Gar.) Functions of Complex Variable Severin Pošta, Pavel Š oví ek Pavel Š oví ek (Gar.) 01FKO Z,ZK 3 2+1PS **Functional Analysis 1** 01FANA1 Z,ZK 5 2P+2C PS Pavel Š oví ek Pavel Š oví ek Pavel Š oví ek (Gar.) **Functional analysis 2** 01FAN2 Z,ZK 5 2P+2C PS Pavel Š oví ek Pavel Š oví ek Pavel Š oví ek (Gar.) **Geometric Methods in Physics 1** 02GMF1 Z,ZK 4 2+2 L PS Libor Šnobl Martin Štefa ák Libor Šnobl (Gar.) **Quantum Mechanics 1** Ζ 02KM1 6 4P+2C Z,ZK PS Martin Štefa ák Martin Štefa ák Martin Štefa ák (Gar.) Quantum Mechanics 2 02KM2 Z.ZK 6 4P+2C L PS Martin Štefa ák Martin Štefa ák Martin Štefa ák (Gar.) **General Relativity** 02**O**R ΖK 3 3+0 L PS Old ich Semerák Boris Tomášik Boris Tomášik (Gar.) **Equations of Mathematical Physics** 01RMAF Z,ZK 7 4P+2C PS Václav Klika Václav Klika (Gar.) **Bachelor Seminar** 01BASE Ζ 1 0P+2S PS Pavel Strachota Pavel Strachota (Gar.) Introduction to Particle Physics 02UCF Z,ZK 4 2P+2C Ζ PS Zden k Hubá ek Zden k Hubá ek Zden k Hubá ek (Gar.)

Characteristics of the courses of this group of Study Plan: Code=BSPMIMF3 Name=BS P_MIB MF 3rd year 02BPMI1 **Bachelor Thesis 1** Ζ 5 The bachelor project is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the project supervisor during common regular meetings and discussions. 02BPMI2 **Bachelor Thesis 2** Ζ 10 The bachelor project is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the project supervisor during common regular meetings and discussions.

01FKO	Functions of Complex Variable	Z,ZK	3
The course starts from o	utlining the Jordan curve theorem and the Riemann-Stieltjes integral. Then basic results of complex analysis in one variable ar	e explained in det	ail: the derivative
of a complex function a	nd the Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Ca	uchy's integral th	eorem, Morera's
theorem, roots of a holo	morphic function, analytic continuation, isolated singularities, the maximum modulus principle, Liouville's theorem, the Cauchy	estimates, Laurer	nt series, residue
theorem.			
01FANA1	Functional Analysis 1	Z,ZK	5
01FAN2	Functional analysis 2	Z,ZK	5
The course aims to pre-	sent selected fundamental results from functional analysis including basic theorems of the theory of Banach spaces, closed o	perators and the	r spectrum,
Hilbert-Schmidt operato	rs, spectral decomposition of bounded self-adjoint operators.		
02GMF1	Geometric Methods in Physics 1	Z,ZK	4
Foundations of geomet	ic methods in physics on manifolds. Differential forms.	·	
02KM1	Quantum Mechanics 1	Z,ZK	6
Abstract: The lecture de	scribes the birth of quantum mechanics and description of one particle and more particles by elements of the Hilbert space as	well as its time ev	olution. Besides
that it includes descripti	on of observable quantities by operators in the Hilbert space and calculation of their spectra.		
02KM2	Quantum Mechanics 2	Z,ZK	6
Abstract: The lecture ex	pands the introduction to quantum mechanics with more general formalism of quantum theory, approximate methods and pa	th integral. It sum	marizes the
terminology and method	Is used in various applications of quantum mechanics and prepares the students for an effective scientific research and further	study, in particula	ar, of the modern
formulations of quantum	n field theory.		
02OR	General Relativity	ZK	3
Introduction to general	heory of relativity: principle of equivalence and principle of general covariance, parallel transport and geodesic equation, grav	vitational redshift.	Curvature and
	aw. Schwarzschild solution of the Einstein equations, homogeneous and isotropic cosmological models.		
01RMAF	Equations of Mathematical Physics	Z,ZK	7
The subject of this cour	se is solving integral equations, theory of generalized functions, classification of partial differential equations, theory of integra	al transformations	, and solution of
partial differential equat	ions (boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).		
01BASE	Bachelor Seminar	Z	1
In the first part of the se	minar, students familiarize themselves with the general principles of publishing and presenting scientific work and the formal \dot{r}	equirements for b	achelors degree
projects at the faculty. T	he second part is designed as a practical training for the defense of the bachelors degree project. The students give oral pres	sentations of the o	current state of
the research results ach	ieved during the work on their projects. Each presentation is followed by a discussion on scientific matters as well as on the pos	sibilities of improv	/ing the students
performance.			
02UCF	Introduction to Particle Physics	Z,ZK	4
Abstract: Overview of n	uclear and subnuclear physics from the beginning of the 20th century until today. The lecture describes basic properties of at	omic nuclei, nucle	ar decays and
nuclear reactions. Then	it concentrates on elementary particle physics. It reviews basic properties of elementary particles and fundamental interactio	ns leading to the	formulation of
the so-called Standard	Model of elementary particles. The lecture contains the overview of current particle and astroparticle experiments.		

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

Code of the group: BSSPOLVEDY

Name of the group: BS - Social Sciences

Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 1 course Credits in the group: 0

Note on the group:

Only one of these courses is obligatory.

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

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

00EKOT	Economy in Technology	Z	1
The course introduces t	he basics of micro- and macroeconomics.		
00ETV	Ethics of Science and Technology	Z	1
00RET	Rhetoric	Z	1
The course is focused of	n the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the	ne composition of	public speech
as well as to its nonverb	al aspects. Stylistics exercises, strategies for coping with stage-fright and a short excursion into the history of rhetoric are an	n integral part of th	ne course.
00UPRA	Introduction to Law	Z	1
00UPSY	Introduction to Psychology	Z	1

Code of the group: BSPJAZYKYZK

Name of the group: BS P languages

Requirement credits in the group:

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

Credits in the group: 0

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
04XAMZK	English for Intermediate Students Examination Jana Ková ová, Slav na Brownová Jana Ková ová	ZK	4		Z	PV
04XAPZK	English for Advanced Students Examination Slav na Brownová, Darren Copeland Jana Ková ová	ZK	4		Z	PV
04XCESZZK	Czech for Foreigners Beginners - Examination Slav na Brownová Jana Ková ová Jana Ková ová (Gar.)	ZK	4		Z	PV
04XCESMZK	Czech for Intermediate Students Examination Jana Ková ová Jana Ková ová Jana Ková ová (Gar.)	ZK	4		Z	PV
04XCESPZK	Czech for Foreign Students - Advanced Examination Jana Ková ová Jana Ková ová Jana Ková ová (Gar.)	ZK	4		Z	PV
04XFMZK	French for Intermediate Students Examination V ra Šlechtová V ra Šlechtová V ra Šlechtová (Gar.)	ZK	4		Z	PV
04XFPZK	French for Advanced Students Examination V ra Šlechtová V ra Šlechtová V ra Šlechtová (Gar.)	ZK	4		Z	PV
04XFZZK	French for Beginners Examination V ra Šlechtová V ra Šlechtová V ra Šlechtová (Gar.)	ZK	3		L	PV
04XNMZK	German for Intermediate Students Examination Miloslava echová Miloslava echová Miloslava echová (Gar.)	ZK	4		Z	PV
04XNPZK	German for Advanced Students Examination Miloslava echová Miloslava echová Miloslava echová (Gar.)	ZK	4		Z	PV
04XRMZK	Russian for Intermediate Students Examination Zhanna Isaeva Zhanna Isaeva Zhanna Isaeva (Gar.)	ZK	4		Z	PV
04XRPZK	Russian for Advanced Students Examination Zhanna Isaeva Zhanna Isaeva Zhanna Isaeva (Gar.)	ZK	4		Z	PV
04XRZZK	Russian for Beginners Examination Zhanna Isaeva Zhanna Isaeva Zhanna Isaeva (Gar.)	ZK	3		L	PV
04XSMZK	Spanish for Intermediate Students Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	4		Z	PV
04XSPZK	Spanish for Advanced Students Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	4		Z	PV
04XSZZK	Spanish for Beginners Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	3		L	PV

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

	ZK	4	
The course content is the examination as given by the study plan. The examination covers the AM1, AM2, and AM3 courses and consists of two parts - written (100 min) and oral			
(20-30 min). The student is expected to master the AM syllabus and demonstrate the ability to apply their knowledge gained in the three English courses.			
04XAPZK English for Advanced Students Examination	ZK	4	
The course content is the examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability to apply	their kno	wledge obtained	
in the three AP courses. The examination consists of 2 parts - written (100 min) and oral (30 min) and includes also oral presentation of a topic from the stu-	dent's field	d of study.	
04XCESZZK Czech for Foreigners Beginners - Examination	ZK	4	
The course content is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04XCES	1,2,3 cou	rses and can	
only be taken after successful completion of all three courses. Detailed information is to be obtained from the teacher.			
04XCESMZK Czech for Intermediate Students Examination	ZK	4	
The course content is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the CESM1,2	,3 course	s and can only	
be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.			
04XCESPZK Czech for Foreign Students - Advanced Examination	ZK	4	
The course content is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the CESP1,2	3 courses	and can only	
be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.			
04XFMZK French for Intermediate Students Examination	ZK	4	
The content is the examination as given by the study programme. The whole French programme is ended with an examination covering the contents of FM1	-FM3. The	e examination	
consists of a written and oral part and is organized according to Examination Instructions, a document available on the web.			
04XFPZK French for Advanced Students Examination	ZK	4	
The whole French program is ended with an examination covering the contents of FP1-FP3. The examination consists of a written and/or an oral part and is	organized	according to	
Examination Instructions, a document available on the web. Assessment of the presentation is included into the examination grading.			
04XFZZK French for Beginners Examination	ZK	3	
The content is the examination as given by the study plan. The course is terminated with an examination consisting of oral and written part. The examination	is ruled b	y the document	
Instruction for examination. Its content covers the levels FZ1 - FZ5.			

04XNMZK	German for Intermediate Students Examination	ZK	4
The course content is t	he examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examination	on consisting of tw	o parts - written
and oral, which cover t	he courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assess	ment. More detail	ed information
is to be obtained from	he teacher.		
04XNPZK	German for Advanced Students Examination	ZK	4
The course content is	he examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination	n consisting of two	o parts - written
and oral, which cover t	he courses NP1 - NP3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungrade	ed assessment. M	ore detailed
information is to be obt	ained from the teacher.		
04XRMZK	Russian for Intermediate Students Examination	ZK	4
The course content is	he examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	ledge and skills a	cquired in RM1
- RM3. Students are el	gible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given instruct	ions by the teache	er.
04XRPZK	Russian for Advanced Students Examination	ZK	4
The course content is	he examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	ledge and skills a	cquired in RP1
- RP3. Students are eli	gible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruction	ons by the teache	r.
04XRZZK	Russian for Beginners Examination	ZK	3
The course content is	he examination as given by the study plan. The course is completed by taking a written and oral examination testing the know	ledge and skills a	cquired in RZ1
- RZ5. Students are eli	gible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instruction	ons by the teache	r.
04XSMZK	Spanish for Intermediate Students Examination	ZK	4
The course content is t	ne examination as given by the study plan. SMZK examination consists of two parts - written and oral; to be eligible for the writte	n part, students w	ill have obtained
non-graded assessme	nt for course SM3.Oral examination follows the written part.		
04XSPZK	Spanish for Advanced Students Examination	ZK	4
The course content is t	he examination as given by the study plan. Examination SPZK consists of two parts, namely oral and written. The prerequisite f	or admission to o	ral part is having
passed the written test	Examination content is based on syllabi of courses SP1, SP2, and SP3 or on an individual study plan of the student.		
04XSZZK	Spanish for Beginners Examination	ZK	3
The course content is	he examination as given by the study plan. Examination consists of two parts - written and oral. Student can register for oral e	xamination only if	he/she has
passed the written exa	mination test.		

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

Code of the group: BSPMIMFV
Name of the group: BS P_MIB MF Optional courses
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
01ALGE	Algebra Zuzana Masáková Zuzana Masáková Zuzana Masáková (Gar.)	Z,ZK	6	4+1		V
01TA	Algebra and Calculus in Applications Lubomíra Dvo áková, Edita Pelantová Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	ZK	2	2P+0C		V
02DEF2	History of Physics 2 Igor Jex Igor Jex (Gar.)	Z	2	2+0	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 (Gar.)	Z	2	2P+0C	L	V
01DIMA3	Discrete Mathematics 3 Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	ZK	2	2P+0C		V
02FYS1	Physical Seminar 1 Martin Štefa ák Filip Petrásek (Gar.)	Z	2	0+2	Z	V
04AKS	English Conversation Jana Ková ová Jana Ková ová (Gar.)	Z	1	0+2	L	V
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
00MAM1	Essentials of High School Course 1 David Be 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

02NSAD1	Simulations and Data Analysis Tools 1 Zden k Hubá ek Zden k Hubá ek Zden k Hubá ek (Gar.)	Z	2	2P+0C	Z	V
15CH1	General Chemistry 1 Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z	3	2+1	Z	V
15CH2	General Chemistry 2 Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z,ZK	3	2+1	L	V
01PRST	Probability and Statistics Tomáš Hobza Tomáš Hobza Tomáš Hobza (Gar.)	Z,ZK	4	3+1	Z	V
02SMF	Seminar of Mathematical Physics Martin Štefa ák Ladislav Hlavatý (Gar.)	Z	2	0+2	Z	V
01SSM1	Seminar of Contemporary Mathematics 1	Z	2	0+2	Z	V
02STR	Mat j Tušek Edita Pelantová (Gar.) Special Theory of Relativity	ZK	2	2+0	L	V
TV-1	David B e Martin Štefa ák David B e (Gar.) Physical Education	Z	1	210	Z	V
TV-2	Physical Education	Z	1		 L	V
TV-3	Physical education	Z	1	0+2	Z	V
TV-4	Physical education Physical education	Z	1	0+2	 L	V
	Topology	_		-		
01TOP	estmír Burdík estmír Burdík estmír Burdík (Gar.)	ZK	2	2+0	Z	V
14TED	Creating Electronic Documents Aleš Materna, Ji í Martin ík Aleš Materna Aleš Materna (Gar.)	Z	2	26C		V
02UFEC	Introduction to Elementary Particle Physics Jaroslav Biel ík, Marek Matas Jaroslav Biel ík Jaroslav Biel ík (Gar.)	Z	2	2+0	Z	V
11UFP	Introduction to Solid State Physics Petr Kolenko Petr Kolenko (Gar.)	ZK	3		L	V
11UFPLN	Introduction to Solid State Physics	ZK	2	2+0	L	V
02UKP	Introduction to Curves and Surfaces	Z	2	1+1	L	V
02UKP1	Introduction to Curves and Surfaces Ladislav Hlavatý Martin Štefa ák Ladislav Hlavatý (Gar.)	Z	2	1P+1C	L	V
02UKP2	Introduction to Curves and Surfaces 2 Ladislav Hlavatý Martin Štefa ák Ladislav Hlavatý (Gar.)	Z	2	1P+1C	Z	V
02UKT	Introduction to Quantum Theory Martin Štefa ák Martin Štefa ák Martin Štefa ák (Gar.)	Z	2	2+0		V
12UMF	Introduction to Modern Physics	Z	3	2+1	L	V
12UNXAP	Jan Pšikal Jan Pšikal Jan Pšikal (Gar.) Introduction to UNIX	z	2	1P+1C	L	V
18ZALG	Milan Kucha ík Milan Kucha ík Milan Kucha ík (Gar.) Basics of Algorithmization Vladimír Jarý, Miroslav Virius, Petr Pauš, František Vold ich, Jan Tomsa, Zuzana Pet í ková, František Gašpar Vladimír Jarý Miroslav Virius (Gar.)	Z,ZK	4	2+2	L	V
02ZM1	Foundations of Physical Measurements 1 Solangel Rojas Torres, Petr Chaloupka Martin Štefa ák Petr Chaloupka (Gar.)	ZK	2	2P+0C	Z	v
02ZM2	Foundations of Physical Measurements 2 Petr Chaloupka Martin Štefa ák Petr Chaloupka (Gar.)	KZ	4	0P+4L	L	V
haractoristics of	the courses of this group of Study Plan: Code=BSPMIMFV Name=					
1	Algebra				,ZK	6
	s are treated in detail. Elements of the set theory cover only: equivalence and subvalence, t	he Cantorov-Ber	nstein theo		· I	-
	ordinals and cardinals. Further standard algebraic structures are addressed: semigroups,	monoids, groups	, rings, inte	gral domains,	principal ide	eal domains,
, 1	ent chapters are devoted to divisibility in integral domains and to finite fields. Algebra and Calculus in Applications				ZK	2
We illustrate methods ba	sed on combination of (CONtinuous) calculus and discrete (disCRETE) structures, so calle	es concrete math	ematics. Th			
	illustrated on problems from informatics. History of Physics 2				Z	2
1	I mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, c	orpuscular and v	vave approa	ach. Electricity	1	
	, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its					
	Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherfo acept of Nature and Universe of today.	iu anu Bohr. The	way to nuc	ieai energy, E	iementary p	ai licies,
02DRG	Differential Equations, Symmetries and Groups				Z	4
	re is to teach students computation of symmetries of the differential equations.			1	Z	2
	Discrete Mathematics 1 to elementary number theory and applications. It includes individual problem solving.			I	<u>د</u>	2
01DIM2	Discrete Mathematics 2 to recurrence relations. It includes individual problem solving.				Z	2
	Discrete Mathematics 3				ZK	2
e 1	oblems and methods of their solving from various parts of discrete mathematics. The semination of the	nar includes indiv	idual probl	em solving of	ones own cł	noice from the
given literature. 02FYS1	Physical Seminar 1			1	Z	2
	EDVSICAL SHOULAL L			1		

04AKS	English Conversation	Z	1
	the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral commun		ent will develop
their vocabulary for vari	ous communication situations and will master their communication strategy. They will also practise their listening skills in order	er to better follow	and participate
in discussions. The stud	lent will be trained to express their ideas clearly and according to current English usage, and become a more confident speal	ker.	
02LCF1	Experimental Laboratory 1	Z	2
Cavendish experiment.	Elasticity Thermal capacities. Electric measurements, Acoustic. Oscillations.		
02LCF2	Experimental Laboratory 2	Z	2
Electric and magnetic fi	eld, microwaves, Xray and gamma rays, geometric optics		
00MAM1	Essentials of High School Course 1	Z	1
Students are introduced	to mathematical concepts and methods used in the introductory physics course.		
00MAM2	Essentials of High School Math Course 2	Z	1
Review of basics of high			
02NSAD1	Simulations and Data Analysis Tools 1	Z	2
Data analysis and simu	lations of high energy elementary particle collisions. ROOT and Pythia programs.		
15CH1	General Chemistry 1	Z	3
	icepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practic		ted by examples
solved in exercises.			
15CH2	General Chemistry 2	Z,ZK	3
	nuation of the course General chemistry I. The main attention is paid to general principles governing chemical processes. Usi	· ·	oles, the fact that
the validity of these prin	ciples is not restricted only to chemical processes is documented. The significance and practical use of explained principles	are illustrated by	examples solved
in exercises.			
01PRST	Probability and Statistics	Z,ZK	4
It is a basic course of p	robability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition ar	nd continuing till th	ne Kolmogorov
definition. The notions a	is random variable, distribution function of random variable and characteristics of random variable are treated and basic limit	theorems are star	ted and proved.
	ory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testing are exp	plained.	
02SMF	Seminar of Mathematical Physics	Z	2
The purpose of the sem	ninar is to iluminate mathematical physics by virtue of solved examples. It is supposed that the teachers of the physics depart	ment will present	simple tasks
concerning their scientit	fic 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	a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of basic of	courses of mathe	matics.
02STR	Special Theory of Relativity	ZK	2
	nowledge of classical, non-quantum mechanics of the special theory of relativity fundamentals.		
TV-1	Physical Education	Z	1
TV-2	Physical Education	Z	1
TV-3	Physical education	Z	1
	•	Z	
TV-4	Physical education		1
01TOP	Topology	ZK	2
	e systematization and deepening the knowledge of general topology.	-	
14TED	Creating Electronic Documents	Z	2
, s	and presenting student theses. Individual exercises focus on creating and formatting texts, equations, charts, tables, present	ations and entire	documents in an
office suite.		-	
02UFEC	Introduction to Elementary Particle Physics	Z	2
•	easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subject		
11UFP	Introduction to Solid State Physics	ZK	3
	e fundamentals of diffraction stress analysis with a strong emphasis on the illustrations of the capability of X-ray diffraction to		
11UFPLN	Introduction to Solid State Physics	ZK	2
	ure is to introduce the undergraduate students to the study of the solid state physics.		
02UKP	Introduction to Curves and Surfaces	Z	2
e e	is an introduction to the differential geometry of simple manifolds - curves and two-dimensional surfaces. The basic concepts		
	plained. In the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essential p	art of the lecture a	are the examples
calculated by students		_	
02UKP1	Introduction to Curves and Surfaces	Z	2
-	is an introduction to the differential geometry of simple manifolds - curves and two-dimensional surfaces. The basic concepts		
	plained. In the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essential p	art of the lecture a	are the examples
calculated by students.		-	
02UKP2	Introduction to Curves and Surfaces 2	Z	2
	course 02UKP1. The properties of the first fundamental form are briefly summarized. The concept of the second fundamental	al form is introduc	ed, leading to
	n curvature. Finally, the usual concepts of Riemann geometry are introduced.	7	
02UKT	Introduction to Quantum Theory	Z	2
	s to introduce the basic principles of quantum theory and its interpretation on simple examples.	_	
12UMF	Introduction to Modern Physics	Z	3
	to be a concise introduction to modern / nonclassical physics for students who have already had basic classical physics cours	e. A part of the co	uise is delivered
in a computational labor		~	
12UNXAP	Introduction to UNIX	Z	2
	g systems. Personal computer, workstation and supercomputers. Processor, memory, bus, devices, hard disk, network interfa		
	systems. Operating system UNIX. Basic principles, kernel, kernel services. Documentation. File system, file atributes, working		
	shell) bash and its programming (scripts). Controlling processes, process status, computer load a process priorities. Standard	-	
-	etworks. Local computer networks. Global computer networks. Addresses and protocols TCP/IP. Network configutation of a c	omputer. Network	SELVICES.
	scp, etc. Network applications	7 71/	A
18ZALG	Basics of Algorithmization	Z,ZK	4
I THIS COURSE IS DEVOTED 1	to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of th	ie algorithm comp	nexity.

02ZM1	Foundations of Physical Measurements 1	ZK	2
The lecture is designe	d for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however	, it can be attende	d by students of
other branches. The g	pal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired c	lata on a PC. Stud	lents learn the
basic habits of work in	a physics lab.		
02ZM2	Foundations of Physical Measurements 2	KZ	4
The lecture is designe	d for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however	, it can be attende	d by students of
other branches. The g	pal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired c	lata on a PC. Stud	lents learn the
basic habits of work in	a physics lab.		

Code of the group: BSPJAZYKYZAP Name of the group: BS P jazyky zap Requirement credits in the group: Requirement courses in the group: Credits in the group: 0 Note on the group:

Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their Code Completion Credits Scope Semester Role members) Tutors, authors and guarantors (gar.) **English for Intermediate Students M1** 04XAM1 Ζ 0+2 Ζ 2 v Jana Ková ová **English for Intermediate Students M2** 04XAM2 Ζ 2 L 0+2 v Jana Ková ová **English for Intermediate Students M3** 04XAM3 Ζ 2 0+2 Ζ v Jana Ková ová **English for Advanced Students P1** Ζ 04XAP1 Ζ 2 0+2 V Jana Ková ová **English for Advanced Students P2** 04XAP2 Ζ 2 0+2 L V Jana Ková ová **English for Advanced Students P3** 04XAP3 Ζ 2 0+2 Ζ v Jana Ková ová **Czech for Foreigners - Beginners 1** 04XCESZ1 Ζ 2 Ζ 0+2v Jana Ková ová Jana Ková ová (Gar.) Czech for Foreigners - Beginners 2 04XCESZ2 Ζ 2 0+2 L v Jana Ková ová Jana Ková ová (Gar.) Czech for Foreigners - Beginners 3 04XCESZ3 Ζ 2 2S Ζ v Jana Ková ová Jana Ková ová (Gar.) Czech for Foreigners - Intermediate 1 Ζ Ζ 04XCESM1 2 0+2V Jana Ková ová Jana Ková ová (Gar.) Czech for Foreigners - Intermediate 2 04XCESM2 Ζ 2 L 0+2 v Jana Ková ová Jana Ková ová (Gar.) **Czech for Foreigners - Intermediate 3** 04XCESM3 7 2 7 0+2v Jana Ková ová Jana Ková ová (Gar.) Czech for Foreign Students - Advanced 1 04XCESP1 Ζ 2 Ζ 0+2 V **Jana Ková ová** Jana <u>Ková ová (Gar.</u> Czech for Foreigners - Advanced 2 04XCESP2 Ζ 2 0+2 L v **Jana Ková ová** Jana Ková ová (Gar.) Czech for Foreigners - Advanced 3 04XCESP3 Ζ 2 0+2 Ζ v Jana Ková ová Jana Ková ová (Gar.) French for Intermediate Students M1 04XFM1 Ζ 2 Ζ 0+2 v V ra Šlechtová V ra Šlechtová (Gar.) French for Intermediate Students M2 04XFM2 Ζ 2 L 0+2v V ra Šlechtová V ra Šlechtová (Gar.) French for Intermediate Students M3 04XFM3 7 2 0+27 V V ra Šlechtová V ra Šlechtová (Gar.) French for Advanced Students P1 04XFP1 Ζ 2 0+2 Ζ v V ra Šlechtová V ra Šlechtová (Gar., French for Advanced Students P2 2 04XFP2 Ζ 0+2 L v V ra Šlechtová V ra Šlechtová (Gar.) French for Advanded Students P3 04XFP3 2 Ζ 0+2 Ζ V V ra Šlechtová V ra Šlechtová (Gar.) French for Beginners Z1 04XFZ1 Ζ 2 0+4L V V ra Šlechtová V ra Šlechtová (Gar.) French for Beginners Z2 Ζ 04XFZ2 2 0+4 Ζ v V ra Šlechtová V ra Šlechtová (Gar.) French for Beginners Z3 Ζ 04XFZ3 2 0+4L v V ra Šlechtová V ra Šlechtová (Gar.) French for Beginners Z4 V ra Šlechtová V ra Šlechtová (Gar.) 04XFZ4 Ζ 2 0+4 Ζ v French for Beginners Z5 Ζ L 04XFZ5 2 0+4v V ra Šlechtová V ra Šlechtová (Gar.)

04XNM2	German for Intermediate Students M2 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	L	V
04XNM1	German for Intermediate Students M1 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XNM3	German for Intermediate Students M3 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XNP1	German for Advanced Students P1 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XNP2	German for Advanced Students P2 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	L	V
04XNP3	German for Advanced Students P3 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XRM1	Russian for Intermediate Students M1 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRM2	Russian for Intermediate Students M2 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	L	V
04XRM3	Russian for Intermediate Students M3 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRP1	Russian for Advanced Students P1 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRP2	Russian for Advanced Students P2 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	L	V
04XRP3	Russian for Advanced Students P3 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRZ1	Russian for Beginners Z1 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	L	V
04XRZ2	Russian for Beginners Z2 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	Z	V
04XRZ3	Russian for Beginners Z3 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	L	V
04XRZ4	Russian for Beginners Z4 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	Z	V
04XRZ5	Russian for Beginners Z5 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	L	V
04XSM1	Spanish for Intermediate Students M1 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSM2	Spanish for Intermediate Students M3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	L	V
04XSM3	Spanish for Intermediate Students M3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSP1	Spanish for Advanced Students P1 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSP2	Spanish for Advanced Students P2 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	L	V
04XSP3	Spanish for Advanced Students P3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSZ1	Spanish for Beginners Z1 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	L	V
04XSZ2	Spanish for Beginners Students Z2 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	Z	V
04XSZ3	Spanish for Beginners Z3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	L	V
04XSZ4	Spanish for Beginners Z4 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	Z	V
04XSZ5	Spanish for Beginners Z5 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	L	V
Characteristics of the	courses of this group of Study Plan: Code=BSPJAZYKYZAP I	Name=BS P i	azyky za	D		
	lish for Intermediate Students M1				Z	2
	udents who have successfully completed the full secondary school English language	course at least of	the A2 lovel	of the Com		
	CEFR). It provides an introduction into English for Specific and Academic Purposes (
	communication situations. Thus it covers topics related to the student's life and needs	as well as topics	or subtechr	ical interest	. Attention is a	also paid to
extending the knowledge of g						
	plish for Intermediate Students M2				Z	2
The AM2 course expects the	student to have completed the AM1 course. It develops their skills for work with subte	chnical texts, focu	using also m	ore on spec	ific grammar,	tunctions,

The AMZ course expect	is the student to have completed the Alvin course. It develops their skills for work with subtechnical texts, locusing also more	on specific granin	iai, iunciions,
and lexical items typical	of ESP and EAP (e.g., definition, existence and classification of phenomena, object descriptions). Part of the course is also gui	ded writing. If nece	essary, grammai
revision is included.			
04XAM3	English for Intermediate Students M3	Z	2

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

04XAP1 English for Advanced Students P1	Z	2
The course is designed for students who have successfully completed the full secondary school English language course (at least the B1 level of t	ne Common Europ	
of Reference for Languages - CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into the fundam	-	
grammar, and style typical of professional oral and written communication situations (fundamentals of terms in mathematics and physics, definition	s, graph descriptio	ns, etc). It also
covers professional oral and written communication on topics related to the undergraduate's life and needs. It develops skills for free professional writi	ng (writing a CV, lett	er of application,
polite request). If necessary, revision of selected grammar topics is included.		
04XAP2 English for Advanced Students P2	Z	2
The AP2 course is based on AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of chose	n branches of scier	ice. According to
the students' needs it concentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typical rhe	orical functions (e.	g., various types
of descriptions, and, if possible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading of linguis	tically more demar	nding materials.
The course extends the student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focused on format	I writing including the	he sentence and
paragraph structure, linking, cohesion and coherence in texts.		
04XAP3 English for Advanced Students P3	Z	2
The AP3 course is based on AP2 and expects the student to work without any guidance with authentic professional materials and to interpret the tex	. It includes training	oral and written
communication skills and functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summarizing, w	riting an abstract) a	ind, if possible,
also preparing a project on a given or chosen topic and presenting it. The course places emphasis on distinguishing levels of formal and informal la	inguage both in ora	al and written
communication.		
04XCESZ1 Czech for Foreigners - Beginners 1	Z	2
The course is designed for students of the English programme. Students will become acquainted with the main characteristics of Czech (phonetic a	and grammar featur	es) and they will
acquire basic language and speaking skills. The course focuses on pronunciation exercises, simple social phrases, and oral and written communic	ation in the most co	ommon everyday
situations. The course covers roughly lessons 1-3 of eština Express (Czech Express) by L. Holá and P. Bo ilová.		
04XCESZ2 Czech for Foreigners - Beginners 2	Z	2
The language and communication competences acquired in CESZ1 are further developed. Students deepen their knowledge of the declension and	d conjugation syste	m and practise
basic communication topics. The course covers roughly lessons 3-5 in Czech Express by L. Holá and P. Bo ilová.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
04XCESZ3 Czech for Foreigners - Beginners 3	Z	2
The course further develops the language and communication competences acquired in the XCESZ1 and XCESZ2 courses. The teaching focuses	1 1	
fixing correct pronunciation and deepening grammar, features through practice, as well as introducing the Czech culture. Students are asked to pro		
frequent types of dialogue. They also practise understanding texts in terms of main ideas or looking for specific details in texts. The course covers ro		
	aginy locoone e 7 n	
04XCESM1 Czech for Foreigners - Intermediate 1	7	2
04XCESM1 Czech for Foreigners - Intermediate 1 The course is focused on correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending		
	the student s vocat	bulary for various
social situations.	7	0
04XCESM2 Czech for Foreigners - Intermediate 2	Z	2
The course develops the topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and re-	ading skills and tra	ains the student
in understanding common abbreviations, abbreviated words, and mathematical terms and formulas.		
04XCESM3 Czech for Foreigners - Intermediate 3	Z	2
The last course revises morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is espectively a student is the student of the s	ecially focused on s	stylistics and
lexicology and on developing the student's writing skills.		
04XCESP1 Czech for Foreign Students - Advanced 1	Z	2
The prerequisite of the course is very good knowledge of the Czech language, i.e., communicative competences at least at level B2 of the Common	•	
It is focused partly on revision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of		
basics of functional style of engineering and professional communication, both in spoken and written form. The topics include University Studies and	d Student Life. Wri	tten practice
includes communication with teachers and faculty administrators.		
04XCESP2 Czech for Foreigners - Advanced 2	Z	2
This course extends the student's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with technical	and specialist texts	s placing greater
emphasis on individual work.		
04XCESP3 Czech for Foreigners - Advanced 3	Z	2
The course develops the student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presenta	tion, and, finally, pr	esentation of the
student's project. Writing skills necessary for professional communication are trained.		
04XFM1 French for Intermediate Students M1	Z	2
French - intermediate FM The objective of this three-semester course is to improve and further develop communication in the French language in the	1	
will be able to communicate in social interaction and in academic, scientific and professional environment. They will be able to use the language to		
information and to solve problems. FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises,	e	
skills gained in previous study. The following topics are covered: University studies in our country and in France, writing of transactional letters, CV, p	-	
to an advert, French culture and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts, wo		-
04XFM2 French for Intermediate Students M2	Z	2
Course FM2 builds on FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science	1	
and scientific language (passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French si		
scientists, artists and architects. Description of an object, device, shapes, dimensions, material.		3,,
04XFM3 French for Intermediate Students M3	Z	2
The course is focused on improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures		
participle structures, compound tenses). Text summaryStudents prepare a written paper which will be delivered in form of an oral presentation in-		
field of students' future specialisation or to their interest and generally covers a technical /applied science topic. It is not a translation but a creative		
and one's own knowledge/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesion and	-	
04XFP1 French for Advanced Students P1	Z	2
FP advanced course The objective of this three-semester course is to improve and further develop communication in the French language in both	1	
be able to communicate in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit ge		
to solve problems. FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topics are		
passé composé-imparfait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of transactio	· ·	•
request, answer to an advert, environmental issues, success of French science and technology, chosen topics from French regional culture, Paris. To	-	
internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation.		

04XFP2 French for Advanced Students P2	Z	2
With the link to P1 contents, the course further develops language skills. Focus is put on reading popular science texts and on oral communication or	_	_
technical and scientific communication are stressed (passive voice, nominalization, word formation).	in given topicorrie	ata oo typical of
04XFP3 French for Advanded Students P3	Z	2
	_	1
The course is focused on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in skill - translation of shorter texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally co		
topic. It is a creative work compiled from 3 French sources. Preparation of several set topics for oral examination.		applied science
	_	
04XFZ1 French for Beginners Z1	Z	2
French for beginners The objective of this 5-level course is to be able to communicate in French orally and in writing in situations of everyday life , in	-	
The course includes French for specific / technical communication and reading of popular science and scientific texts. FZ1 The objective is to be able		
level, actively using the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Pravd		-
(Francouzština pro za áte ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4 : introductions		
giving the directions, simple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronuncial	tion and grammar	
04XFZ2 French for Beginners Z2	Z	2
The course is linking up with FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of	the textbook: Prav	/da - Pravdová :
French for Beginners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreem	ent - disagreeme	nt, apology,
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm	unication. Specifi	c topics covered:
How does the machine work? A few expressions concerning the study. Name of University and Faculty.		
04XFZ3 French for Beginners Z3	Z	2
The course builts upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - F	_	
Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for ir		° I
pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.		
	7	2
04XFZ4 French for Beginners Z4	Z	. – .
The course builds up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The of the second state	•	
lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the le		
Students of FJFI. The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sho	pping, weather, u	niversity in our
country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet.		
04XFZ5 French for Beginners Z5	Z	2
All four skills acquired in FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topic. The	y 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 materials.	Topics: on physics	s from lecture
notes, success of French science and technology, information about France. Grammar is systemized and complemented with syntax (subordinate cl	auses, typical cor	njunctions,
subjunctive clauses, gerund, passive.		
04XNM2 German for Intermediate Students M2	7	2
The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the relation	n between techno	. –
the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and		
practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course system		
phenomena important for professional discourse (participles, relative clauses).		anor grannadoar
	Z	2
04XNM1 German for Intermediate Students M1	-	
The objective of the course is to level off the students' skills in the German language. The course focuses on revision of more difficult phenomena an		
word formation processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Repul	-	
environmental issues together with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physicis	ts, and the fundar	nentals of IT
terminology. It develops communication on related topics and is aimed at correct pronunciation, grammatical correctness and understandability.		
04XNM3 German for Intermediate Students M3	Z	2
The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the relatio	n between techno	logy and society,
the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and	l car technology e	tc. Students
practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course syster	natically revises o	ther grammatical
phenomena important for professional discourse (participles, relative clauses).		
04XNP1 German for Advanced Students P1	Z	2
This course requires good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be le	velled off at the b	eainning of the
course. The course is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for		
more difficult grammar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on		-
i.e., telephoning.	,	
04XNP2 German for Advanced Students P2	Z	2
The course develops the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extend		
vocabulary range. It introduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and	a practising iorma	communication,
both written and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indirect speech).		
04XNP3 German for Advanced Students P3	Z	2
The course consists of 3 main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a va		
(traffic problems and car accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the v	ocabulary range i	n fields such as
nuclear power engineering, 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 process information gained from their reading of complex and difficult texts and present it to the class in a simplified oral form. The students are trained to process information gained from their reading of complex and difficult texts and present it to the class in a simplified oral form.	he course also inc	ludes translation
practice to and from German.		
04XRM1 Russian for Intermediate Students M1	Z	2
The course is designed for students with previous knowledge of Russian from secondary schools. Students are supposed to know the Russian alphat	bet (both printed a	ind handwritten),
basic vocabulary for communication in everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday need, ask		
they can use basic grammar structures (verbal and nominal forms, irregular verbs, pronouns). The initial knowledge corresponds to the achievement	level of the RZ2	course. The
contents and scope of the course correspond approximately to the RZ3 course, but for half of the time allotted in the timetable.		
04XRM2 Russian for Intermediate Students M2	Z	2
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.	· -	-
	Z	2
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 RZ5, h	owever, ior hair of	the time allotted
in the timetable.		

0.4VDD4 Duration for A durate of Obstate D4	7 0
04XRP1 Russian for Advanced Students P1	Z 2
The entrance requirement for the course is to achieve the B1 CEFR level. The objective of the course is revision of standard la	nguage structures, practicing more difficult grammar
structures, understanding the fundamentals of technical language and training writing skills.	
04XRP2 Russian for Advanced Students P2	Z 2
The course is based on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives,	participles, passives, verb aspects, specific syntactic
structures). Stress is put on independent oral and written communication.	
04XRP3 Russian for Advanced Students P3	Z 2
	_ _
The course is based on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral	
courses require good previous knowledge of general language at secondary level (listening, reading, correct communication in	
these skills. Further study is aimed at professional and technical skills (reading technical literature according to the students' s	
develop their subtechnical vocabulary and practice quick and correct communication in professional situations. They will be able	e to both speak write accurately and with confidence on
technical topics.	
04XRZ1 Russian for Beginners Z1	Z 2
The course represents the first stage of the five-semester programme, its final aim being reading and understanding profession	al texts written in Russian. Thus it begins with mastering
the Russian alphabet (for both reading and writing skills) and fundamentals of grammar necessary for everyday communication	
a short text with marked stress, understand its contents and summarize it.	
	7 0
04XRZ2 Russian for Beginners Z2	Z 2
The second semester of the programme is designed to teach skills for basic communication in everyday situations and for reac	ing easy and short subtechnical texts. Students will be
able to communicate using short sentences and appropriate structures, and read aloud with confidence a short text without ma	rked stress. They will also develop their vocabulary and
master further grammatical structures. They will have mastered with confidence the Russian alphabet and will be able to use it	in writing.
04XRZ3 Russian for Beginners Z3	Z 2
The course is based on RZ2 and includes further everyday topics, develops understanding of short compact texts on new subter	
and listening) and introduces new grammar. Students will be trained to distinguish intonation patterns while listening to spoken	anyuaye. They will be able to respond so as to be
understood, and to express their opinion. Writing skills will be trained on guided writing tasks and note-taking.	
04XRZ4 Russian for Beginners Z4	Z 2
The course is based on RZ3. It improves and expands the knowledge of general language in all four skills (reading and understar	iding longer texts with a certain percentage of unfamiliar
words, oral communication in everyday situations, writing longer texts). Students are trained to use grammar structures effective	ely (e.g., irregular verbs, differences in verb patterns
from Czech, modality, imperatives, conditionals). They practice and develop communication skills for everyday situations (food,	
communication on more specific topics (environment, addictions, the green movement). They become acquainted with various	
	geographical data (e.g., Obena), learn now to minin
forms, look up the information from the timetable, learn about Russian holidays and typical meals.	
04XRZ5 Russian for Beginners Z5	Z 2
The course expects the student to have completed RZ4. It concentrates predominantly on reading skills (working with profession	al texts, i.e. understanding, extracting and summarizing
information from a specialized text) and speaking, and to a certain extent, writing about the professional information obtained b	y reading the texts. Communication skills are trained on
everyday topics. Studying grammar is based on professional and technical texts and only includes items typically used in profe	ssional communication (verbal adjectives, participles,
passive voice). Students develop their technical and economic vocabulary, and are also trained in some professional skills (writ	
	Z 2
	I I
The course is designed for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondar	
vocabulary and pays attention to further grammar topics (e.g., perifrasis verbales, futuro imperfecto, direct object and indirect of	
subjunctive), to written and oral communication on a given everyday or easy subtechnical topic, for which the students are train	ed by reading texts or listening to them.
04XSM2 Spanish for Intermediate Students M3	Z 2
The course develops the students' knowledge from the previous course (SM1). Students are gradually acquainted with fundam	entals of Spanish for specific purposes in order to be
able to work with specialized texts on the Internet.	
04XSM3 Spanish for Intermediate Students M3	7 2
The course books are supplemented with additional subtechnical materials, so the students will be gradually acquainted with the	
enough to use the Internet in Spanish and search for information of their specialization or field of interest. Students will use the	
final part of the programme, general Spanish course based on course books, covers presentations and, finally, a written and or	al examination.
04XSP1 Spanish for Advanced Students P1	Z 2
Course concentrates on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well a	s written communication. Course prerequisites: level B2
of CEFR.	
	7 0
04XSP2 Spanish for Advanced Students P2	Z 2
Course SP2 is the second part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises r	nore grammar and syntax and focuses on independent
written communication.	
04XSP3 Spanish for Advanced Students P3	Z 2
Course SP3 is the final part of the advanced Spanish course. It is based on texts chosen by the students according to their futu	e specialization. It is focused on written communication
based on what students will need in their career.	
	7 0
04XSZ1 Spanish for Beginners Z1	Z 2
Course SZ1 is the first stage of the five-semester programme of Spanish studies; during the first stage the students will master	phonetics and fundamental grammar structures and will
be able to communicate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary	of general Spanish and will develop it.
04XSZ2 Spanish for Beginners Students Z2	Z 2
Course SZ2 is based on course SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grar	1 1
them to understand short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-spea	
Realia of Spanish-speaking countries are also included.	
04XSZ3 Spanish for Beginners Z3	Z 2
The course is based on course SZ2, and develops the student's vocabulary and grammar structure. The course covers realia (history and culture) of the Spanish-speaking countries,
mainly of Spain. It pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the geru	and and the imperative). It includes written and oral
communication on a given general topic, for which the student is trained by reading texts or listening to them.	
04XSZ4 Spanish for Beginners Z4	Z 2
The course is based on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social	1 – 1 –
Spain. It pays attention to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronot	
to written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or	
04XSZ5 Spanish for Beginners Z5	Z 2
The course books are supplemented with additional subtechnical materials, so the students will be gradually acquainted with p	eculiarities of Spanish for specific purposes. In its final
part, the general Spanish course based on the course book will end with presentations and, finally, a written and oral examinat	

List of courses of this pass:

Code	Name of the course	Completion	Credits
00EKOT	Economy in Technology The course introduces the basics of micro- and macroeconomics.	Z	1
00ETV	Ethics of Science and Technology	Z	1
00MAM1	Essentials of High School Course 1 Students are introduced to mathematical concepts and methods used in the introductory physics course.	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
	sed on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the	1	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 a	n integral part of the	e course.
00UPRA	Introduction to Law	Z	1
00UPSY	Introduction to Psychology	Z	1
01ALGE	Algebra	Z,ZK	6
	kioms are treated in detail. Elements of the set theory cover only: equivalence and subvalence, the Cantorov-Bernstein theorem, the on of ordinals and cardinals. Further standard algebraic structures are addressed: semigroups, monoids, groups, rings, integral dor		
	fields, lattices. Independent chapters are devoted to divisibility in integral domains and to finite fields.		
01ANA3	Mathematical Analysis A 3	Z,ZK	9
· · · · · · · · · · · · · · · · · · ·	Function sequences and series, introduction to topology and metric spaces, differential calculus of functions of several varia	bles.	
01ANA4	Mathematical Analysis A 4 Inverse and implicit functions, constrained extrema, measure and integration theory, contour and surface integrals.	Z,ZK	9
01BASE	Bachelor Seminar	Z	1
In the first part of the	e seminar, students familiarize themselves with the general principles of publishing and presenting scientific work and the formal req	uirements for bach	elors degree
. ,	Ity. The second part is designed as a practical training for the defense of the bachelors degree project. The students give oral prese achieved during the work on their projects. Each presentation is followed by a discussion on scientific matters as well as on the possil performance.		
01DIFR	Differential Equations	Z,ZK	4
	s introduction in the solution of ordinary differential equations. It contains a survey of equation types solvable analytically, basics of t linear types of equations and introduction in the theory of boundary-value problems.		-
		Z	2
01DIM1	Discrete Mathematics 1 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.		
01DIMA3	Discrete Mathematics 3	ZK	2
	w problems and methods of their solving from various parts of discrete mathematics. The seminar includes individual problem solvi given literature.	ng of ones own cho	pice from the
01FAN2	Functional analysis 2	Z,ZK	5
	to present selected fundamental results from functional analysis including basic theorems of the theory of Banach spaces, closed of		-
	Hilbert-Schmidt operators, spectral decomposition of bounded self-adjoint operators.		
01FANA1	Functional Analysis 1	Z,ZK	5
01FKO	Functions of Complex Variable	Z,ZK	3
	om outlining the Jordan curve theorem and the Riemann-Stieltjes integral. Then basic results of complex analysis in one variable are e		
	n and the Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Cauchy-Riemann equations, holomorphic and analytic functions, holomorphic and analytic functions, holomorphic and holomorphic an	, ,	
theorem, roots of a h	nolomorphic function, analytic continuation, isolated singularities, the maximum modulus principle, Liouville's theorem, the Cauchy es	timates, Laurent se	ries, residue
	theorem.	7	2
01LAL 1. Vector space. 2.	Linear Algebra 1 Linear dependence and independence. 3. Basis and dimension. 4. Subspaces of vector spaces. 5. Linear mappings. 6. Matrices of theorem.	Z linear mappings. 7.	2 Frobenius
01LAL2	Linear Algebra 2	Z,ZK	4
	e matrix and operator. 2. Permutation and determinant. 3. Spectral theory (eigenvalue, eigenvector, diagonalization). 4. Hermitian a		1
	onality. 6. Metric geometry. 7. Riesz theorem and adjoint operator. Outline of the exercises: 1. Methods for calculation of inverse mat		
of determinants.	 Calculation of eigenvalues and eigenvectors. 4. Hermitian and quadratic forms. Canonical form. 5. Scalar product and orthogonal complements. 6. Geometry exercises and examples. 7. Adjoint operators. 	ity. Calculation of o	rthogonal
01LALZ	Linear Algebra 1, exam	ZK	2
01MAN	Calculus 1 Basic calculus (real analysis, functions of one real variable, differential calculus).	Z	4
	Calculus 2	Z,ZK	8
01MAN2			_
1. Continuation of c	tifferential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolute a ower series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of integ		-
1. Continuation of c			-

r			
01NMA1	Numerical Mathematics 1	ZK	4
The course introdu	ices to numerical methods for solving the basic problems arising from technical and research problems. The accent is put on a good theoretical methods.	understanding of	the root o
01PRST		Z,ZK	4
1	Probability and Statistics of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition and o		· ·
	ns as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit the	-	-
	basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testir		
01RMAF	Equations of Mathematical Physics	Z.ZK	7
-	ourse is solving integral equations, theory of generalized functions, classification of partial differential equations, theory of integral transmission of the solving integral equations and the solving integral equations are solving integral equations.	,	1
	partial differential equations (boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).		
01SSM1	Seminar of Contemporary Mathematics 1	Z	2
	rovides a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of basic		matics.
01TA	Algebra and Calculus in Applications	ZK	2
1	Is based on combination of (CONtinuous) calculus and discrete (disCRETE) structures, so calles concrete mathematics. Theorems a		
	informatics and they are illustrated on problems from informatics.		
01TOP	Τοροίοσγ	ZK	2
1	The aim of lecture is the systematization and deepening the knowledge of general topology.		1
02BPMI1	Bachelor Thesis 1	Z	5
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	ect supervisor du	ing comm
	regular meetings and discussions.	·	0
02BPMI2	Bachelor Thesis 2	Z	10
	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	ect supervisor du	-
	regular meetings and discussions.	·	0
02DEF1	History of Physics 1	7	2
	ce in the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural philo	sophers, Aristotle	Physics
	Archimed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galileo, H		-
	as experimental science. Newton and his work.		
02DEF2	History of Physics 2	Z	2
Development of	classical mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. E	electricity and mag	netism -
lectrostatics, galva	anism, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzmann.	The birth of mode	rn quantu
and relativistic ph	nysics, Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclear en	nergy, Elementary	particles
	standard model. The concept of Nature and Universe of today.		
02DRG	Differential Equations, Symmetries and Groups	Z	4
02DRG		Z	4
02DRG 02ELMA	Differential Equations, Symmetries and Groups	Z Z,ZK	4
02ELMA	Differential Equations, Symmetries and Groups The purpose of the lecture is to teach students computation of symmetries of the differential equations.	Z,ZK	6
02ELMA	Differential Equations, Symmetries and Groups The purpose of the lecture is to teach students computation of symmetries of the differential equations. Electricity and Magnetism	Z,ZK luctivity. Basics of	6 the relativ
02ELMA	Differential Equations, Symmetries and Groups The purpose of the lecture is to teach students computation of symmetries of the differential equations. Electricity and Magnetism Ilomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectrics. Electric current and circuits, cond	Z,ZK luctivity. Basics of	6 the relativ
02ELMA lectric charge, Cou theory. E 02FYS1 The seminar is de	Differential Equations, Symmetries and Groups The purpose of the lecture is to teach students computation of symmetries of the differential equations. Electricity and Magnetism ulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectrics. Electric current and circuits, cond ilectrodynamic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, RLC circuits. Electromagnetic waves, M Physical Seminar 1 evoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of physics	Z,ZK luctivity. Basics of Maxwell equations Z s presented in the	the relatives.
02ELMA lectric charge, Cou theory. E 02FYS1 The seminar is de Mechar	Differential Equations, Symmetries and Groups The purpose of the lecture is to teach students computation of symmetries of the differential equations. Electricity and Magnetism ulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectrics. Electric current and circuits, cond Electrodynamic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, RLC circuits. Electromagnetic waves, M Physical Seminar 1	Z,ZK luctivity. Basics of Maxwell equations Z s presented in the	the relatives.
02ELMA lectric charge, Cou theory. E 02FYS1 The seminar is de	Differential Equations, Symmetries and Groups The purpose of the lecture is to teach students computation of symmetries of the differential equations. Electricity and Magnetism ulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectrics. Electric current and circuits, cond ilectrodynamic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, RLC circuits. Electromagnetic waves, M Physical Seminar 1 evoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of physics	Z,ZK luctivity. Basics of Maxwell equations Z s presented in the	the relatives.
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02ELMA lectric charge, Cou theory. E 02FYS1 The seminar is de Mechar	Differential Equations, Symmetries and Groups The purpose of the lecture is to teach students computation of symmetries of the differential equations. Electricity and Magnetism ulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectrics. Electric current and circuits, cond Electrodynamic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, RLC circuits. Electromagnetic waves, N Physical Seminar 1 evoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of physics nics. The problems are chosen, studied and presented by the students themselves, with the possibility to use PC and physical labora Geometric Methods in Physics 1	Z,ZK luctivity. Basics of Maxwell equations Z s presented in the atory equipments.	6 the relatives.
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02TEF1	Theoretical Physics 1	Z,ZK	4
	roduction to analytical mechanics. The students acquire knowledge of the basic concepts of the Lagrange and Hamiltonian formalisms		
	lynamics (Newtons, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these methods is illustrated on elementary		
problem, the motion	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		1
	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 cal systems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials; kinetic theory: Maxwell's velocity dist		-
02TSFA	Thermodynamics and Statistical Physics	Z,ZK	4
	nodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chateli	· ·	-
	dy description from a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical		
	of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena.		
02UCF	Introduction to Particle Physics	Z,ZK	4
	v of nuclear and subnuclear physics from the beginning of the 20th century until today. The lecture describes basic properties of atom		-
nuclear reactions.	Then it concentrates on elementary particle physics. It reviews basic properties of elementary particles and fundamental interactions the so-called Standard Model of elementary particles. The lecture contains the overview of current particle and astroparticle expe	•	mulation of
02UFEC	Introduction to Elementary Particle Physics	Z	2
	se provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the su	-	1
02UKP	Introduction to Curves and Surfaces	Z	2
	ecture is an introduction to the differential geometry of simple manifolds - curves and two-dimensional surfaces. The basic concepts for		
Frenets formulae ar	re explained. In the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essential part	of the lecture are the	ne examples
	calculated by students	7	0
02UKP1	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	Z	2
-	re explained. In the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essential part		
	calculated by students.		
02UKP2	Introduction to Curves and Surfaces 2	Z	2
The lecture extend	ds the course 02UKP1. The properties of the first fundamental form are briefly summarized. The concept of the second fundamental	form is introduced,	leading to
0.0L II/T	the mean and Gaussian curvature. Finally, the usual concepts of Riemann geometry are introduced.	-	-
02UKT	Introduction to Quantum Theory	Z	2
02VOAF	The aim of the lecture is to introduce the basic principles of quantum theory and its interpretation on simple examples. Waves, Optics and Atomic Physics	Z.ZK	6
Wave phenomena		· ·	-
	a in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polariza netrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Bro	ition, interference,	diffraction,
coherence. Geor	a in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polariza	ttion, interference, oglie waves,the Sc	diffraction, hrodinger
coherence. Geor 02ZM1	a in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization netrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Bro equation, stationary states and spectra of finite systems. Foundations of Physical Measurements 1	bition, interference, oglie waves,the Sc ZK	diffraction, hrodinger
coherence. Geor 02ZM1 The lecture is desig	a in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarizat metrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Bro equation, stationary states and spectra of finite systems. Foundations of Physical Measurements 1 gned for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it of	tion, interference, oglie waves,the Sc ZK can be attended by	diffraction, hrodinger 2 students of
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coherence. Geor 02ZM1 The lecture is desig other branches. Th	a in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization is netrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Browequation, stationary states and spectra of finite systems. Foundations of Physical Measurements 1 gened for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it compared for the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired date basic habits of work in a physics lab.	tion, interference, oglie waves,the Sc ZK can be attended by	diffraction, hrodinger 2 students of
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coherence. Geor 02ZM1 The lecture is desig other branches. Th 02ZM2 The lecture is desig	a in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization in the provide state of the energy indication is the provide state of the energy indication. The goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired date basic habits of work in a physics lab. Foundations of Physical Measurements 2 goal of the lecture is to introduce the basics of physical particle physics, Physical engineering, Nuclear engineering), however, it consists and the physical specializations (Experimental particle physics, Physical Measurements 2 goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired date basic habits of physical specializations (Experimental particle physics, Physical measurements 2 goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired date basic habits of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired date basic habits of physical measurements are physical engineering, Nuclear engineering), however, it can be goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired date basic basic habits of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired date basic basic habits of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired date basic basic basic habits of the lecture is to introduce the basics of physical measurements are methods of processing and evaluation of acquired date basic	tion, interference, oglie waves,the Sc ZK can be attended by a on a PC. Student KZ can be attended by	diffraction, hrodinger 2 students of ts learn the 4 students of
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coherence. Geor 02ZM1 The lecture is desig other branches. Th 02ZM2 The lecture is desig other branches. Th 04AKS	a in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization metrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Brogenation, stationary states and spectra of finite systems. Foundations of Physical Measurements 1 gened for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it consists habits of work in a physics lab. Foundations of Physical Measurements 2 gened for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it consists habits of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired data basic habits of work in a physics lab. Foundations of Physical Measurements 2 gened for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it consists habits of work in a physics lab. English Conversation	tion, interference, oglie waves,the Sc ZK can be attended by a on a PC. Student KZ can be attended by a on a PC. Student Z	diffraction, hrodinger 2 students of ts learn the 4 students of ts learn the 1
coherence. Geor 02ZM1 The lecture is desig other branches. Th 02ZM2 The lecture is desig other branches. Th 04AKS The course will de	a in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization metrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Brogenation, stationary states and spectra of finite systems. Foundations of Physical Measurements 1 gened for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it consists habits of work in a physics lab. Foundations of Physical Measurements 2 gened for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it consists habits of physical specializations (Experimental particle physics, Physical measurements 2 gened for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it consists habits of work in a physics lab. Foundations of Physical measurements, the methods of processing and evaluation of acquired data basic habits of work in a physics lab. English Conversation velop the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral communication students of oral communication students throughout their previous studies. It aims to improve all aspects of oral communication students of physical special previous studies. It aims to improve all aspects of oral communication students of physical special previous studies. It aims to improve all aspects of oral communication students throughout their previous studies. It aims to improve all aspects of oral communication students appreciation of the previous studies. It aims to improve all aspects of oral communication students appreciation of the previous studies. It aims to improve all aspects of oral communicati	tion, interference, oglie waves,the Sc ZK can be attended by a on a PC. Student KZ can be attended by a on a PC. Student Z ation. The student of	diffraction, hrodinger 2 students of ts learn the 4 students of ts learn the 1 will develop
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	polite request). If necessary, revision of selected grammar topics is included.		application,	
04XAP2	English for Advanced Students P2	Z	2	
	based on AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of chosen brai	nches of science.	According to	
	s it concentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typical rhetorica			
•	d, if possible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading of linguistical		°	
The course extend	s the student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focused on formal writi paragraph structure, linking, cohesion and coherence in texts.	ing including the s	entence and	
04XAP3	English for Advanced Students P3	Z	2	
	based on AP2 and expects the student to work without any guidance with authentic professional materials and to interpret the text. It in	-		
	ills and functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summarizing, writing	-		
also preparing a	project on a given or chosen topic and presenting it. The course places emphasis on distinguishing levels of formal and informal lang	uage both in oral a	and written	
	communication.			
04XAPZK	English for Advanced Students Examination	ZK	4	
	t is the examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability to a courses. The examination consists of 2 parts - written (100 min) and oral (30 min) and includes also oral presentation of a topic from		°	
04XCESM1	Czech for Foreigners - Intermediate 1	Z	2	
	ed on correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending the s	. —		
	social situations.		,	
04XCESM2	Czech for Foreigners - Intermediate 2	Z	2	
The course develo	ps the topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and readir	ng skills and trains	the student	
	in understanding common abbreviations, abbreviated words, and mathematical terms and formulas.			
04XCESM3	Czech for Foreigners - Intermediate 3	Z	2	
The last course i	revises morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is especia lexicology and on developing the student's writing skills.	ally focused on sty	listics and	
04XCESMZK		ZK	4	
	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 CES	1		
	be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher.	1001303 al	na can only	
04XCESP1	Czech for Foreign Students - Advanced 1	Z	2	
	the course is very good knowledge of the Czech language, i.e., communicative competences at least at level B2 of the Common Europ	pean Framework o		
It is focused partly	on revision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of sci	ence. Students are	e taught the	
basics of function	hal style of engineering and professional communication, both in spoken and written form. The topics include University Studies and S	Student Life. Writte	en practice	
	includes communication with teachers and faculty administrators.	_		
04XCESP2	Czech for Foreigners - Advanced 2 Is the student's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with technical and	Z Specialist toxts pla	2	
This course exterio	emphasis on individual work.	specialist texts pla	cing greater	
04XCESP3		7	2	
04XCESP3 The course develo	Czech for Foreigners - Advanced 3 ps the student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation,		2 ntation of the	
	Czech for Foreigners - Advanced 3			
The course develo	Czech for Foreigners - Advanced 3 ps the student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation, student's project. Writing skills necessary for professional communication are trained. Czech for Foreign Students - Advanced Examination	and, finally, preser	tation of the	
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	French for Intermediate Students Examination	ZK	4
I he content is the	examination as given by the study programme. The whole French programme is ended with an examination covering the contents o consists of a written and oral part and is organized according to Examination Instructions, a document available on the wel		amination
04XFP1	French for Advanced Students P1	Z	2
	se The objective of this three-semester course is to improve and further develop communication in the French language in both writte	en and oral form. S	tudents will
	icate in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit general		
	FP1 The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topics are reper-	•	
	parfait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of transactional le an advert, environmental issues, success of French science and technology, chosen topics from French regional culture, Paris. Topics (
	internet, physics, chemistry. Reading of technical and popular science texts, further work with these texts and interpretation	-	athematics,
04XFP2	French for Advanced Students P2	Z	2
	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).		
04XFP3	French for Advanded Students P3	Z	2
	ed on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in engine texts (both from and into the language). Writing of a paper and making and presentation in glass. The paper generally average		
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 topic. It is a creative work compiled from 3 French sources. Preparation of several set topics for oral examination.	s a technical /appli	eu science
04XFPZK	French for Advanced Students Examination	ZK	4
	program is ended with an examination covering the contents of FP1-FP3. The examination consists of a written and/or an oral part a		cording to
	Examination Instructions, a document available on the web. Assessment of the presentation is included into the examination gra	ading.	-
04XFZ1	French for Beginners Z1	Z	2
-	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		
	es French for specific / technical communication and reading of popular science and scientific texts. FZ1 The objective is to be able to		-
	Ising the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Prava za áte ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4 : introductions, pe		-
	lirections, simple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronu		
04XFZ2	French for Beginners Z2	Z	2
The course is linki	ng up with FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of the	textbook: Pravda -	Pravdová :
-	ners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreeme	-	
thanking, travelling	, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral communic	cation. Specific top	ics covered:
0.41/570	How does the machine work? A few expressions concerning the study. Name of University and Faculty.	7	0
04XFZ3	French for Beginners Z3 upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - Pra	Z Z	2 Beginners
	and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for info		-
	pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.		
04XFZ4	French for Beginners Z4	Z	2
The course builds	up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The cor	tents is roughly co	vered with
lessons 19 - 23 of th			
	he textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lecture		Engineering
	The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shopp	ing, weather, unive	Engineering
Students of FJFI.	The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shopp country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet	ing, weather, unive et.	Engineering rsity in our
Students of FJFI.	The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shopp country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet French for Beginners Z5	ing, weather, unive et. Z	Engineering rsity in our 2
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	German for Advanced Students P2	Z	2
The course develop	os the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending	their general and s	ubtechnical
	t introduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and pra	-	munication,
	oth written and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indi	. ,	
04XNP3	German for Advanced Students P3	Z	2
	sts of 3 main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a varie		
	nd car accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the voca 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.		
04XNPZK	German for Advanced Students Examination	ZK	4
	t is the examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination of	onsisting of two pa	rts - written
and oral, which o	over the courses NP1 - NP3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungraded	d assessment. More	e detailed
	information is to be obtained from the teacher.		
04XRM1	Russian for Intermediate Students M1	Z	2
-	ned for students with previous knowledge of Russian from secondary schools. Students are supposed to know the Russian alphabet (-
-	or communication in everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday need, asking		
they can use bas	sic grammar structures (verbal and nominal forms, irregular verbs, pronouns). The initial knowledge corresponds to the achievement I contents and scope of the course correspond approximately to the RZ3 course, but for half of the time allotted in the timetab		urse. The
04XRM2	Russian for Intermediate Students M2	Z	2
	Fine course is based on the RM1 course, its contents and scope correspond roughly to RZ4, however, for half of the time allotted in th	1 1	Z
04XRM3	Russian for Intermediate Students M3	Z	2
	bs the knowledge and skills acquired in RM1 and RM2 and its contents and scope are roughly at the same level as those of RZ5, howe	_	
	in the timetable.		
04XRMZK	Russian for Intermediate Students Examination	ZK	4
• • • • • • • • • • • • • • • • • • • •	t is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled		red in RM1
	ents are eligible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given inst		
04XRP1	Russian for Advanced Students P1	Z	2
The entrance req	uirement for the course is to achieve the B1 CEFR level. The objective of the course is revision of standard language structures, prac	ticing more difficult	grammar
	structures, understanding the fundamentals of technical language and training writing skills.		
04XRP2	Russian for Advanced Students P2	Z	2
The course is bas	ed on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives, ve	erb aspects, specifi	c syntactic
	structures). Stress is put on independent oral and written communication.		
04XRP3	Russian for Advanced Students P3	Z	2
	ed on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraphrasing		
	od previous knowledge of general language at secondary level (listening, reading, correct communication in everyday situations). The	-	-
	er study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and we chnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according to the students of the students are according to the students.	-	
	chilical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according		nfidanca an
	technical topics.	urately and with co	nfidence on
	technical topics. Russian for Advanced Students Examination		
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		1	- <u>r</u>
04XSM2	Spanish for Intermediate Students M3	Z	2
The course devel	lops the students' knowledge from the previous course (SM1). Students are gradually acquainted with fundamentals of Spanish for sp able to work with specialized texts on the Internet.	becific purposes in	order to be
04XSM3	Spanish for Intermediate Students M3	Z	2
	are supplemented with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of academ	-	
enough to use the	e Internet in Spanish and search for information of their specialization or field of interest. Students will use the information to write sho	rt articles and sun	nmaries. The
	final part of the programme, general Spanish course based on course books, covers presentations and, finally, a written and oral ex	amination.	-
04XSMZK	Spanish for Intermediate Students Examination	ZK	4
The course conter	t is the examination as given by the study plan. SMZK examination consists of two parts - written and oral; to be eligible for the written p	art, students will h	ave obtained
	non-graded assessment for course SM3.Oral examination follows the written part.		
04XSP1	Spanish for Advanced Students P1	Z	2
Course concentra	tes on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communication. of CEFR.	Course prerequis	illes: level bz
04XSP2	Spanish for Advanced Students P2	7	2
	e second part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and synta	. –	-
	written communication.		
04XSP3	Spanish for Advanced Students P3	Z	2
	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 co	mmunication
	based on what students will need in their career.		
04XSPZK	Spanish for Advanced Students Examination	ZK	4
The course conter	t is the examination as given by the study plan. Examination SPZK consists of two parts, namely oral and written. The prerequisite for a		part is having
0.027	passed the written test. Examination content is based on syllabi of courses SP1, SP2, and SP3 or on an individual study plan of th	1	-
04XSZ1	Spanish for Beginners Z1	Z	2
	first stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundamen communicate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Spar	-	
04XSZ2	Spanish for Beginners Students Z2		2
	sed on course SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structures and lexis	-	
	Id short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries and other		
	Realia of Spanish-speaking countries are also included.		
04XSZ3	Spanish for Beginners Z3	Z	2
	ed on course SZ2, and develops the student's vocabulary and grammar structure. The course covers realia (history and culture) of the		-
mainly of Spain.	It pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative). It includes writte	en and oral
0.01/074	communication on a given general topic, for which the student is trained by reading texts or listening to them.	-	-
04XSZ4	Spanish for Beginners Z4 sed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish	Z	2
	ention to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the		
	to written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listeni		, abjunitario),
04XSZ5	Spanish for Beginners Z5	Z	2
The course books	s are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish for	or specific purpose	es. In its final
	part, the general Spanish course based on the course book will end with presentations and, finally, a written and oral examination	ation.	
04XSZZK	Spanish for Beginners Examination	ZK	3
The course cont	tent is the examination as given by the study plan. Examination consists of two parts - written and oral. Student can register for oral ex passed the written examination test.	camination only if I	he/she has
11UFP		ZK	3
-	Introduction to Solid State Physics tains the fundamentals of diffraction stress analysis with a strong emphasis on the illustrations of the capability of X-ray diffraction to a	1	1
11UFPLN	Introduction to Solid State Physics	ZK	2
HOIT EN	The purpose of this lecture is to introduce the undergraduate students to the study of the solid state physics.		L 7
12UMF	Introduction to Modern Physics	Z	3
	nded to be a concise introduction to modern / nonclassical physics for students who have already had basic classical physics course. A	1	-
	in a computational laboratory.		
12UNXAP	Introduction to UNIX	Z	2
	operating systems. Personal computer, workstation and supercomputers. Processor, memory, bus, devices, hard disk, network interfa		
	ating systems. Operating system UNIX. Basic principles, kernel, kernel services. Documentation. File system, file atributes, working w		
	reter (shell) bash and its programming (scripts). Controlling processes, process status, computer load a process priorities. Standard t mputer networks. Local computer networks. Global computer networks. Addresses and protocols TCP/IP. Network configutation of a c	-	
X windows. 00	hardware sharing, mail, scp, etc. Network applications		301 1003.
14TED	Creating Electronic Documents	Z	2
	ating and presenting student theses. Individual exercises focus on creating and formatting texts, equations, charts, tables, presentation	1	
	office suite.		
15CH1	General Chemistry 1	Z	3
The most important	nt concepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practical of	use are illustrated	by examples
	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		
the validity of thes	e principles is not restricted only to chemical processes is documented. The significance and practical use of explained principles are in exercises.	musualeu by exal	mpies suived
18ZALG	Basics of Algorithmization	Z,ZK	4
	s devoted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of	1	1
18ZPRO	Basics of Programming	Z	4
	intended mainly for students with little or no experience in programming. It familiarizes the students with the basic concepts in program	-	1
	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

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