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

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 Yalcınkaya, Josef Schmidt, Ji í Hrivnák, Goce Chadzitaskos, Jan Vysoký Jan Vysoký Josef Schmidt (Gar.)	Z,ZK	6	4+2	L	PS
01LAL	Linear Algebra 1 Petr Ambrož, Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	Z	2	2P+2C		PS
01LALZ	Linear Algebra 1, exam Petr Ambrož, Lubomíra Dvo áková Lubomíra Dvo áková (Gar.)	ZK	2	0P+0C		PS
01LAL2	Linear Algebra 2 Petr Ambrož, 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 Be Antonín Hoskovec David Be (Gar.)	Z	4	4+2	Z	PS
02MECHZ	Mechanics - Examination Iskender Yalcinkaya, Goce Chadzitaskos, Stanislav Skoupý, Petr Novotný, David Be, Filip Petrásek, Antonín Hoskovec Antonín Hoskovec David Be (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	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	s of the courses of this group of Study Plan: Code=BSPMIMF1 Name	BS P_MIB	/IF 1st ye	ar		
02DEF1	History of Physics 1	-			Z	2
Physics and its place	ce in the system of sciences. The relationship of man and nature. Natural sciences in ancient O	rientand Greece	Greek natu	ral philosoph	ers, Aristotle	e. Physics in
Helenistic period, A	Archimed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano	Bruno. Copernic	us, Kepler, G	alileo, Huyge	ns. The birt	h of physics
as experimental sc	ience. Newton and his work.					
02ELMA	Electricity and Magnetism			Z	,ZK	6
Electric charge, Co	ulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectric	ics. Electric curr	ent and circu	1	, I	of the relativity
heory. Electrodyna	mic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, RLC circuits	. Electromagneti	c waves, Max	xwell equatio	ns.	
D1LAL	Linear Algebra 1				Z	2
	Linear dependence and independence. 3. Basis and dimension. 4. Subspaces of vector spaces	5. Linear mappi	ngs. 6. Matri	। ces of linear।	_	_
heorem.			J		0	
D1LALZ	Linear Algebra 1, exam				ZK	2
)1LAL2	Linear Algebra 2				,ZK	4
	matrix and operator. 2. Permutation and determinant. 3. Spectral theory (eigenvalue, eigenvecto	r diagonalizatio	n) 4 Hermiti	l l		· ·
	onality. 6. Metric geometry. 7. Riesz theorem and adjoint operator. Outline of the exercises: 1. M		•	•		
	Calculation of eigenvalues and eigenvectors. 4. Hermitian and quadratic forms. Canonical form.					
	eometry exercises and examples. 7. Adjoint operators.	o. ocaia. produ	, a.i.a oi ii.o g	jonaniji oalo		
1MAN	Calculus 1				Z	4
	I analysis, functions of one real variable, differential calculus).				_	7
1MANZ	Calculus 1, exam			-	ZK	4
	, and the second					
01MAN2	Calculus 2			1	,ZK	8
	differential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of converger					
	power series, the Cauchy-Hadamard theorem, expansion of function into power series, summating, techniques of integration and application of integrals, Generalized Riemann integral	on of infinite seri	es. 4. Theory	or integrals:	primitives, a	lefinite integr
					7	4
D2MECH	Mechanics				Z	-
	sics, physical quantities and units. Kinematics of a particle, basic types of motion and their super		•		•	
	otion, motion in a central force field, forces in non-inertial reference frames. Mechanics of a sys	tern or particles,	two-body pro	obiems, parti	sie collision:	s. Mechanics
of a rigid body, rota					71/	
D2MECHZ	Mechanics - Examination			4	ZK	2
	subject is the examination according to the plan of studies.					
DOPT	Preparatory Week				Z	2
D2TER	Heat and Molecular Physics			Z	,ZK	4
•	of materials, heat transfer; stationary and non-stationary heat conduction, heat transfer and pe					•
entropy; non-chemi	ical systems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials	; kinetic theory: N	/laxwell's vel	ocity distribut	ion,equipar	tition theoren
8ZPRO	Basics of Programming				Z	4
his course is inter	nded mainly for students with little or no experience in programming. It familiarizes the students	with the basic co	ncepts in pro	ogramming a	nd with the	Python
orogramming langu	lage.					
ada of the	group: PSDMIME2					
	group: BSPMIMF2					
lame of the	e group: BS P_MIB MF 2nd year					
	nt credits in the group:					
rodan emer	it ordans in the group.					

Basics of Programming

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 předmě	étů 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 in	troduction in the solution of ordinary differential equations. It contains a survey of equation types solvable analytically, basics	of the existence the	heory, solution of
linear types of equatio	ns and introduction in the theory of boundary-value problems.		
01ANA3	Mathematical Analysis A 3	Z,ZK	9
Function sequences a	nd 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 fur	ctions, 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 go	od understanding	of the root of
theoretical methods.			

02TEF1 Theoretical Physics 1
The course is an introduction to analytical mechanics. The students acquire knowledge of the basic concepts of the Lagrange and Hamiltonian formalisms as well as diferent approaches to description of dynamics (Newtons, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these methods is illustrated on elementary examples like the two-body problem, the motion of a system of constrained mass points, and of a rigid body. Advanced parts of the course cover differential and integral principles of mechanics. The subject is the first part of the course of classical theoretical physics (02TEF1, 02TEF2).

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 and classical field theory in the Minkowski space-time. Classical electrodynamics: Maxwell's equations in the Minkowski space-time, electromagnetic waves in dielectric media, electromagnetic radiation in the dipole approximation.

02TSFA Thermodynamics and Statistical Physics

Z,ZK

4

Foundation of thermodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelier principle. Statistical entropy. Basics of many body descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena.

02VOAF Waves, Optics and Atomic Physics

Z,ZK

6

Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves, the Schrodinger equation, stationary states and spectra of finite systems.

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

Note on the group:

Zkoušku z předmětu 01RMAF lze skládat až po složení všech zkoušek z Matematické

analýzy a Lineární algebry.

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

Characteristics of the courses of this group of Study Plan: Code=BSPMIMF3 Name=BS P_MIB MF 3rd year

02BPMI1	Bachelor Thesis 1	Z	5
The bachelor project is b	pased on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the	project superviso	during common
regular meetings and di	scussions.		
02BPMI2	Bachelor Thesis 2	Z	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** The course starts from outlining the Jordan curve theorem and the Riemann-Stieltjes integral. Then basic results of complex analysis in one variable are explained in detail: the derivative of a complex function and the Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve. Cauchy's integral theorem. Morera's theorem, roots of a holomorphic function, analytic continuation, isolated singularities, the maximum modulus principle, Liouville's theorem, the Cauchy estimates, Laurent series, residue 01FANA1 Functional Analysis 1 Z,ZK 5 01FAN2 Functional analysis 2 Z.ZK 5 The course aims to present selected fundamental results from functional analysis including basic theorems of the theory of Banach spaces, closed operators and their spectrum, Hilbert-Schmidt operators, spectral decomposition of bounded self-adjoint operators. 02GMF1 Geometric Methods in Physics 1 Z,ZK Foundations of geometric methods in physics on manifolds. Differential forms. 02KM1 Z,ZK 6 Quantum Mechanics 1 Abstract: The lecture describes the birth of quantum mechanics and description of one particle and more particles by elements of the Hilbert space as well as its time evolution. Besides that it includes description of observable quantities by operators in the Hilbert space and calculation of their spectra. Quantum Mechanics 2 02KM2 7.7K Abstract: The lecture expands the introduction to quantum mechanics with more general formalism of quantum theory, approximate methods and path integral. It summarizes the terminology and methods used in various applications of quantum mechanics and prepares the students for an effective scientific research and further study, in particular, of the modern formulations of quantum field theory. 02OR General Relativity ZK 3 Introduction to general theory of relativity: principle of equivalence and principle of general covariance, parallel transport and geodesic equation, gravitational redshift. Curvature and Einstein's gravitational law. Schwarzschild solution of the Einstein equations, homogeneous and isotropic cosmological models. 01RMAF Equations of Mathematical Physics The subject of this course is solving integral equations, theory of generalized functions, classification of partial differential equations, theory of integral transformations, and solution of partial differential equations (boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE). **Bachelor Seminar** In the first part of the seminar, students familiarize themselves with the general principles of publishing and presenting scientific work and the formal requirements for bachelors degree projects at the faculty. The second part is designed as a practical training for the defense of the bachelors degree project. The students give oral presentations of the current state of the research results achieved during the work on their projects. Each presentation is followed by a discussion on scientific matters as well as on the possibilities of improving the students performance 02UCF Introduction to Particle Physics Z,ZK

Abstract: Overview of nuclear and subnuclear physics from the beginning of the 20th century until today. The lecture describes basic properties of atomic nuclei, nuclear decays and nuclear reactions. Then it concentrates on elementary particle physics. It reviews basic properties of elementary particles and fundamental interactions leading to the formulation of

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

the so-called Standard Model of elementary particles. The lecture contains the overview of current particle and astroparticle experiments.

Credits in the group: 0

Note on the group:

Only one of these courses is obligatory.

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
00EKOT	Economy in Technology Jana Ková ová	Z	1	2+0		PV
00ETV	Ethics of Science and Technology Jakub Hají ek Jana Ková ová	Z	1	0+2	L	PV
00RET	Rhetoric Jana Ková ová Jana Ková ová 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 Haii 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	in 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 ar	integral part of the	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 (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 (Gar.)	ZK	4		Z	PV
04XSPZK	Spanish for Advanced Students Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.) Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	ZK	4		Z	PV
04XSZZK	Spanish for Beginners Examination Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.) Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo	ZK	3		L	PV

Characteristics of	the courses of this group of Study Plan: Code=BSPJAZYKYZK Name=BS P languages		
04XAMZK	English for Intermediate Students Examination	ZK	4
The course content is the	e examination as given by the study plan. The examination covers the AM1, AM2, and AM3 courses and consists of two par	ts - written (100 n	nin) and oral
(20-30 min). The studer	it is expected to master the AM syllabus and demonstrate the ability to apply their knowledge gained in the three English cou	rses.	
04XAPZK	English for Advanced Students Examination	ZK	4
The course content is the	e examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability	to apply their kno	wledge obtained
in the three AP courses	. The examination consists of 2 parts - written (100 min) and oral (30 min) and includes also oral presentation of a topic from	the student's field	d of study.
04XCESZZK	Czech for Foreigners Beginners - Examination	ZK	4
The course content is the	e examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04	4XCESZ1,2,3 cou	irses and can
only be taken after succ	sessful 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	e examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the C	ESM1,2,3 course	s and can only
be taken after successf	ul 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	e examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the C	ESP1,2,3 courses	s and can only
be taken after successf	ul completion of the 3 courses. Detailed information is to be obtained from the teacher.		
04XFMZK	French for Intermediate Students Examination	ZK	4
The content is the exam	ination as given by the study programme. The whole French programme is ended with an examination covering the contents	of FM1-FM3. The	e examination
consists of a written and	d oral part and is organized according to Examination Instructions, a document available on the web.		
04XFPZK	French for Advanced Students Examination	ZK	4
The whole French prog	ram is ended with an examination covering the contents of FP1-FP3. The examination consists of a written and/or an oral par	t and is organized	d according to

The content is the examination as given by the study plan. The course is terminated with an examination consisting of oral and written part. The examination is ruled by the document

Examination Instructions, a document available on the web. Assessment of the presentation is included into the examination grading.

French for Beginners Examination

Instruction for examination. Its content covers the levels FZ1 - FZ5.

04XNMZK	German for Intermediate Students Examination	ZK	4
The course content	is the examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examinat	ion consisting of t	vo parts - written
and oral, which cove	er the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 asses	sment. More deta	iled information
is to be obtained fro	m the teacher.		
04XNPZK	German for Advanced Students Examination	ZK	4
The course content	is the examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination	on consisting of tw	o parts - written
and oral, which cove	er the courses NP1 - NP3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungrad	led assessment. M	fore detailed
information is to be	obtained from the teacher.		
04XRMZK	Russian for Intermediate Students Examination	ZK	4
The course content	is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the known	wledge and skills a	acquired in RM1
 RM3. Students are 	eligible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given instruc	tions by the teach	er.
- RM3. Students are 04XRPZK	eligible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given instruction Russian for Advanced Students Examination	tions by the teach	er. 4
04XRPZK		ZK	4
04XRPZK The course content	Russian for Advanced Students Examination	ZK wledge and skills a	4 acquired in RP1
04XRPZK The course content	Russian for Advanced Students Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the known	ZK wledge and skills a	4 acquired in RP1
04XRPZK The course content - RP3. Students are 04XRZZK	Russian for Advanced Students Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowledgible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruct	ZK wledge and skills a ions by the teache	4 acquired in RP1 er.
04XRPZK The course content - RP3. Students are 04XRZZK The course content	Russian for Advanced Students Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruct Russian for Beginners Examination	ZK wledge and skills a ions by the teache ZK wledge and skills a	4 acquired in RP1 er. 3 acquired in RZ1
04XRPZK The course content - RP3. Students are 04XRZZK The course content	Russian for Advanced Students Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruct Russian for Beginners Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the known	ZK wledge and skills a ions by the teache ZK wledge and skills a	4 acquired in RP1 er. 3 acquired in RZ1
04XRPZK The course content - RP3. Students are 04XRZZK The course content - RZ5. Students are	Russian for Advanced Students Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruct Russian for Beginners Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instructions	ZK wledge and skills a ions by the teache ZK wledge and skills a ions by the teache ZK	4 acquired in RP1 er. 3 acquired in RZ1 er. 4
04XRPZK The course content - RP3. Students are 04XRZZK The course content - RZ5. Students are 04XSMZK The course content	Russian for Advanced Students Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruct Russian for Beginners Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instruction Spanish for Intermediate Students Examination	ZK wledge and skills a ions by the teache ZK wledge and skills a ions by the teache ZK	4 acquired in RP1 er. 3 acquired in RZ1 er. 4
04XRPZK The course content - RP3. Students are 04XRZZK The course content - RZ5. Students are 04XSMZK The course content	Russian for Advanced Students Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruct Russian for Beginners Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instruction as prior Intermediate Students Examination Spanish for Intermediate Students Examination consists of two parts - written and oral; to be eligible for the written	ZK wledge and skills a ions by the teache ZK wledge and skills a ions by the teache ZK	4 acquired in RP1 er. 3 acquired in RZ1 er. 4
04XRPZK The course content - RP3. Students are 04XRZZK The course content - RZ5. Students are 04XSMZK The course content inon-graded assessr	Russian for Advanced Students Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruct Russian for Beginners Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instruct Spanish for Intermediate Students Examination s the examination as given by the study plan. SMZK examination consists of two parts - written and oral; to be eligible for the written tor course SM3. Oral examination follows the written part.	ZK wledge and skills a ions by the teache ZK wledge and skills a ions by the teache ZK en part, students v	4 acquired in RP1 er. 3 acquired in RZ1 er. 4 vill have obtained
04XRPZK The course content - RP3. Students are 04XRZZK The course content - RZ5. Students are 04XSMZK The course content inon-graded assessr 04XSPZK The course content	Russian for Advanced Students Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruct Russian for Beginners Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instruct Spanish for Intermediate Students Examination s the examination as given by the study plan. SMZK examination consists of two parts - written and oral; to be eligible for the written for course SM3. Oral examination follows the written part. Spanish for Advanced Students Examination	ZK wledge and skills a ions by the teache ZK wledge and skills a ions by the teache ZK en part, students v	4 acquired in RP1 er. 3 acquired in RZ1 er. 4 vill have obtained
04XRPZK The course content - RP3. Students are 04XRZZK The course content - RZ5. Students are 04XSMZK The course content inon-graded assessr 04XSPZK The course content	Russian for Advanced Students Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instruct Russian for Beginners Examination is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the know eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instruct Spanish for Intermediate Students Examination s the examination as given by the study plan. SMZK examination consists of two parts - written and oral; to be eligible for the written for course SM3. Oral examination follows the written part. Spanish for Advanced Students Examination is the examination as given by the study plan. Examination SPZK consists of two parts, namely oral and written. The prerequisite	ZK wledge and skills a ions by the teache ZK wledge and skills a ions by the teache ZK en part, students v	4 acquired in RP1 er. 3 acquired in RZ1 er. 4 vill have obtained

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

The role of the block: V

passed the written examination test.

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:

	Name of the course / Name of the group of courses			1		
Code	(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		٧

2NSAD1	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
5CH1	General Chemistry 1 Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z	3	2+1	Z	V
5CH2	General Chemistry 2 Ond ej Holas, Petr Distler, Václav uba Petr Distler Petr Distler (Gar.)	Z,ZK	3	2+1	L	V
1PRST	Probability and Statistics Tomáš Hobza Tomáš Hobza (Gar.)	Z,ZK	4	3+1	Z	V
2SMF	Seminar of Mathematical Physics Martin Štefa ák Ladislav Hlavatý (Gar.)	Z	2	0+2	Z	V
1SSM1	Seminar of Contemporary Mathematics 1 Mat j Tušek Edita Pelantová (Gar.)	Z	2	0+2	Z	V
2STR	Special Theory of Relativity David Be Martin Štefa ák David Be (Gar.)	ZK	2	2+0	L	V
√-1	Physical Education	Z	1		Z	V
V-2	Physical Education	Z	1		L	V
TV-3	Physical education	Z	1	0+2	Z	V
·V-4	Physical education	Z	1	0+2	L	V
1TOP	Topology estmír Burdík estmír Burdík estmír Burdík (Gar.)	ZK	2	2+0	Z	V
4TED	Creating Electronic Documents Aleš Materna, Ji í Martin ík Aleš Materna Aleš Materna (Gar.)	Z	2	26C		V
2UFEC	Introduction to Elementary Particle Physics Jaroslav Biel ík, Marek Matas Jaroslav Biel ík Jaroslav Biel ík (Gar.)	Z	2	2+0	Z	V
1UFP	Introduction to Solid State Physics Petr Kolenko Petr Kolenko (Gar.)	ZK	3		L	٧
1UFPLN	Introduction to Solid State Physics Petr Kolenko	ZK	2	2+0	L	V
2UKP	Introduction to Curves and Surfaces	Z	2	1+1	L	V
2UKP1	Introduction to Curves and Surfaces Ladislav Hlavatý Martin Štefa ák Ladislav Hlavatý (Gar.)	Z	2	1P+1C	L	V
2UKP2	Introduction to Curves and Surfaces 2 Ladislav Hlavatý Martin Štefa ák Ladislav Hlavatý (Gar.)	Z	2	1P+1C	Z	V
2UKT	Introduction to Quantum Theory Martin Štefa ák Martin Štefa ák (Gar.)	Z	2	2+0		V
2UMF	Introduction to Modern Physics Jan Pšikal Jan Pšikal Jan Pšikal (Gar.)	Z	3	2+1	L	V
2UNXAP	Introduction to UNIX Milan Kucha ik Milan Kucha ik Milan Kucha ik (Gar.)	Z	2	1P+1C	L	V
8ZALG	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
2ZM1	Foundations of Physical Measurements 1 Solangel Rojas Torres, Petr Chaloupka Martin Štefa ák Petr Chaloupka (Gar.)	ZK	2	2P+0C	Z	V
2ZM2	Foundations of Physical Measurements 2 Petr Chaloupka Martin Štefa ák Petr Chaloupka (Gar.)	KZ	4	0P+4L	L	V
naracteristics of the	e courses of this group of Study Plan: Code=BSPMIMFV Name	=BS P_MIB N	//F Optio	nal cours	es	
1ALGE AI	gebra			Z	,ZK	6
• *	e treated in detail. Elements of the set theory cover only: equivalence and subvalence, t					•
	linals and cardinals. Further standard algebraic structures are addressed: semigroups,	monoids, groups	, rings, inte	gral domains,	principal idea	al domain
	chapters are devoted to divisibility in integral domains and to finite fields.					
ITA AI	gebra and Calculus in Applications				ZK	2

)1ALGE	Algebra	Z,ZK	6
irstly, the Peano a	cioms are treated in detail. Elements of the set theory cover only: equivalence and subvalence, the Cantorov-Bernstein theoren	n, the axiom of choice	and equivale
tatements, definition	n of ordinals and cardinals. Further standard algebraic structures are addressed: semigroups, monoids, groups, rings, integra	al domains, principal id	eal domains
elds, lattices. Inde	pendent chapters are devoted to divisibility in integral domains and to finite fields.		
)1TA	Algebra and Calculus in Applications	ZK	2
	ds based on combination of (CONtinuous) calculus and discrete (disCRETE) structures, so calles concrete mathematics. Theoly are illustrated on problems from informatics.	rems are motivated by	problems fro
		7	
2DEF2	History of Physics 2	Z	2
•	ssical mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach		
ectrostatics, galva	nism, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzn	nann. The birth of mod	ern quantur
nd relativistic phys	ics, Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclea	ır energy, Elementary ı	particles,
tandard model. Th	e concept of Nature and Universe of today.		
2DRG	Differential Equations, Symmetries and Groups	Z	4
he purpose of the	lecture is to teach students computation of symmetries of the differential equations.		
			_
1DIM1	Discrete Mathematics 1		
	Discrete Mathematics 1 Discrete Mathematics Discrete Mathemati	Z	2
		Z	2
he seminar is devi	oted to elementary number theory and applications. It includes individual problem solving.	Z	2
he seminar is devo 11DIM2 he seminar is devo	bted to elementary number theory and applications. It includes individual problem solving. Discrete Mathematics 2	Z	2 2
the seminar is devoluted in th	bted to elementary number theory and applications. It includes individual problem solving. Discrete Mathematics 2 bted to recurrence relations. It includes individual problem solving.	1	2
he seminar is devo 1DIM2 he seminar is devo 1DIMA3	bited to elementary number theory and applications. It includes individual problem solving. Discrete Mathematics 2 bited to recurrence relations. It includes individual problem solving. Discrete Mathematics 3	1	2
he seminar is devo 1DIM2 he seminar is devo 1DIMA3 tudents get to kno	bited to elementary number theory and applications. It includes individual problem solving. Discrete Mathematics 2 bited to recurrence relations. It includes individual problem solving. Discrete Mathematics 3	1	2

04AKS	English Conversation	Z	1
	the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral commun	ication. The stude	ent will develop
	ous communication situations and will master their communication strategy. They will also practise their listening skills in order		and participate
	dent will be trained to express their ideas clearly and according to current English usage, and become a more confident spea		
02LCF1	Experimental Laboratory 1	Z	2
	Elasticity.Thermal capacities. Electric measurements, Acoustic. Oscillations.		
02LCF2	Experimental Laboratory 2	Z	2
	eld, microwaves, Xray and gamma rays, geometric optics		4
00MAM1	Essentials of High School Course 1	Z	1
	d to mathematical concepts and methods used in the introductory physics course.	7	4
00MAM2 Review of basics of high	Essentials of High School Math Course 2	Z	1
02NSAD1		Z	2
	Simulations and Data Analysis Tools 1 lations of high energy elementary particle collisions. ROOT and Pythia programs.		2
15CH1	General Chemistry 1	Z	3
	ncepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practic	_	-
solved in exercises.	noopis, quantities and units used in chemistry are introduced in the course ocheral orientary i. Their significance and practice	al use are mustre	ica by examples
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	'	_
=	ciples is not restricted only to chemical processes is documented. The significance and practical use of explained principles	-	
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 t	ne Kolmogorov
definition. The notions a	as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit	theorems are sta	ted and proved.
On the basis of this the	ory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testing are exp	olained.	
02SMF	Seminar of Mathematical Physics	Z	2
	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
	fic activities that could become the topics of the student?s bachelor theses in the next year		r
01SSM1	Seminar of Contemporary Mathematics 1	Z	2
-	a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of basic		
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
TV-4	Physical education	Z	1
01TOP	Topology	ZK	2
The aim of lecture is the	e systematization and deepening the knowledge of general topology.		
14TED	Creating Electronic Documents	Z	2
_	and presenting student theses. Individual exercises focus on creating and formatting texts, equations, charts, tables, present	ations and entire	documents in an
office suite.			ı
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
· ·	ture is to introduce the undergraduate students to the study of the solid state physics.	7	2
02UKP	Introduction to Curves and Surfaces is an introduction to the differential geometry of simple manifolds - curves and two-dimensional surfaces. The basic concepts	for the curves are	2 p introduced
_	plained. In the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essential p		
calculated by students	pained. In the durage theory we introduce that and economic and former and mountaine education of value. Economic p		are the examples
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		
Frenets formulae are ex	plained. In the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essential p	art of the lecture	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.		
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	urse is delivered
in a computational labo		7	
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		
	systems. Operating system Civix. Basic principles, kerner, kerner services. Documentation. File system, file ambutes, working shell) bash and its programming (scripts). Controlling processes, process status, computer load a process priorities. Standard	=	
	networks. Local computer networks. Global computer networks. Addresses and protocols TCP/IP. Network configutation of a c	· · · · · · · · · · · · · · · · · · ·	
-	scp, etc. Network applications		
18ZALG		Z,ZK	4
102/120	Basics of Algorithmization	∠,∠r\	-
	Basics of Algorithm2ation to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of the	'	

02ZM1 Foundations of Physical Measurements 1

Κ

2

The lecture is designed for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it can be attended by students of other branches. The goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired data on a PC. Students learn the basic habits of work in a physics lab.

D2ZM2 Foundations of Physical Measurements 2

ΚZ

4

The lecture is designed for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it can be attended by students of other branches. The goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired data on a PC. Students 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:

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

04XNM2	German for Intermediate Students M2 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	L	V
04XNM1	German for Intermediate Students M1 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XNM3	German for Intermediate Students M3 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XNP1	German for Advanced Students P1 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XNP2	German for Advanced Students P2 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	L	V
04XNP3	German for Advanced Students P3 Miloslava echová Miloslava echová (Gar.)	Z	2	0+2	Z	V
04XRM1	Russian for Intermediate Students M1 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRM2	Russian for Intermediate Students M2 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	L	V
04XRM3	Russian for Intermediate Students M3 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRP1	Russian for Advanced Students P1 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRP2	Russian for Advanced Students P2 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	L	V
04XRP3	Russian for Advanced Students P3 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+2	Z	V
04XRZ1	Russian for Beginners Z1 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	L	V
04XRZ2	Russian for Beginners Z2 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	Z	V
04XRZ3	Russian for Beginners Z3 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	L	V
04XRZ4	Russian for Beginners Z4 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	Z	V
04XRZ5	Russian for Beginners Z5 Zhanna Isaeva Zhanna Isaeva (Gar.)	Z	2	0+4	L	V
04XSM1	Spanish for Intermediate Students M1 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSM2	Spanish for Intermediate Students M3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	L	V
04XSM3	Spanish for Intermediate Students M3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSP1	Spanish for Advanced Students P1 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSP2	Spanish for Advanced Students P2 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	L	V
04XSP3	Spanish for Advanced Students P3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+2	Z	V
04XSZ1	Spanish for Beginners Z1 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	L	V
04XSZ2	Spanish for Beginners Students Z2 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	Z	V
04XSZ3	Spanish for Beginners Z3 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	L	V
04XSZ4	Spanish for Beginners Z4 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	Z	V
04XSZ5	Spanish for Beginners Z5 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.)	Z	2	0+4	L	V

Characteristics of the courses of this group of Study Plan: Code=BSPJAZYKYZAP Name=BS P jazyky zap

English for Intermediate Students M1

of Reference for Languages (CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into fundamentals of vocabulary and style typical of professional oral and written communication situations. Thus it covers topics related to the student's life and needs as well as topics of subtechnical interest. Attention is also paid to extending the knowledge of grammar issues used in EAP.

O4XAM2 English for Intermediate Students M2

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

The course is designed for students who have successfully completed the full secondary school English language course at least at the A2 level of the Common European Framework

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 the	Common Europe	ean Framework
of Reference for Langua	ages - CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into the fundamer	ntals of vocabular	y, functions,
grammar, and style typi	cal of professional oral and written communication situations (fundamentals of terms in mathematics and physics, definitions,	graph description	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 writing	(writing a CV, lette	er of application,
polite request). If neces	sary, revision of selected grammar topics is included.		
04XAP2	English for Advanced Students P2	Z	2
The AP2 course is base	on AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of chosen by	ı branches of scien	ce. According to
	oncentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typical rhetor		- 1
	ossible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading of linguistic	, ,	
The course extends the	student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focused on formal v	writing including th	ne sentence and
paragraph structure, lin	king, cohesion and coherence in texts.		
04XAP3	English for Advanced Students P3	Z	2
-	d on AP2 and expects the student to work without any guidance with authentic professional materials and to interpret the text. I	= 1	
	d functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summarizing, writing	_	
	on a given or chosen topic and presenting it. The course places emphasis on distinguishing levels of formal and informal lan	-	
communication.	on a given of chosen topic and presenting it. The course places emphasis on distinguishing levels of formal and informal and	guage botti ili ola	ii and written
	Crack for Foreigners, Regioners 1	Z	2
04XCESZ1	Czech for Foreigners - Beginners 1	_	_
	for students of the English programme. Students will become acquainted with the main characteristics of Czech (phonetic an	-	
	and speaking skills. The course focuses on pronunciation exercises, simple social phrases, and oral and written communication	ion in the most co	mmon everyday
	overs 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 com	munication competences acquired in CESZ1 are further developed. Students deepen their knowledge of the declension and o	conjugation syster	m and practise
basic communication to	pics. 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 deve	elops the language and communication competences acquired in the XCESZ1 and XCESZ2 courses. The teaching focuses o	n building up basi	c vocabulary,
fixing correct pronuncia	tion and deepening grammar, features through practice, as well as introducing the Czech culture. Students are asked to produ	uce simple texts a	nd they practise
frequent types of dialog	ue. They also practise understanding texts in terms of main ideas or looking for specific details in texts. The course covers roug	hly lessons 5-7 ir	n eština expres
1.			
04XCESM1	Czech for Foreigners - Intermediate 1	Z	2
	n correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending th		_
social situations.		o otaaont o vocas	alary for various
	Creat for Foreigners, Intermediate 2	7	
04XCESM2	Czech for Foreigners - Intermediate 2	Z	2
· ·	e topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and rea	iding skilis and tra	lins the student
	on abbreviations, abbreviated words, and mathematical terms and formulas.		_
04XCESM3	Czech for Foreigners - Intermediate 3	Z	2
	morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is espec	ially focused on s	tylistics and
	oping 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 Eu	uropean Framewo	rk of Reference.
It is focused partly on re	evision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of s	science. Students	are taught the
basics of functional styl	e of engineering and professional communication, both in spoken and written form. The topics include University Studies and	Student Life. Writ	ten practice
includes communication	n with teachers and faculty administrators.		
04XCESP2	Czech for Foreigners - Advanced 2	Z	2
This course extends the	s student's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with technical a	nd specialist texts	placing greater
emphasis on individual	work.	·	
04XCESP3	Czech for Foreigners - Advanced 3	Z	2
	e student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation	1	
•	g skills necessary for professional communication are trained.	on, ana, many, pro	occination of the
		Z	2
04XFM1	French for Intermediate Students M1		
	M The objective of this three-semester course is to improve and further develop communication in the French language in bo		
	cate in social interaction and in academic, scientific and professional environment. They will be able to use the language to tra	_	
	e problems. FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises, sy	-	1
	study. The following topics are covered: University studies in our country and in France, writing of transactional letters, CV, per		-
	ture and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts, work		
04XFM2	French for Intermediate Students M2	Z	2
	M1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science		
	(passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French scie	ence and technolo	ogy, French
	chitects. Description of an object, device, shapes, dimensions, material.		
04XFM3	French for Intermediate Students M3	Z	2
The course is focused of	n improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures (subordinate and i	nfinitive clauses,
participle structures, co	mpound tenses). Text summaryStudents prepare a written paper which will be delivered in form of an oral presentation in-cl	ass. The paper is	linked to the
field of students' future	specialisation or to their interest and generally covers a technical /applied science topic. It is not a translation but a creative w	ork compiled from	r French articles
and one's own knowled	ge/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesion and continuous control of the examination are prepared.	coherence.	
04XFP1	French for Advanced Students P1	Z	2
	the objective of this three-semester course is to improve and further develop communication in the French language in both wr		
	e in social interaction and in academic, scientific and work environment. They will be able to use the language to transmit gene		
	The course builds on and further develops linguistic competence acquired at secondary school. Difficult grammar topics are re		
•	ait, pronouns. The following specific topics are covered: University studies in our country and in France, writing of transactiona		
	dvert, environmental issues, success of French science and technology, chosen topics from French regional culture, Paris. Topi	· ·	
•	stry. Reading of technical and popular science texts, further work with these texts and interpretation.		
, p.1., 5.50, 5110111	2. 7 The Control of t		

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 to be a second formal formation.	on on given topics. Fe	eatures typical o
technical and scientific communication are stressed (passive voice, nominalization, word formation).	7	
04XFP3 French for Advanded Students P3	Z	2
The course is focused on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communicatio skill - translation of shorter texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally		=
topic. It is a creative work compiled from 3 French sources. Preparation of several set topics for oral examination.	COVERS & LECTIFICAL /	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	-	_
The course includes French for specific / technical communication and reading of popular science and scientific texts. FZ1 The objective is to be	-	-
evel, actively using the knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Pr		
(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 pronur	nciation and gramma	r.
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: Pra	vda - Pravdová :
French for Beginners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agre	eement - disagreeme	nt, apology,
thanking, travelling, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral co	mmunication. Specif	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	a - Pravdová: French	for Beginners.
Topics, functions and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both f	or information and lo	ud as part of
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. T	_	-
lessons 19 - 23 of the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the		
Students of FJFI. The course covers generals and specific topics: health-illness, sport, free time, environment, study, travelling in France, Paris,	shopping, 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.		
general contents is covered by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other materia		
notes, success of French science and technology, information about France. Grammar is systemized and complemented with syntax (subordinat	te clauses, typical co	njunctions,
authius alouges, sexual pessive		
subjunctive clauses, gerund, passive. 04XNM2 German for Intermediate Students M2	Z	2
04XNM2 German for Intermediate Students M2 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel	ation between techno	logy and society
04XNM2 German for Intermediate Students M2 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers	ation between technology e	ology and society etc. Students
O4XNM2 German for Intermediate Students M2 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy	ation between technology e	ology and society etc. Students
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O4XNM2 German for Intermediate Students M2 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). O4XNM1 German for Intermediate Students M1	ation between technology of stematically revises of	plogy and society etc. Students other grammatica
O4XNM2 German for Intermediate Students M2 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). O4XNM1 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	ation between technology of and car technology of stematically revises of the stematical structures (e.g.	the passive) and
O4XNM2 German for Intermediate Students M2 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). O4XNM1 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 word formation processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Re	ation between technology of and car technology of stematically revises of the standard structures (e.g. epublic and Germany	ology and society setc. Students ther grammatica 2 the passive) and the current
O4XNM2 German for Intermediate Students M2 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). O4XNM1 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 word formation processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Reenvironmental issues together with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physical course focuses.	ation between technology of and car technology of stematically revises of the standard structures (e.g. epublic and Germany	ology and society setc. Students ther grammatica 2 the passive) and the current
O4XNM2 German for Intermediate Students M2 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). O4XNM1 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 word formation processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Re environmental issues together with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physiterminology. It develops communication on related topics and is aimed at correct pronunciation, grammatical correctness and understandability.	ation between technology of and car technology of stematically revises of the standard structures (e.g. epublic and Germany sicists, and the fundard	ology and society stee. Students other grammatical the passive) and current mentals of IT
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The course introduces of the more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). O4XNM1 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 word formation processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Revironmental issues together with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, phys terminology. It develops communication on related topics and is aimed at correct pronunciation, grammatical correctness and understandability. O4XNM3 German for Intermediate Students M3 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). O4XNP1 German for Advanced Students P1 This course requires good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be ocurse. The course is then focused on working with technical and scientific texts (understanding, summarising, note-taking, interpreting) while exvocabulary range	ation between technology of stematically revises of and structures (e.g. epublic and Germany sicists, and the fundation between technology of stematically revises of a stematically revises of a stematically revises of a stematical everydation between technology of stematically revises of a stematical everydation between technology of stematically revises of a stematical everydation between technology of stematical everydat	lology and society etc. Students other grammatical the passive) and course the passive) and course the passive) and course the passive) and course the passive) and society etc. Students other grammatical the pand develops of the and develops of the and develops of the and subtechnical communication and subtechnical communication are presentation, cludes translation and handwritten) giving directions)
O4XNM2 German for Intermediate Students M2 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). O4XNM1 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 word formation processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech R renvironmental issues together with all necessary expressions and phrases needed to chemists, mathematicians, phys terminology. It develops communication on related topics and is aimed at correct pronunciation, grammatical correctness and understandability. O4XNM3 German for Intermediate Students M3 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). 04XNP1 German for Advanced Students P1 This course requires good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be ocurse. The course is then focused on working with technical and scientific texts (understanding, summarising, note-taking, interpreting)	ation between technology of stematically revises of an and structures (e.g. epublic and Germany sicists, and the fundation between technology of stematically revises of a stematically revises of a stematically revises of a stematical everydation between technology of stematically revises of a stematical everydation between technology of stematical everydation between technology	lology and society etc. Students other grammatical ther grammatical the passive) and course the passive) and course the passive and society etc. Students other grammatical there grammatical the pand develops of the pand develops of the pand develops of the pand subtechnical communication and subtechnical communication and part of the pand develops of the pand subtechnical communication and subtechnical communication and part of the pand develops of the pand subtechnical communication and subtechnical communication and part of the pand subtechnical communication and part of the pand of th
Details of the course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). O4XNM1 German for Intermedicate 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 word formation processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech R environmental issues together with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, phys terminology. It develops communication on related topics and is aimed at correct pronunciation, grammatical correctness and understandability. O4XNM3 German for Intermedicate Students M3 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course sy phenomena important for professional discourse (participles, relative clauses). 04XNP1 German for Advanced Students P1 This course intended to prove the students' skills in working with technical and scientific texts and practising reading techniques (skimming, scanning, reading more difficult grammar structures necessary for understanding a subtechnical text (passive voice, participles, participles struct	ation between technology of stematically revises of an and structures (e.g. epublic and Germany sicists, and the fundation between technology of stematically revises of a stematically revises of a stematically revises of a stematical everydation between technology of stematically revises of a stematical everydation between technology of stematical everydation between technology	lology and society etc. Students other grammatical ther grammatical the passive) and course the passive) and course the passive and society etc. Students other grammatical there grammatical the pand develops of the pand develops of the pand develops of the pand subtechnical communication and subtechnical communication and part of the pand develops of the pand subtechnical communication and subtechnical communication and part of the pand develops of the pand subtechnical communication and subtechnical communication and part of the pand subtechnical communication and part of the pand of th
German for Intermediate Students M2 The course introduces other more complex grammatical structures and their application in communication based on technical texts, such as the rel the world at the beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers practise reading for information and reading aloud, and appropriate language for various purposes in oral and written communication. The course syphenomena important for professional discourse (participles, relative clauses). OdXNM1	ation between technology of stematically revises of and structures (e.g. epublic and Germany sicists, and the funda Z ation between technology of stematically revises of a stematically revises of a stematically revises of a stematically revises of a pand practising formatical everydation Z tending their general pand practising formatically revises on practical everydation Z tending their general pand practising formatical everydation Z tending th	lology and society etc. Students other grammatical the passive) and a current mentals of IT 2 blogy and society etc. Students other grammatical the passive) and society etc. Students other grammatical the pand develops by communication 2 and subtechnical communication 2 and subtechnical communication 2 and handwritten) giving directions) course. The

04XRP1	Duscine for Advanced Students D1	Z	2
-	Russian for Advanced Students P1 ment for the course is to achieve the B1 CEFR level. The objective of the course is revision of standard language structures, p	-	1
	ding the fundamentals of technical language and training writing skills.	actionly more unit	icuit graniinai
04XRP2	Russian for Advanced Students P2	Z	2
-	n RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives	_	. –
	put on independent oral and written communication.	, verb aspects, spe	come symaciie
04XRP3	Russian for Advanced Students P3	Z	2
	on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraphra	_	. –
	previous knowledge of general language at secondary level (listening, reading, correct communication in everyday situations)	-	
	tudy is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and		
levelop their subtech	nical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write	accurately and w	ith confidence
echnical topics.			
04XRZ1	Russian for Beginners Z1	Z	2
The course represen	ts the first stage of the five-semester programme, its final aim being reading and understanding professional texts written in Rus	ssian. Thus it begir	ns with masteri
he Russian alphabe	(for both reading and writing skills) and fundamentals of grammar necessary for everyday communication (listening and spea	king). Students wi	II be able to rea
	ked stress, understand its contents and summarize it.	,	
)4XRZ2	Russian for Beginners Z2	Z	2
	r of the programme is designed to teach skills for basic communication in everyday situations and for reading easy and short s		
	using short sentences and appropriate structures, and read aloud with confidence a short text without marked stress. They will	I also develop thei	ir vocabulary a
	natical structures. They will have mastered with confidence the Russian alphabet and will be able to use it in writing.		
)4XRZ3	Russian for Beginners Z3	Z	2
	on RZ2 and includes further everyday topics, develops understanding of short compact texts on new subtechnical topics (for tra	•	•
	roduces new grammar. Students will be trained to distinguish intonation patterns while listening to spoken language. They will l opress their opinion. Writing skills will be trained on guided writing tasks and note-taking.	be able to respond	a so as to be
)4XRZ4		Z	2
	Russian for Beginners Z4 on RZ3. It improves and expands the knowledge of general language in all four skills (reading and understanding longer texts with	_	1
	cation in everyday situations, writing longer texts). Students are trained to use grammar structures effectively (e.g., irregular ve	•	•
	; imperatives, conditionals). They practice and develop communication skills for everyday situations (food, travelling, free time).		-
=	ore specific topics (environment, addictions, the green movement). They become acquainted with various geographical data (e	-	
	ormation from the timetable, learn about Russian holidays and typical meals.	g., 0.2011a/, 10a11	
4XRZ5	Russian for Beginners Z5	Z	2
_	he student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understa	anding, extracting:	1
•	ecialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. C		
veryday topics. Stud	lying grammar is based on professional and technical texts and only includes items typically used in professional communication	on (verbal adjectiv	es, participles
assive voice). Stude	nts develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, polite requ	est, etc.)	
04XSM1	Spanish for Intermediate Students M1	Z	2
he course is design	ed for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-sem	ester course deve	lops standard
ocabulary and pays	attention to further grammar topics (e.g., perífrasis verbales, futuro imperfecto, direct object and indirect object pronouns, neg-	ative form of the in	mperative, and
ubjunctive), to writte	n and oral communication on a given everyday or easy subtechnical topic, for which the students are trained by reading texts	or listening to then	n.
04XSM2	Spanish for Intermediate Students M3	Z	2
he course develops	the students' knowledge from the previous course (SM1). Students are gradually acquainted with fundamentals of Spanish fo	r specific purpose	s in order to be
ble to work with spe	cialized texts on the Internet.		
04XSM3	Spanish for Intermediate Students M3	Z	2
	e supplemented with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of acadesis and acquainted with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of acadesis and acquainted with the peculiarities of acquainted with the peculiarities and acquainted with the peculiarities acquainted with the peculia		
•	ternet in Spanish and search for information of their specialization or field of interest. Students will use the information to write	short articles and	summaries. T
	amme, general Spanish course based on course books, covers presentations and, finally, a written and oral examination.		
)4XSP1	Spanish for Advanced Students P1	Z	2
	on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communica	tion. Course prere	quisites: level
of CEFR.			
)4XSP2	Spanish for Advanced Students P2	Z	2
	cond part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and s	yntax and focuses	on independe
ritten communicatio			
14XSP3	Spanish for Advanced Students P3	Z	2
	al part of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is	rocused on writter	n communicat
	nts will need in their career.		
)4XSZ1	Spanish for Beginners Z1	Z	2
	st stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundants at an elementary level on topics of everyday life. They will acquire and extend fundamental vecabulary of general Spanish	=	
	ate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Spanish		
14XSZ2	Spanish for Beginners Students Z2 on course SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structures and	Z	2
	hort adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries and countries are continuous.		
	eaking countries are also included.	Allers such as the	Ozcon Repub
4XSZ3	Spanish for Beginners Z3	Z	2
	Spanish for Degitiners 2.3 on course SZ2, and develops the student's vocabulary and grammar structure. The course covers realia (history and culture) of	_	
	ys attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperati		
	given general topic, for which the student is trained by reading texts or listening to them.	/	and oral
04XSZ4	Spanish for Beginners Z4	Z	2
	on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Span	1	1
	on to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of		=
	mmunication on a given general or subtechnical topic, for which the student is trained by reading texts or listening to them.		,
04XSZ5	Spanish for Beginners Z5	Z	2
14A3Z3			
	e supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanis	sh for specific pure	ooses. In its fin

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
		I	
	used on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the nonverbal aspects. Stylistics exercises, strategies for coping with stage-fright and a short excursion into the history of rhetoric are ar		-
00UPRA	Introduction to Law	Z	1
00UPSY	Introduction to Psychology	Z	1
01ALGE	Algebra	Z,ZK	6
statements, defini	exioms are treated in detail. Elements of the set theory cover only: equivalence and subvalence, the Cantorov-Bernstein theorem, the tion of ordinals and cardinals. Further standard algebraic structures are addressed: semigroups, monoids, groups, rings, integral don fields, lattices. Independent chapters are devoted to divisibility in integral domains and to finite fields.	nains, principal idea	al domains,
01ANA3	Mathematical Analysis A 3 Function sequences and series, introduction to topology and metric spaces, differential calculus of functions of several varial		9
01ANA4	Mathematical Analysis A 4 Inverse and implicit functions, constrained extrema, measure and integration theory, contour and surface integrals.	Z,ZK	9
projects at the fac	Bachelor Seminar ne seminar, students familiarize themselves with the general principles of publishing and presenting scientific work and the formal request. The second part is designed as a practical training for the defense of the bachelors degree project. The students give oral preses achieved during the work on their projects. Each presentation is followed by a discussion on scientific matters as well as on the possible performance.	ntations of the curr	ent state of
01DIFR	Differential Equations	Z.ZK	4
	is introduction in the solution of ordinary differential equations. It contains a survey of equation types solvable analytically, basics of the linear types of equations and introduction in the theory of boundary-value problems.	,	
01DIM1	Discrete Mathematics 1 The seminar is devoted to elementary number theory and applications. It includes individual problem solving.	Z	2
01DIM2	Discrete Mathematics 2 The seminar is devoted to recurrence relations. It includes individual problem solving.	Z	2
01DIMA3	Discrete Mathematics 3	ZK	2
	ow problems and methods of their solving from various parts of discrete mathematics. The seminar includes individual problem solving from various parts of discrete mathematics. The seminar includes individual problem solving iven literature.	1	_
01FAN2	Functional analysis 2	Z,ZK	5
	s to present selected fundamental results from functional analysis including basic theorems of the theory of Banach spaces, closed o	1	-
	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
The course starts for a complex function	rom outlining the Jordan curve theorem and the Riemann-Stieltjes integral. Then basic results of complex analysis in one variable are e on and the Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Caucholomorphic function, analytic continuation, isolated singularities, the maximum modulus principle, Liouville's theorem, the Cauchy est	xplained in detail: th hy's integral theore	m, Morera
	theorem.		
01LAL	Linear Algebra 1	Z	2
	2. Linear dependence and independence. 3. Basis and dimension. 4. Subspaces of vector spaces. 5. Linear mappings. 6. Matrices of theorem.	linear mappings. 7.	Frobenius
01LAL2	Linear Algebra 2 se matrix and operator. 2. Permutation and determinant. 3. Spectral theory (eigenvalue, eigenvector, diagonalization). 4. Hermitian ar	Z,ZK	4 5 Scalar
product and orthog	gonality. 6. Metric geometry. 7. Riesz theorem and adjoint operator. Outline of the exercises: 1. Methods for calculation of inverse mat. 3. Calculation of eigenvalues and eigenvectors. 4. Hermitian and quadratic forms. Canonical form. 5. Scalar product and orthogonalic complements. 6. Geometry exercises and examples. 7. Adjoint operators.	rices. 2. Methods of	f calculation
01LALZ	Linear Algebra 1, exam	ZK	2
01MAN	Calculus 1	Z	4
	Basic calculus (real analysis, functions of one real variable, differential calculus).	1	
01MAN2	Calculus 2	Z,ZK	8
	differential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolute a power series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of integ (Riemann definition), techniques of integration and application of integrals, Generalized Riemann integral		_
0414417		71/	A
01MANZ	Calculus 1, exam	ZK	4

01NMA1	Numerical Mathematics 1	ZK	4
The course introd	duces 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 t	he root of
01PRST	Probability and Statistics	Z,ZK	4
	e of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition and o	-	- 1
	ions as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit the The basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testin		ina provea.
01RMAF	Equations of Mathematical Physics	Z,ZK	7
	course is solving integral equations, theory of generalized functions, classification of partial differential equations, theory of integral transport partial differential equations (boundary value problem for eliptic PDE, mixed boundary problem for eliptic PDE).		I solution of
01SSM1	Seminar of Contemporary Mathematics 1	Z	2
This seminar	provides a different approach to those fields of mathematics that are included in curriculum but also to those that are not part of basic	courses of mather	natics.
01TA	Algebra and Calculus in Applications	ZK	2
We illustrate metho	ods based on combination of (CONtinuous) calculus and discrete (disCRETE) structures, so calles concrete mathematics. Theorems and informatics and they are illustrated on problems from informatics.	re motivated by pro	blems from
01TOP	Topology	ZK	2
01101	The aim of lecture is the systematization and deepening the knowledge of general topology.	ZI	
02BPMI1	Bachelor Thesis 1	Z	5
The bachelor proje	ct is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the 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 is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the 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 is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the 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 is based on a topic approved by the administrators of the programme, department and by the dean.	ect supervisor durii	ng common
02BPMI2	Bachelor Thesis 2	Z	10
The bachelor proje	ct is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the 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 is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the 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 is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the project is a superior of the programme and discussions.	ect supervisor durii	ng common
02DEF1	History of Physics 1	Z	2
	ace in the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural philo	•	-
neienistic period,	Archimed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galileo, Fascence. Newton and his work.	luygens. The birth	oi priysics
02DEF2	History of Physics 2	Z	2
	of classical mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. E		I
_	vanism, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzmann.		- 1
and relativistic p	physics, Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclear en	ergy, Elementary p	particles,
02DRG	standard model. The concept of Nature and Universe of today. Differential Equations, Symmetries and Groups	Z	4
OZDING	The purpose of the lecture is to teach students computation of symmetries of the differential equations.	2	7
02ELMA	Electricity and Magnetism	Z,ZK	6
Electric charge, Co	bulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectrics. Electric current and circuits, cond	uctivity. Basics of the	he relativity
	Electrodynamic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, RLC circuits. Electromagnetic waves, N		
02FYS1	Physical Seminar 1	Z	2
	devoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of physics anics. The problems are chosen, studied and presented by the students themselves, with the possibility to use PC and physical labora	•	ourse or
02GMF1	Geometric Methods in Physics 1	Z,ZK	4
	Foundations of geometric methods in physics on manifolds. Differential forms.	, ,	
02KM1	Quantum Mechanics 1	Z,ZK	6
Abstract: The lectu	re describes the birth of quantum mechanics and description of one particle and more particles by elements of the Hilbert space as well	I as its time evolution	on. Besides
02KM2	that it includes description of observable quantities by operators in the Hilbert space and calculation of their spectra. Quantum Mechanics 2	Z,ZK	6
	ture expands the introduction to quantum mechanics with more general formalism of quantum theory, approximate methods and path		
	ethods used in various applications of quantum mechanics and prepares the students for an effective scientific research and further stu	-	
	formulations of quantum field theory.		
02LCF1	Experimental Laboratory 1	Z	2
02LCF2	Cavendish experiment. Elasticity.Thermal capacities. Electric measurements, Acoustic. Oscillations. Experimental Laboratory 2	Z	2
UZLCFZ	Electric and magnetic field, microwaves, Xray and gamma rays, geometric optics	۷	2
02MECH	Mechanics	Z	4
	hysics, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, so	lving equations of i	
one-dimensional r	notion, motion in a central force field, forces in non-inertial reference frames. Mechanics of a system of particles, two-body problems, of a rigid body, rotation.	particle collisions.	Mechanics
02MECHZ	Mechanics - Examination	ZK	2
0011075	The content of the subject is the examination according to the plan of studies.		
02NSAD1	Simulations and Data Analysis Tools 1	Z	2
02OR	Data analysis and simulations of high energy elementary particle collisions. ROOT and Pythia programs. General Relativity	ZK	3
	neral theory of relativity: principle of equivalence and principle of general covariance, parallel transport and geodesic equation, gravita		
3	Einstein's gravitational law. Schwarzschild solution of the Einstein equations, homogeneous and isotropic cosmological mode		
02SMF	Seminar of Mathematical Physics	Z	2
The purpose of the	he seminar is to iluminate mathematical physics by virtue of solved examples. It is supposed that the teachers of the physics departm	ent will present sin	nple tasks
00075	concerning their scientific activities that could become the topics of the student?s bachelor theses in the next year	71/	
02STR	Special Theory of Relativity Students extend their knowledge of classical, non-quantum mechanics of the special theory of relativity fundamentals.	ZK	2

02TEF1 Theoretical Physics 1 Z,ZK The course is an introduction to analytical mechanics. The students acquire knowledge of the basic concepts of the Lagrange and Hamiltonian formalisms as well as diferent approaches to description of dynamics (Newtons, Lagrange, Hamilton and Hamilton-Jacobi equations). The efficiency of these methods is illustrated on elementary examples like the two-body problem, the motion of a system of constrained mass points, and of a rigid body. Advanced parts of the course cover differential and integral principles of mechanics. The subject is the first part of the course of classical theoretical physics (02TEF1, 02TEF2). Theoretical Physics 2 Tensors and transformations in physics. Mechanics of point mass, rigid body and continuum. The special theory of relativity: relativistic mechanics and classical field theory in the Minkowski space-time. Classical electrodynamics: Maxwell's equations in the Minkowski space-time, electromagnetic waves in dielectric media, electromagnetic radiation in the dipole approximation. 02TER Heat and Molecular Physics Thermal expansion of materials, heat transfer; stationary and non-stationary heat conduction, heat transfer and penetration; 1st and 2nd thermodynamic principle, ideal and real gas, entropy; non-chemical systems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials; kinetic theory. Maxwell's velocity distribution, equipartition theorem. Thermodynamics and Statistical Physics Foundation of thermodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelier principle. Statistical entropy. Basics of many body descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. Introduction to Particle Physics Abstract: Overview of nuclear and subnuclear physics from the beginning of the 20th century until today. The lecture describes basic properties of atomic nuclei, nuclear decays and nuclear reactions. Then it concentrates on elementary particle physics. It reviews basic properties of elementary particles and fundamental interactions leading to the formulation of the so-called Standard Model of elementary particles. The lecture contains the overview of current particle and astroparticle experiments. 02UFEC Introduction to Elementary Particle Physics 2 The course provides an easily accessible introduction to elementary particle physics. Development, methods, goals and perspectives of the subject are presented. Introduction to Curves and Surfaces 02UKP 2 The goal of the lecture is an introduction to the differential geometry of simple manifolds - curves and two-dimensional surfaces. The basic concepts for the curves are introduced Frenets formulae are explained. In the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essential part of the lecture are the examples calculated by students Introduction to Curves and Surfaces The goal of the lecture is an introduction to the differential geometry of simple manifolds - curves and two-dimensional surfaces. The basic concepts for the curves are introduced Frenets formulae are explained. In the surface theory we introduce first and second fundamental forms and mean and Gaussian curvature. Essential part of the lecture are the examples calculated by students. 02UKP2 Introduction to Curves and Surfaces 2 7 2 The lecture extends the course 02UKP1. The properties of the first fundamental form are briefly summarized. The concept of the second fundamental form is introduced, leading to the mean and Gaussian curvature. Finally, the usual concepts of Riemann geometry are introduced. 02UKT Introduction to Quantum Theory 2 The aim of the lecture is to introduce the basic principles of quantum theory and its interpretation on simple examples. 02VOAF Waves, Optics and Atomic Physics Wave phenomena in mechanics and electromagnetism: modes, standing and travelling waves, wave packets indispersive media. Wave optics: polarization, interference, diffraction, coherence. Geometrical optics. Introduction to quantum physics: black body radiation, quantum of energy, photoeffect, the Compton effect, the de Broglie waves,the Schrodinger equation, stationary states and spectra of finite systems. Foundations of Physical Measurements 1 The lecture is designed for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it can be attended by students of other branches. The goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired data on a PC. Students learn the basic habits of work in a physics lab. Foundations of Physical Measurements 2 The lecture is designed for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it can be attended by students of other branches. The goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired data on a PC. Students learn the basic habits of work in a physics lab. 04AKS **English Conversation** The course will develop the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral communication. The student will develop their vocabulary for various communication situations and will master their communication strategy. They will also practise their listening skills in order to better follow and participate in discussions. The student will be trained to express their ideas clearly and according to current English usage, and become a more confident speaker. 04XAM1 English for Intermediate Students M1 The course is designed for students who have successfully completed the full secondary school English language course at least at the A2 level of the Common European Framework of Reference for Languages (CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into fundamentals of vocabulary and style typical of professional oral and written communication situations. Thus it covers topics related to the student's life and needs as well as topics of subtechnical interest. Attention is also paid to extending the knowledge of grammar issues used in EAP. English for Intermediate Students M2 The AM2 course expects the student to have completed the AM1 course. It develops their skills for work with subtechnical texts, focusing also more on specific grammar, functions, and lexical items typical of ESP and EAP (e.g., definition, existence and classification of phenomena, object descriptions). Part of the course is also guided writing. If necessary, grammar revision is included. English for Intermediate Students M3 The course develops the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing 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. 04XAMZK English for Intermediate Students Examination 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. English for Advanced Students P1 04XAP1 Ζ The course is designed for students who have successfully completed the full secondary school English language course (at least the B1 level of the Common European Framework of Reference for Languages - CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into the fundamentals of vocabulary, functions, grammar, and style typical of professional oral and written communication situations (fundamentals of terms in mathematics and physics, definitions, graph descriptions, etc). It also

covers professional oral and written communication on topics related to the undergraduate's life and needs. It develops skills for free professional writing (writing a CV, letter of application, polite request). If necessary, revision of selected grammar topics is included. 04XAP2 English for Advanced Students P2 7 2 The AP2 course is based on AP1, thus extending the student's skills for working with subtechnical texts, and even with professional texts of chosen branches of science. According to the students' needs it concentrates on chosen grammar topics, but mainly intends to develop understanding of syntactic structures and typical rhetorical functions (e.g., various types of descriptions, and, if possible, a case study). Increasing emphasis is placed on the undergraduate's independent work with and reading of linguistically more demanding materials. The course extends the student's subtechnical vocabulary, and includes fundamental notions of chosen branches of science. It is focused on formal writing including the sentence and paragraph structure, linking, cohesion and coherence in texts. 04XAP3 English for Advanced Students P3 The AP3 course is based on AP2 and expects the student to work without any guidance with authentic professional materials and to interpret the text. It includes training oral and written communication skills and functions (e.g., expressing an opinion, agreement, and objections; taking part in discussion, note-taking; summarizing, writing an abstract) and, if possible, also preparing a project on a given or chosen topic and presenting it. The course places emphasis on distinguishing levels of formal and informal language both in oral and written communication. 04XAPZK English for Advanced Students Examination ZK The course content is the examination as given by the study plan. The student is supposed to demonstrate mastering the AP3 syllabus and the ability to apply their knowledge obtained in the three AP courses. The examination consists of 2 parts - written (100 min) and oral (30 min) and includes also oral presentation of a topic from the student's field of study. Czech for Foreigners - Intermediate 1 2 The course is focused on correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending the student's vocabulary for various social situations. 04XCESM2 Czech for Foreigners - Intermediate 2 Ζ 2 The course develops the topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and reading skills and trains the student in understanding common abbreviations, abbreviated words, and mathematical terms and formulas. Czech for Foreigners - Intermediate 3 The last course revises morphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is especially focused on stylistics and lexicology and on developing the student's writing skills. 04XCFSM7K Czech for Intermediate Students Examination 7K 4 The course content is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the CESM1,2,3 courses and can only be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher. 04XCESP1 Czech for Foreign Students - Advanced 1 Ζ 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 European Framework of Reference. It is focused partly on revision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of science. Students are taught the basics of functional style of engineering and professional communication, both in spoken and written form. The topics include University Studies and Student Life. Written practice includes communication with teachers and faculty administrators. 04XCESP2 Czech for Foreigners - Advanced 2 2 This course extends the student's knowledge acquired in CESP1 and focuses on difficult language phenomena. It practises working with technical and specialist texts placing greater emphasis on individual work. 04XCESP3 Czech for Foreigners - Advanced 3 7 2 The course develops the student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation, and, finally, presentation of the student's project. Writing skills necessary for professional communication are trained. 04XCESPZK Czech for Foreign Students - Advanced Examination 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. 04XCESZ1 Z Czech for Foreigners - Beginners 1 2 The course is designed for students of the English programme. Students will become acquainted with the main characteristics of Czech (phonetic and grammar features) and they will acquire basic language and speaking skills. The course focuses on pronunciation exercises, simple social phrases, and oral and written communication in the most common 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 7 2 The language and communication competences acquired in CESZ1 are further developed. Students deepen their knowledge of the declension and conjugation system 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 2 The course further develops the language and communication competences acquired in the XCESZ1 and XCESZ2 courses. The teaching focuses on building up basic vocabulary, fixing correct pronunciation and deepening grammar, features through practice, as well as introducing the Czech culture. Students are asked to produce simple texts and they practise frequent types of dialogue. They also practise understanding texts in terms of main ideas or looking for specific details in texts. The course covers roughly lessons 5-7 in eština expres 04XCESZZK Czech for Foreigners Beginners - Examination The course content is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04XCESZ1,2,3 courses and can only be taken after successful completion of all three courses. Detailed information is to be obtained from the teacher. 04XFM1 French for Intermediate Students M1 Ζ French - intermediate FM The objective of this three-semester course is to improve and further develop communication in the French language in both written and oral form. Students will be able to communicate in social interaction and in academic, scientific and professional environment. They will be able to use the language to transmit general and technical information and to solve problems. FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises, systemizes and expands language skills gained in previous study. The following topics are covered: University studies in our country and in France, writing of transactional letters, CV, personal statement, request, answer to an advert, French culture and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts, work based on these texts. 04XFM2 2 French for Intermediate Students M2 Course FM2 builds on FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science texts, features typical for technical and scientific language (passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French science and technology, French scientists, artists and architects. Description of an object, device, shapes, dimensions, material. French for Intermediate Students M3 04XFM3 The course is focused on improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures (subordinate and infinitive clauses, participle structures, compound tenses). Text summary. -Students prepare a written paper which will be delivered in form of an oral presentation in-class. The paper is linked to the 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 work compiled from French articles and one's own knowledge/experience. -Longer monologues on topics /situations set for the examination are prepared. Text structure, cohesion and coherence.

04XFMZK	French for Intermediate Students Examination	ZK	4
	e examination as given by the study programme. The whole French programme is ended with an examination covering the contents o		
THO COMOTICION	consists of a written and oral part and is organized according to Examination Instructions, a document available on the well		armination
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	. – .	
	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 repe		
· · · · · · · · · · · · · · · · · · ·	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	•	
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		
	technical and scientific communication are stressed (passive voice, nominalization, word formation).		
04XFP3	French for Advanded Students P3	Z	2
	sed on systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in eng		
	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.		
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		
THE WHOLE THEHEI	Examination Instructions, a document available on the web. Assessment of the presentation is included into the examination gr	•	oording to
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 soc		
-	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 - Pravd		- 1
	za áte ky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4: introductions, pe		-
	directions, simple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronu		•
04XFZ2	French for Beginners Z2	7	2
-	ng up with FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of the	texthook: Pravda -	
	iners . Additional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreeme		
_	, map of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral communi-	_	
anamang, aaroming,	How does the machine work? A few expressions concerning the study. Name of University and Faculty.	zanom opcomo top.	
04XFZ3	French for Beginners Z3	7	2
	upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - Pra	. – .	_
	and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for inf		-
,	pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts.		
04XFZ4	French for Beginners Z4	Z	2
-	up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The cor	. – .	
	ne textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lectur		
	The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shopp		0 0
	country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet	-	,
04XFZ5	French for Beginners Z5	7	2
	red in FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topic. They pr	. – .	_
•	is covered by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other materials. To	-	
•	of French science and technology, information about France. Grammar is systemized and complemented with syntax (subordinate class)		
	subjunctive clauses, gerund, passive.		
04XFZZK	French for Beginners Examination	ZK	3
	examination as given by the study plan. The course is terminated with an examination consisting of oral and written part. The examin		
	Instruction for examination. Its content covers the levels FZ1 - FZ5.		
04XNM1	German for Intermediate Students M1	Z	2
	e course is to level off the students' skills in the German language. The course focuses on revision of more difficult phenomena and st		
-	processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Repu		
	sues together with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physicists	•	
	terminology. It develops communication on related topics and is aimed at correct pronunciation, grammatical correctness and unders		
04XNM2	German for Intermediate Students M2	Z	2
	ces other more complex grammatical structures and their application in communication based on technical texts, such as the relation be	_	
	peginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and		- 1
	information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systemati		
, 5 .	phenomena important for professional discourse (participles, relative clauses).	,	
04XNM3	German for Intermediate Students M3	Z	2
	ces other more complex grammatical structures and their application in communication based on technical texts, such as the relation be		
	peginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and		- 1
	information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systemati		
	phenomena important for professional discourse (participles, relative clauses).		-
04XNMZK	German for Intermediate Students Examination	ZK	4
	t is the examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examination		
	ver the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessment		
,	is to be obtained from the teacher.		
04XNP1	German for Advanced Students P1	Z	2
	es good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be level		
	es good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be level se is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for d		
	nar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on pra-		
	i.e., telephoning.		
	ner, receptioning.		

04XNP2	German for Advanced Students P2	Z	2
	os the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending	_	
· · ·	t introduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and pra oth written and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indi		munication,
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.	-	
students are traine	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.	course also includes	s translation
04XNPZK	German for Advanced Students Examination	ZK	4
	it is the examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination of		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
0.07/2014	information is to be obtained from the teacher.		
04XRM1	Russian for Intermediate Students M1 gned for students with previous knowledge of Russian from secondary schools. Students are supposed to know the Russian alphabet (L Z L	2
	pried for students with previous knowledge of Russian norm secondary scribbis. 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		
	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	ole.	
04XRM2	Russian for Intermediate Students M2	Z	2
	The course is based on the RM1 course, its contents and scope correspond roughly to RZ4, however, for half of the time allotted in the		
04XRM3 The course develor	Russian for Intermediate Students M3 ps the knowledge and skills acquired in RM1 and RM2 and its contents and scope are roughly at the same level as those of RZ5, howe	Z Z	2 ime allotted
The course develop	in the timetable.	over, for flatt of the t	iiio aiiottoa
04XRMZK	Russian for Intermediate Students Examination	ZK	4
	it is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled	-	
	lents 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 Z	2 grammar
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 structures, understanding the fundamentals of technical language and training writing skills.	alcing more difficult	graninai
04XRP2	Russian for Advanced Students P2	Z	2
The course is bas	sed on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives, ve	erb aspects, specific	syntactic
	structures). Stress is put on independent oral and written communication.		
04XRP3	Russian for Advanced Students P3	Z Z	2
	ed on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraphrasin		
courses require go	od previous knowledge of general language at secondary level (listening, reading, correct communication in everyday situations). The	-	
	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 wi	e courses develop a	and expand
these skills. Further	er study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and witchnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according to the students' specialization or an according to the students' specialization.	e courses develop a ritten interpretation)	and expand). Students
these skills. Furthe develop their subte	er study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and with chnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according to the students' specialization, oral and with chnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according to the students' specialization, oral and with the students' specialization and with the students' specialization and write according to the students' specialization, oral and write according to the students' specialization, oral and write according to the students' specialization and the students' specialization are specialized by the students' specialization and the students' specializati	e courses develop a ritten interpretation) urately and with cor	and expand). Students nfidence on
these skills. Furthedevelop their subte	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' 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' specialization, oral and we chnical topics. Russian for Advanced Students Examination	e courses develop a ritten interpretation) urately and with con	and expand). Students nfidence on
these skills. Furthed develop their subtermed 04XRPZK The course contermed the skills.	er study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and with chnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according to the students' specialization, oral and with chnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according to the students' specialization, oral and with the students' specialization and with the students' specialization and write according to the students' specialization, oral and with the students' specialization and write according to the students' specialization and the students' specialization and students' specialization and specialization are specialization and specialization are specialization and specialization and specialization are specialization are specialization are specialization and specialization are specialization are specialization and specialization are specialization are specialization are specia	e courses develop a ritten interpretation) urately and with cou ZK dge and skills acqui	and expand). Students infidence on 4 ired in RP1
these skills. Furthed develop their subtermed 04XRPZK The course contermed the skills.	er study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and with chnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according to the students' specialization, oral and with chnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according to the students specialization, oral and with chnical topics. Russian for Advanced Students Examination It is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowledge.	e courses develop a ritten interpretation) urately and with cou ZK dge and skills acqui	and expand). Students infidence on 4 ired in RP1
these skills. Furthedevelop their subtervalue of their subtervalue of their subtervalue of the course contervalue of the course contervalue of the course representation of the course represe	er study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and with chinical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according to the speak write acco	e courses develop a ritten interpretation) urately and with con ZK dge and skills acquiructions by the teac Z . Thus it begins with	and expand). Students infidence on 4 ired in RP1 wher. 2 in mastering
these skills. Furthedevelop their subtervalue of their subtervalue of their subtervalue of the course contervalue of the course contervalue of the course representation of the course represe	er study is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral and with chinical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write according to the study plan according to the study plan. The course is completed by taking a written and oral examination testing the knowled lents are eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instrained the first stage of the five-semester programme, its final aim being reading and understanding professional texts written in Russian poet (for both reading and writing skills) and fundamentals of grammar necessary for everyday communication (listening and speaking)	e courses develop a ritten interpretation) urately and with con ZK dge and skills acquiructions by the teac Z . Thus it begins with	and expand). Students infidence on 4 ired in RP1 wher. 2 in mastering
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04XSM2	Spanish for Intermediate Students M3	Z	2
The course develo	ops the students' knowledge from the previous course (SM1). Students are gradually acquainted with fundamentals of Spanish for spanish for spanish for spanish for spanish for spanish to work with specialized texts on the Internet.	pecific 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	Internet in Spanish and search for information of their specialization or field of interest. Students will use the information to write shot final part of the programme, general Spanish course based on course books, covers presentations and, finally, a written and oral ex		maries. The
04XSMZK	Spanish for Intermediate Students Examination	ZK	4
The course content	t is the examination as given by the study plan. SMZK examination consists of two parts - written and oral; to be eligible for the written p non-graded assessment for course SM3.Oral examination follows the written part.	art, students will ha	ave obtained
04XSP1	Spanish for Advanced Students P1	Z	2
Course concentrate	es on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communication. of CEFR.	Course prerequisi	ites: level B2
04XSP2	Spanish for Advanced Students P2	Z	2
Course SP2 is the	second part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and synta written communication.	x and focuses on i	independent
04XSP3	Spanish for Advanced Students P3	Z	2
Course SP3 is the	final part of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is focu based on what students will need in their career.	used on written cor	mmunication
04XSPZK	Spanish for Advanced Students Examination	ZK	4
The course content	t is the examination as given by the study plan. Examination SPZK consists of two parts, namely oral and written. The prerequisite for a passed the written test. Examination content is based on syllabi of courses SP1, SP2, and SP3 or on an individual study plan of the	· · · · · · · · · · · · · · · · · · ·	art is having
04XSZ1	Spanish for Beginners Z1	Z	2
Course SZ1 is the t	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 Span	•	
04XSZ2	Spanish for Beginners Students Z2	Z	2
	ed on course SZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structures and lexis		
them to understand	d short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries and other Realia of Spanish-speaking countries are also included.	s such as the Cze	ch Republic.
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		-
	It pays attention to further grammar topics (pretérito perfecto, pretérito indefinido, pretérito imperfecto, the gerund and the imperative communication on a given general topic, for which the student is trained by reading texts or listening to them.). It includes writte	n and oral
04XSZ4	Spanish for Beginners Z4	Z	2
	ed on course SZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish		-
	ntion to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the to written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listeni	="	ubjunctive),
04XSZ5	Spanish for Beginners Z5	Z	2
	are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish for part, the general Spanish course based on the course book will end with presentations and, finally, a written and oral examina	r specific purpose	1
04XSZZK	Spanish for Beginners Examination	ZK	3
	ent is the examination as given by the study plan. Examination consists of two parts - written and oral. Student can register for oral expassed the written examination test.	1	1
11UFP	Introduction to Solid State Physics	ZK	3
	ains the fundamentals of diffraction stress analysis with a strong emphasis on the illustrations of the capability of X-ray diffraction to	I	1
11UFPLN	Introduction to Solid State Physics The purpose of this lecture is to introduce the undergraduate students to the study of the solid state physics.	ZK	2
12UMF	Introduction to Modern Physics	Z	3
	ided 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		
	ting systems. Operating system UNIX. Basic principles, kernel, kernel services. Documentation. File system, file atributes, working wi		
· ·	reter (shell) bash and its programming (scripts). Controlling processes, process status, computer load a process priorities. Standard to imputer networks. Local computer networks. Global computer networks. Addresses and protocols TCP/IP. Network configuration of a computer networks.		
14TED	hardware sharing, mail, scp, etc. Network applications Creating Floctronic Documents	Z	2
	Creating Electronic Documents atting and presenting student theses. Individual exercises focus on creating and formatting texts, equations, charts, tables, presentation	I	1
450114	office suite.	7	
15CH1 The most importan	General Chemistry 1 It concepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practical to the course of the course	Zuse are illustrated l	3 by examples
150LI0	solved in exercises.	7 71/	2
15CH2	General Chemistry 2 continuation of the course General chemistry I. The main attention is paid to general principles governing chemical processes. Using	Z,ZK	the fact that
· ·	e principles is not restricted only to chemical processes is documented. The significance and practical use of explained principles are in exercises.	-	
18ZALG	Basics of Algorithmization	Z,ZK	4
	Basics of Algorithmization s devoted to selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of		I
18ZPRO	Basics of Programming	Z	4
	ntended mainly for students with little or no experience in programming. It familiarizes the students with the basic concepts in program programming language.	. –	1
	programming ranguage.		

TV-1	Physical Education	Z	1
TV-2	Physical Education	Z	1
TV-3	Physical education	Z	1
TV-4	Physical education	Z	1

For updated information see http://bilakniha.cvut.cz/en/FF.html Generated: day 2025-07-03, time 22:33.