Study plan

Name of study plan: Fyzikální inženýrství - Laserová technika a fotonika

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Physical 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: BSPFILTF1

Name of the group: BS P_FIB LTF 1st year

Requirement credits in the group:

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

Credits in the group: 0

Note on the group: Podmínkou skládání zkoušky 01MANZ je získání zápočtu z 01MAN.Podmínkou skládání

zkoušky 01LALZ je získání zápočtu z 01LAL

| Code | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) | Completion | Credits | Scope | Semester | Role |
|---------|---|------------|---------|-------|----------|------|
| 02DEF1 | History of Physics 1 Igor Jex Martin Štefaňák Igor Jex (Gar.) | Z | 2 | 2+0 | Z | PS |
| 02ELMA | Electricity and Magnetism Iskender Yalcınkaya, Josef Schmidt, Jiří Hrivnák, Goce Chadzitaskos, Jan Vysoký Jan Vysoký Josef Schmidt (Gar.) | Z,ZK | 6 | 4+2 | L | PS |
| 01LAL | Linear Algebra 1 Petr Ambrož, Lubomíra Dvořáková Lubomíra Dvořáková (Gar.) | Z | 2 | 2P+2C | | PS |
| 01LALZ | Linear Algebra 1, exam Petr Ambrož, Lubomíra Dvořáková Lubomíra Dvořáková (Gar.) | ZK | 2 | 0P+0C | | PS |
| 01LAL2 | Linear Algebra 2 Petr Ambrož, Lubomíra Dvořáková Lubomíra Dvořáková (Gar.) | Z,ZK | 4 | 2P+2C | | PS |
| 01MAN | Calculus 1 Pavel Strachota Pavel Strachota (Gar.) | Z | 4 | 4+4 | | PS |
| 01MANZ | Calculus 1, exam Pavel Strachota, Miroslav Kolář, Edita Pelantová Pavel Strachota Pavel Strachota (Gar.) | ZK | 4 | 0P+0C | | PS |
| 01MAN2 | Calculus 2 Maksym Dreval, Miroslav Kolář, Edita Pelantová Edita Pelantová Maksym Dreval (Gar.) | Z,ZK | 8 | 4P+4C | | PS |
| 02MECH | Mechanics David Břeň Antonín Hoskovec David Břeň (Gar.) | Z | 4 | 4+2 | Z | PS |
| 02MECHZ | Mechanics - Examination Iskender Yalcınkaya, Goce Chadzitaskos, Stanislav Skoupý, Petr Novotný, David Břeň, Filip Petrásek, Antonín Hoskovec Antonín Hoskovec David Břeň (Gar.) | ZK | 2 | - | Z | PS |
| 00PT | Preparatory Week Petr Ambrož, Milan Krbálek Petr Ambrož Petr Ambrož (Gar.) | Z | 2 | týden | Z | PS |
| 02TER | Heat and Molecular Physics Filip Petrásek Petr Novotný Petr Jizba (Gar.) | Z,ZK | 4 | 2+2 | L | PS |
| 18ZPRO | Basics of Programming Jan Vondruška, Vladimír Jarý, Miroslav Virius, Jakub Klinkovský, Petr Pauš, Jan Tomsa, Zuzana Petříčková Miroslav Virius Miroslav Virius (Gar.) | Z | 4 | 4C | Z | PS |

Characteristics of the courses of this group of Study Plan: Code=BSPFILTF1 Name=BS P_FIB LTF 1st year

| 02DEF1 | T | | |
|--|--|---|---|
| - | History of Physics 1 | Z | 2 |
| | n the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural p | • | • |
| | ilmed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galile | o, Huygens. The bir | th of physics |
| • | ce. Newton and his work. | | |
| 02ELMA | Electricity and Magnetism | Z,ZK | 6 |
| • | mb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectrics. Electric current and circuits, | • | of the relativity |
| heory. Electrodynamic | cforces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, RLC circuits. Electromagnetic waves, Maxwel | II equations. | |
| 01LAL | Linear Algebra 1 | Z | 2 |
| 1. Vector space. 2. Line | ear dependence and independence. 3. Basis and dimension. 4. Subspaces of vector spaces. 5. Linear mappings. 6. Matrices | of linear mappings. | 7. Frobenius |
| theorem. | | | |
| 01LALZ | Linear Algebra 1, exam | ZK | 2 |
| 01LAL2 | Linear Algebra 2 | Z,ZK | 4 |
| Outline: 1. Inverse mat | rix and operator. 2. Permutation and determinant. 3. Spectral theory (eigenvalue, eigenvector, diagonalization). 4. Hermitian a | nd quadratic forms. | 5. Scalar |
| roduct and orthogona | ality. 6. Metric geometry. 7. Riesz theorem and adjoint operator. Outline of the exercises: 1. Methods for calculation of inverse i | matrices. 2. Methods | of calculation |
| of determinants. 3. Ca | lculation of eigenvalues and eigenvectors. 4. Hermitian and quadratic forms. Canonical form. 5. Scalar product and orthogona | lity. Calculation of o | rthogonal |
| complements. 6. Georg | netry exercises and examples. 7. Adjoint operators. | | |
| 1MAN | Calculus 1 | Z | 4 |
| 3asic calculus (real ar | alysis, functions of one real variable, differential calculus). | | |
| | | | |
|)1MANZ | Calculus 1, exam | ZK | 4 |
| | Calculus 1, exam Calculus 2 | ZK Z,ZK | 4 8 |
| 1MAN2 | , | Z,ZK | 8 |
| 01MAN2 I. Continuation of diffe | Calculus 2 | Z,ZK | 8 onvergence 3. |
| 01MAN2 1. Continuation of diffe Real and complex pow | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolut | Z,ZK | 8 onvergence 3. |
| 01MAN2 . Continuation of diffe Real and complex pow Riemann definition), t | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolut rer series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of in | Z,ZK | 8 onvergence 3. |
| D1MAN2 I. Continuation of diffe Real and complex pow Riemann definition), t D2MECH | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolut ver series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of integration and application of integrals, Generalized Riemann integral | Z,ZK e and conditional contegrals: primitives, | 8 onvergence 3. definite integral |
| D1MAN2 I. Continuation of diffe Real and complex pow Riemann definition), t D2MECH ntroduction to physics | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolut ver series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of inechniques of integration and application of integrals, Generalized Riemann integral Mechanics | Z,ZK e and conditional contegrals: primitives, | 8 onvergence 3. definite integral 4 of motion for |
| D1MAN2 I. Continuation of differed and complex power Riemann definition), to D2MECH ntroduction to physics one-dimensional motion. | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolut ver series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of intechniques of integration and application of integrals, Generalized Riemann integral Mechanics In physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, on, motion in a central force field, forces in non-inertial reference frames. Mechanics of a system of particles, two-body proble | Z,ZK e and conditional contegrals: primitives, | 8 onvergence 3. definite integral 4 of motion for |
| D1MAN2 1. Continuation of differed and complex power (Riemann definition), to the complex power (Riemann definition), to the complex power (Riemann definition), to the complex power (Riemann) to the complex power (Riemannn) to the complex power (Riemannn) to the complex power (Riemannnn) to the complex power (Riemannnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolut ver series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of intechniques of integration and application of integrals, Generalized Riemann integral Mechanics In physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, on, motion in a central force field, forces in non-inertial reference frames. Mechanics of a system of particles, two-body proble | Z,ZK e and conditional contegrals: primitives, | 8 onvergence 3. definite integral 4 of motion for |
| Real and complex pow (Riemann definition), to 02MECH Introduction to physics one-dimensional motion of a rigid body, rotation 02MECHZ | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolut ver series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of inechniques of integration and application of integrals, Generalized Riemann integral Mechanics In physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, on, motion in a central force field, forces in non-inertial reference frames. Mechanics of a system of particles, two-body probles. | Z,ZK e and conditional contegrals: primitives, Z solving equations of ms, particle collision | 8 onvergence 3. definite integral 4 of motion for as. Mechanics |
| D1MAN2 1. Continuation of different and complex power Riemann definition), to D2MECH antroduction to physics one-dimensional motion arigid body, rotation D2MECHZ The content of the subsection of the subsectio | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absoluter series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of integration and application of integrals, Generalized Riemann integral Mechanics , physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, on, motion in a central force field, forces in non-inertial reference frames. Mechanics of a system of particles, two-body proble in Mechanics - Examination | Z,ZK e and conditional contegrals: primitives, Z solving equations of ms, particle collision | 8 onvergence 3. definite integral 4 of motion for as. Mechanics |
| D1MAN2 1. Continuation of different and complex power Riemann definition), to D2MECH and the different arigid body, rotation of a rigid body, rotation D2MECHZ The content of the sub-D0PT | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absoluter series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of inechniques of integration and application of integrals, Generalized Riemann integral Mechanics , physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, on, motion in a central force field, forces in non-inertial reference frames. Mechanics of a system of particles, two-body proble in. Mechanics - Examination ject is the examination according to the plan of studies. | Z,ZK e and conditional contegrals: primitives, Z solving equations of ms, particle collision | 8 sonvergence 3. definite integral 4 of motion for as. Mechanics |
| D1MAN2 I. Continuation of different and complex powers Riemann definition), to D2MECH D2MECH of a rigid body, rotation of a rigid body, rotation of the content of the sub D0PT D2TER | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absoluter series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of inechniques of integration and application of integrals, Generalized Riemann integral Mechanics Theory of integration and application of integrals, Generalized Riemann integral Mechanics Theory of integration and application of integrals, Generalized Riemann integral Mechanics Theory of integration and application of integrals, Generalized Riemann integral Mechanics Theory of integration and application of integrals, Generalized Riemann integral Mechanics Theory of integration and application of integrals, Generalized Riemann integral Mechanics Theory of integration and application of integrals, Generalized Riemann integral Mechanics Theory of integration integration of integrals, June 1988 Theory of integration of integration integrals, June 1988 Theory of integration of integrals, June 1988 Theory of integration of integrals, June 1988 Theory of integration of in | Z,ZK e and conditional contegrals: primitives, Z solving equations coms, particle collision ZK Z Z,ZK | 8 sonvergence 3. definite integra 4 of motion for as. Mechanics 2 4 |
| D1MAN2 I. Continuation of different and complex powers Riemann definition), to D2MECH D2MECH of a rigid body, rotation of a rigid body, rotation of the content of the sub D0PT D2TER Thermal expansion of | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absoluter series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of itechniques of integration and application of integrals, Generalized Riemann integral Mechanics A, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, on, motion in a central force field, forces in non-inertial reference frames. Mechanics of a system of particles, two-body problem. Mechanics - Examination ject is the examination according to the plan of studies. Preparatory Week Heat and Molecular Physics | Z,ZK e and conditional contegrals: primitives, Z solving equations coms, particle collision ZK Z Z,ZK namic principle, idea | 8 onvergence 3. definite integra 4 of motion for as. Mechanics 2 4 4 al and real gas, |
| 01MAN2 1. Continuation of diffe Real and complex pow (Riemann definition), t 02MECH Introduction to physics one-dimensional motio of a rigid body, rotation 02MECHZ The content of the sub 00PT 02TER Thermal expansion of | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absoluter series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of itechniques of integration and application of integrals, Generalized Riemann integral Mechanics A, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, on, motion in a central force field, forces in non-inertial reference frames. Mechanics of a system of particles, two-body proble in. Mechanics - Examination Ject is the examination according to the plan of studies. Preparatory Week Heat and Molecular Physics materials, heat transfer; stationary and non-stationary heat conduction, heat transfer and penetration; 1st and 2nd thermodyres. | Z,ZK e and conditional contegrals: primitives, Z solving equations coms, particle collision ZK Z Z,ZK namic principle, idea | 8 sonvergence 3. definite integral 4 of motion for as. Mechanics 2 4 l and real gas, |
| 01MAN2 1. Continuation of different and complex powers from the property of th | Calculus 2 rential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absoluter series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of itechniques of integration and application of integrals, Generalized Riemann integral Mechanics A, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, on, motion in a central force field, forces in non-inertial reference frames. Mechanics of a system of particles, two-body proble in the examination according to the plan of studies. Preparatory Week Heat and Molecular Physics materials, heat transfer; stationary and non-stationary heat conduction, heat transfer and penetration; 1st and 2nd thermodyr systems: dielectric and magnetic materials; Maxwell relations and thermodynamic potentials; kinetic theory: Maxwell's velocity. | Z,ZK e and conditional contegrals: primitives, Z solving equations of ms, particle collision ZK Z Z,ZK namic principle, idea of distribution, equipa | 8 onvergence 3. definite integral 4 of motion for ns. Mechanics 2 2 4 Il and real gas, rittion theorem. |

Code of the group: BSPFILTF2

Name of the group: BS P_FIB LTF 2nd year

Requirement credits in the group:

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

Credits in the group: 0

Note on the group: Předmět 02TEF1 lze absolvovat až po absolvování předmětu 02MECHZ. Předmět 02TEF2 lze absolvovat až po absolvování předmětů 02FLMA a 02TFF1

| | ize absolvovat az po absolvovani predmeti | J UZELIVIA a | UZIEFI | • | | |
|--------|--|--------------|---------|-------|----------|------|
| Code | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) | Completion | Credits | Scope | Semester | Role |
| 02PRA1 | Experimental Laboratory 1 Libor Škoda, Jaroslav Bielčík Jaroslav Bielčík (Gar.) | KZ | 6 | 0+4 | Z | PS |
| 02PRA2 | Experimental Laboratory 2 Libor Škoda, Jaroslav Bielčík Jaroslav Bielčík (Gar.) | KZ | 6 | 0+4 | L | PS |
| 12LTB1 | Laser Technique 1 Helena Jelínková, Jan Šulc, Michal Němec Jan Šulc Helena Jelínková (Gar.) | Z,ZK | 3 | 2P+1C | L | PS |
| 01ANB3 | Calculus B 3 Milan Krbálek Milan Krbálek (Gar.) | Z,ZK | 8 | 4P+4C | | PS |
| 01ANB4 | Calculus B 4 Jiří Mikyška, Miroslav Kolář Jiří Mikyška Milan Krbálek (Gar.) | Z,ZK | 6 | 2P+4C | | PS |
| 12NME1 | Numerical Methods 1 Pavel Váchal Pavel Váchal (Gar.) | Z,ZK | 4 | 2+2 | L | 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 Jiří Tolar (Gar.) | Z,ZK | 6 | 4+2 | Z | PS |
| 12ZMDT | Measurement and Data Processing Ivan Procházka, Josef Blažej Josef Blažej Ivan Procházka (Gar.) | Z,ZK | 2 | 1P+1C | Z | PS |

Characteristics of the courses of this group of Study Plan: Code=BSPFILTF2 Name=BS P_FIB LTF 2nd year 02PRA1 Experimental Laboratory 1 ΚZ 6 Lecture is intended especially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear Engineering). But it can be also attended by students interested in the otherspecializations. In Experimental laboratory students learn how to prepare for experiments (including work with theliterature), the implementation of the measurement (acquire of different experimental procedures and routines), willteach writing the records of measurement, processing and evaluation of results. At the same time practically extendthe knowledge gained in lectures on physics. 02PRA2 Experimental Laboratory 2 Lecture is intended especially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear Engineering). But it can be also attended by students interested in the otherspecializations. In Experimental laboratory students learn how to prepare for experiments (including work with theliterature), the implementation of the measurement (acquire of different experimental procedures and routines), willteach writing the records of measurement, processing and evaluation of results. At the same time practically extendthe knowledge gained in lectures on physics. 12LTB1 Laser Technique 1 Open resonators. Stability. Transverse and Longitudinal Modes. Elements of Open Resonators. Threshold of laser oscillations. Gausian beam as an approximation of the fundamental mode. ABCD method. Optical radiation propagation in resonant medium. Two-level approximation. Equations for polarisation and inversion, dispersion, saturation. Coherent and non-coherent pulse propagation. Optical solitons. Photon echo. Superradiation. Amplified spontaneous emission Lasers without optical resonator. 01ANB3 Calculus B 3 1. Functional sequences and series - convergence range, criteria of uniform convergence, continuity, limit, differentiation and integration of functional series, power series, Series Expansion, Taylor's theorem. 2. Ordinary differential equations - equations of first order (method of integration factor, equation of Bernoulli, separation of variables, homogeneous equation and exact equation) and equations of higher order (fundamental system, reduction of order, variation of parameters, equations with constant coefficients and special right-hand side, Euler differential equation). 3. Quadratic functions and quadrics. 4. Metric spaces - metric, norm, scalar product, neighborhood, interior and exterior points, boundary point, isolated and non-isolated point, boundary of set, completeness of space, Hilbert spaces. Orthogonal polynomials. Complete orthogonal systems. 5. Differential calculus for functions of several variables - limit, continuity, partial and directional derivative, gradient, total derivatives and tangent plane. 6. Taylor series for functions of several variables. 7. Fundamentals in vector analysis, Jacobi matrix. 01ANB4 Calculus B 4 Z,ZK [1] Implicitly defined functions. [2] Regular mapping, transformation of coordinates, non-cartesian coordinate systems. [3] Local, constrained, and global extrema of functions of several independend variables. [4] Basics of the measure theory, and construction of the Lebesgue measure. [5] Integral calculus of functions of several independent variables - Riemann and Lebesgue integrals, basic properties, theorem of Fubini, substitution theorem, theorems of Levi and Lebesgue. Limit, continuity and differentiability of parametric integrals. [6] Line and surface integrals. Integral theorems. 12NME1 Numerical Methods 1 The course explains the basic principles of numerical mathematics important for numerical solving of problems important for physics and technology. Methods for solution of tasks very important for physicists (ordinary differential equations, random numbers) are included in addition to the basic numerical methods. Integrated computational environment MATLAB is used as a demonstration tool. The seminars are held in computer laboratory. 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). 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. 02TSFA Thermodynamics and Statistical Physics Foundation of thermodynamics and statistical physics. Thermodynamic potential, the Joule Thomson effect, conditions of equilibrium, the Braun-Le Chatelier principle. Statistical entropy. Basics of many body descriptionfrom a statistical point of view (classical and quasiclassical regime within the frame of a canonical and grand-canonical ensemble, Fermi gas, models of crystals and the black body radiation). The Boltzmann equation is used to discusses simple transport phenomena. 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,

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.

12ZMDT Measurement and Data Processing

Z,ZK

2

Basic knowledge for the measurements and data processing and result interpretation: errors, precision, accuracy, normal distribution and its propeties, data fitting, separation of the signal from the noise.

Code of the group: BSPFILTF3

Name of the group: BS P_FIB LTF 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 01RMFB 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 |
|---------|---|------------|---------|--------|----------|------|
| 12BPFI1 | Bachelor Project 1 Ivan Richter Ladislav Kalvoda (Gar.) | Z | 5 | 0P+5C | | PS |
| 12BPFI2 | Bachelor Project 2 Ivan Richter Ladislav Kalvoda (Gar.) | Z | 10 | 0P+10C | | PS |
| 02KM1 | Quantum Mechanics 1 Martin Štefaňák Martin Štefaňák (Gar.) | Z,ZK | 6 | 4P+2C | Z | PS |

| 12LTB2 | Laser Technique 2 Helena Jelínková, Václav Kubeček Václav Kubeček (Gar.) | Z,ZK | 3 | 2P+1C | Z | PS |
|--------|--|------|---|--------|---|----|
| 01RMFB | Equations of Mathematical Physics B Václav Klika Václav Klika Václav Klika (Gar.) | Z,ZK | 5 | 2P+2C | | PS |
| 11BSEM | Bachelor Seminar Radka Mika Havlíková, Ladislav Kalvoda Ladislav Kalvoda (Gar.) | Z | 1 | 0P+2C | L | PS |
| 12ZPLT | Basic Laser Technique Laboratory Josef Blažej, Václav Kubeček Josef Blažej Václav Kubeček (Gar.) | KZ | 6 | 0+4 | L | PS |
| 12ZPOP | Basic Optical Laboratory Alexandr Jančárek Alexandr Jančárek (Gar.) | KZ | 6 | 0+4 | L | PS |
| 12ZELD | Fundamentals of Electrodynamics Milan Šiňor Ivan Richter Milan Šiňor (Gar.) | Z,ZK | 2 | 2+0 | Z | PS |
| 12ZFS | Fundamentals of Photonic Structures Ivan Richter, Jiří Čtyroký Ivan Richter Ivan Richter (Gar.) | Z,ZK | 2 | 2P | L | PS |
| 11ZFPL | Basic to Solid State Physics Eva Mihóková | KZ | 2 | 26P+0C | Z | PS |
| 11ZFP | Basic to Solid State Physics Ladislav Kalvoda, Eva Mihóková Ladislav Kalvoda Ladislav Kalvoda (Gar.) | ZK | 3 | | Z | PS |
| 12ZAOP | Fundamentals of Optics Ivan Richter, Pavel Kwiecien Ivan Richter Ivan Richter (Gar.) | Z,ZK | 2 | 2+0 | Z | PS |

Characteristics of the courses of this group of Study Plan: Code=BSPFILTF3 Name=BS P_FIB LTF 3rd year 12BPFI1 Z **Bachelor Project 1** 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. Z 12BPFI2 **Bachelor Project 2** 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. 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. Z,ZK12LTB2 Laser Technique 2 3 Laser oscillator, the rate equation, the laser amplifier, Q-switching, mode-locking Equations of Mathematical Physics B 01RMFB Z,ZK 5 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. **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 defence 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 12ZPLT Basic Laser Technique Laboratory 6 K7 Lasers, solid state Nd:YAG laser, laser crystal, laser discharge lamp, laser cavity, resonator, free-running, Q-switching, laser amplifier. second harmonic, He-Ne glow discharges, laser diode, diode pumped Nd:YAG laser, CO2 laser marking, laser materials properties, non-linear transmission, laser beam transverse profile, acousto-optic modulators. 6 127P0P Basic Optical Laboratory ΚZ The practical laboratories give advanced practical skills by experimental work in optics and optoelectronics. Laboratory records must be elaborated 127FI D Z.ZK 2 Fundamentals of Electrodynamics Subject starts by derivation of Maxwell-Lorentz microscopic equations followed by transition to Maxwell macroscopic theory. Using special theory of relativity formulae are found for transformation of field vectors between two inertial systems of coordinates with appropriate invariants. Wave and Helmholtz equations are derived. By expansion into plane monochromatic waves methods of solving these equations are studied in homogeneous media with gradually increasing complexity: isotropic without losses, with absoption, with dispersion, and non-isotropic. Finally, solution in weakly non-homogeneous madia is presented using the method of eiconal. Individual chapters are illustrated by appropriate examples. Fundamentals of Photonic Structures The lecture covers the basics of photonic structures, it classifies photonic structures compares them with the electronic structures, summarizes their preparation and characterization. Specifically, the lecture discusses the basic physics and technology of optical waveguides; it introduces basic linear, nonlinear, and active structures of integrated photonics for applications in optical communications and sensors. Next, the attention is given to introduction of plasmonic structures and plasmonics, periodic structures and photonic crystals, metamaterials, metasurfaces, and finally to photonic structures for quantum technologies. Finally, the lecture is closed with student presentations on selected relevant topics and excursions to selected photonic laboratories. 11ZFPL Basic to Solid State Physics Description of fundamental properties of solids following the regular long distance ordering of atoms in a crystal lattice. Based on the introduced bonding interaction between atoms in solids, various types of crystals and their properties are defined. The model of crystalline lattice dynamics in harmonic approximation is described and basic thermal properties of crystals are derived. The periodic potential of the crystal lattice is introduced and its relation to the following model describing the energetic state of electrons in solids by means of electron energy bands explained. The special consequences of band approach to the physical properties of solids are elucidated. The aim of the course is to systematically introduce and interpret a broad phenomenological basis of physical properties of crystalline solids 11ZFP Basic to Solid State Physics ZK Description of fundamental properties of solids following the regular long distance ordering of atoms in a crystal lattice. Based on the introduced bonding interaction between atoms in solids, various types of crystals and their properties are defined. The model of crystalline lattice dynamics in harmonic approximation is described and basic thermal properties of crystals are derived. The periodic potential of the crystal lattice is introduced and its relation to the following model describing the energetic state of electrons in solids by means of electron energy bands explained. The special consequences of band approach to the physical properties of solids are elucidated. The aim of the course is to systematically introduce and interpret a broad phenomenological basis of physical properties of crystalline solids

12ZAOP Fundamentals of Optics

Z,ZK

2

The lecture covers the very basics of optics - electromagnetic theory, linear optical physics and material effects, basics of nonlinear effects, and geometrical optics. The main goal of the lecture is to obtain, on the bachelor level, broad and general information on optics, giving an essential orientation in the field, especially with respect to character of the bachelor work. Particular topics are further elaborated during departmental masters program. The lecture stems from the electrodynamic notion of plane waves in vacuum (including polarization effects), and further from material medium. It explains basics of linear and nonlinear response in material medium and dispersion properties. It next informs on consequences in anisotropic media, it explains processes induced by boundary conditions at interfaces. It also discusses the consequences of statistics on interference processes, explains elements of two-wave interference and their applications in interferometers. Based on the Fresnel diffraction integral, diffraction processes are presented in a graphical form, including fundamentals of grating diffraction. Based on this diffraction principle, basic functioning of holography is clarified. Finally, the lecture unravels the geometrical optics limit. It takes notice on geometrical approach imaging, substitutive schema of a paraxial imaging system, and optical aberrations. It shows fundamentals of imaging in optical instruments.

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: BSPFILTFPV1

Name of the group: BS P_FIB LTF Required optional courses 1st year

Requirement credits in the group:

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

Credits in the group: 0

Note on the group:

Studenti si volí alespoň 1 předmět.

| Code | members) | Completion | Credits | Scope | Semester | Role |
|--------|---|------------|---------|-------|----------|------|
| 12UFN | Tutors, authors and guarantors (gar.) Introduction to Photonics and Nanostructures Ivan Richter, Pavel Kwiecien, Jan Proška Ivan Richter Ivan Richter (Gar.) | KZ | 3 | 2P+1C | L | PV |
| 12ULTB | Introduction to Laser Technique Helena Jelínková, Jan Šulc, Michal Němec Jan Šulc Helena Jelínková (Gar.) | KZ | 3 | 2P+1C | L | PV |

Characteristics of the courses of this group of Study Plan: Code=BSPFILTFPV1 Name=BS P_FIB LTF Required optional courses 1st year

| 12UFN | Introduction to Photonics and Nanostructures | KZ | 3 | | | | | |
|---------------------------|--|----|---|--|--|--|--|--|
| Overview of nanostruct | verview of nanostructures and nanotechnologies; quantum technologies; quantum nanostructures; photonic structures; nanophotonics and nanoplasmonics; optical waveguides and | | | | | | | |
| fibers; integrated photo | nics; computer simulations; technological realization; student presentations | | | | | | | |
| 12ULTB | Introduction to Laser Technique | KZ | 3 | | | | | |
| Overview of electromag | Overview of electromagnetic radiation sources; laser principle; classification of lasers; characterization and rough application of various types of lasers; laser safety precautions. The | | | | | | | |
| laser amplifier, Q-switch | ning, mode-locking. | | | | | | | |

Code of the group: BSSPOLVEDY

Name of the group: BS - Social Sciences

Requirement credits in the group:

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

Credits in the group: 0

Note on the group:

Only one of these courses is obligatory.

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

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

| | 9 1 | | | | | |
|---------------------------|--|--------------------|------------|--|--|--|
| 00EKOT | Economy in Technology | Z | 1 | | | |
| The course introduces | e course introduces the basics of micro- and macroeconomics. | | | | | |
| 00ETV | Ethics of Science and Technology | Z | 1 | | | |
| 00RET | Rhetoric | Z | 1 | | | |
| The course is focused of | The course is focused on the acquisition of speech and voice techniques and on the rules of correct pronounciation. The course is also devoted to the composition of public speech | | | | | |
| as well as to its nonverl | oal aspects. Stylistics exercises, strategies for coping with stage-fright and a short excursion into the history of rhetoric are ar | integral part of t | he course. | | | |
| OUTDDV | Introduction to Law | 7 | 1 | | | |

Introduction to Psychology

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:

00UPSY

| 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 Kovářová, Slavěna Brownová Jana Kovářová Jana Kovářová (Gar.) | ZK | 4 | | Z | PV |
| 04XAPZK | English for Advanced Students Examination Slavěna Brownová, Darren Copeland Jana Kovářová Darren Copeland (Gar.) | ZK | 4 | | Z | PV |
| 04XCESZZK | Czech for Foreigners Beginners - Examination Slavěna Brownová Jana Kovářová Jana Kovářová (Gar.) | ZK | 4 | | Z | PV |
| 04XCESMZK | Czech for Intermediate Students Examination Jana Kovářová Jana Kovářová (Gar.) | ZK | 4 | | Z | PV |
| 04XCESPZK | Czech for Foreign Students - Advanced Examination Jana Kovářová Jana Kovářová Jana Kovářová (Gar.) | ZK | 4 | | Z | PV |
| 04XFMZK | French for Intermediate Students Examination Věra Šlechtová Věra Šlechtová (Gar.) | ZK | 4 | | Z | PV |
| 04XFPZK | French for Advanced Students Examination Věra Šlechtová Věra Šlechtová (Gar.) | ZK | 4 | | Z | PV |
| 04XFZZK | French for Beginners Examination Věra Šlechtová Věra Šlechtová Věra Šlechtová (Gar.) | ZK | 3 | | L | PV |
| 04XNMZK | German for Intermediate Students Examination Miloslava Čechová Miloslava Čechová (Gar.) | ZK | 4 | | Z | PV |
| 04XNPZK | German for Advanced Students Examination Miloslava Čechová Miloslava Čechová (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 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 (Gar.) | ZK | 3 | | L | PV |

| 04XAMZK | English for Intermediate Students Examination | ZK | 4 |
|-------------------------|---|----------------------|------------------|
| The course content is | s the examination as given by the study plan. The examination covers the AM1, AM2, and AM3 courses and consists of two par | ts - written (100 m | in) and oral |
| (20-30 min). The stud | lent is expected to master the AM syllabus and demonstrate the ability to apply their knowledge gained in the three English cou | ırses. | |
| 04XAPZK | English for Advanced Students Examination | ZK | 4 |
| The course content is | s the examination as given by the study plan. The student is supposed to demonstrate mastering the 04XAP3 syllabus and the | ability to apply the | ir knowledge |
| obtained in the three | 04XAP courses. In addition to passing courses 04XAP1, 04XAP2, and 04XAP3, a prerequisite for taking the exam is a presen | tation on a speciali | zed topic in the |
| student's field. The ex | kamination consists of 2 parts - written and oral. | | |
| 04XCESZZK | Czech for Foreigners Beginners - Examination | ZK | 4 |
| The course content is | s the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 0 | 4XCESZ1,2,3 cour | rses and can |
| only be taken after s | uccessful 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 | s the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the C | ESM1,2,3 courses | and can only |
| be taken after succes | ssful 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 | s the 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 | and can only |
| be taken after succes | ssful 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 ex | am ⁱ nation as given by the study programme. The whole French programme is ended with an examination covering the content: | of FM1-FM3. The | examination |
| consists of a written | and oral part and is organized according to Examination Instructions, a document available on the web. | | |
| 04XFPZK | French for Advanced Students Examination | ZK | 4 |
| | or and adjusted an examination equation describes the contents of EP1 EP2. The examination consists of a written and/or an exal pa | rt and is organized | according to |
| The whole French pr | ogram is ended with an examination covering the contents of FP1-FP3. The examination consists of a written and/or an oral pa | rt and is organized | according to |

04XF77K French for Beginners Examination The content is the examination as given by the study plan. The course is terminated with an examination consisting of oral and written part. The examination is ruled by the document Instruction for examination. Its content covers the levels FZ1 - FZ5 04XNM7K German for Intermediate Students Examination ZK The course content is the examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examination consisting of two parts - written and oral, which cover the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessment. More detailed information is to be obtained from the teacher. 04XNPZK German for Advanced Students Examination ΖK The course content is the examination as given by the study plan. The whole German for Advanced Students Course is completed by an examination consisting of two parts - written and oral, which cover the courses NP1 - NP3. The oral part follows after passing the written part successfully and after obtaining the 04NP3 ungraded assessment. More detailed information is to be obtained from the teacher. 04XRMZK Russian for Intermediate Students Examination 7K The course content is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowledge and skills acquired in RM1 - RM3. Students are eligible for the oral examination only after a prior pass in RM3 and a successful written examination. Students are given instructions by the teacher. 04XRPZK Russian for Advanced Students Examination ZK The course content is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowledge and skills acquired in RP1 - RP3. Students are eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instructions by the teacher. Russian for Beginners Examination 3 The course content is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowledge and skills acquired in RZ1 - RZ5. Students are eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instructions by the teacher. 04XSMZK Spanish for Intermediate Students Examination 7K The course content is the examination as given by the study plan. XSMZK examination consists of two parts: written and oral; to be eligible for the written part, students will have obtained non-graded assessment for course XSM3. Oral examination follows the written part. Spanish for Advanced Students Examination The course content is the examination as given by the study plan. Examination XSPZK consists of two parts, namely oral and written. The prerequisite for admission to oral part is having passed the written test. Examination content is based on syllabi of courses XSP1, XSP2, and XSP3 or on an individual study plan of the student. 04XSZZK Spanish for Beginners Examination ZK 3 The course content is the examination as given by the study plan. Examination consists of two parts: written and oral. Students can register for oral examination only if they have passed the written examination test

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

The role of the block: V

Code of the group: BSPFILTFV

Name of the group: BS P_FIB LTF Optional courses

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

Credits in the group: 0 Note on the group:

| Note on the | <u> </u> | | | | | |
|-------------|--|------------|---------|-------|----------|------|
| Code | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) | Completion | Credits | Scope | Semester | Role |
| 12APL | Application of Lasers Helena Jelínková, Alexandr Jančárek Helena Jelínková Helena Jelínková (Gar.) | Z,ZK | 2 | 2+0 | Z | V |
| 02DEF2 | History of Physics 2 Igor Jex Igor Jex (Gar.) | Z | 2 | 2+0 | L | V |
| 14ELM | Electron Microscopy Miroslav Karlík Miroslav Karlík (Gar.) | KZ | 2 | 2P+0C | | V |
| 01FKO | Functions of Complex Variable Severin Pošta, Pavel Šťovíček Pavel Šťovíček (Gar.) | Z,ZK | 3 | 2+1 | | V |
| 02FYS1 | Physical Seminar 1 Jaroslav Adam Filip Petrásek (Gar.) | Z | 2 | 0+2 | Z | V |
| 04AKS | English Conversation Jana Kovářová Jana Kovářová (Gar.) | Z | 1 | 0+2 | L | V |
| 02KM2 | Quantum Mechanics 2 Martin Štefaňák Martin Štefaňák (Gar.) | Z,ZK | 6 | 4P+2C | L | V |
| 12LAS | Laser Systems Václav Kubeček Václav Kubeček (Gar.) | Z,ZK | 3 | 2+1 | L | V |
| 00MAM1 | Essentials of High School Course 1 David Břeň Martin Štefaňák | Z | 1 | 0+1 | | V |
| 00MAM2 | Essentials of High School Math Course 2 Lukáš Heriban Lukáš Heriban Lukáš Heriban (Gar.) | Z | 1 | 0+1 | | V |
| 12MPP1 | Microprocessor Laboratory 1 David Vyhlidal David Vyhlidal (Gar.) | KZ | 4 | 0+3 | Z | V |
| 12MPP2 | Microprocessor Laboratory 2 David Vyhlidal David Vyhlidal (Gar.) | KZ | 4 | 0+3 | L | V |

| 12MPR1 | Microprocessors 1 Miroslav Čech Miroslav Čech (Gar.) | ZK | 4 | 4+0 | Z | V |
|---------|--|--------|---|-------|-------|---|
| 12MPR2 | Microprocessors 2 Miroslav Čech Miroslav Čech (Gar.) | ZK | 2 | 2+0 | L | V |
| 12MOF | Molecular Physics | ZK | 2 | 2+0 | L | V |
| 12NT | Jan Proška, Martin Michl Martin Michl Martin Michl (Gar.) Nanotechnology In Droška, Flored Martin Michl Martin Michl (Gar.) | ZK | 2 | 2+0 | Z | V |
| 01NME2 | Jan Proška, Eduard Hulicius Jan Proška Eduard Hulicius (Gar.) Numerical Methods 2 | KZ | 2 | 2+0 | L | V |
| 15CH1 | Michal Beneš Michal Beneš Michal Beneš (Gar.) General Chemistry 1 | Z | 3 | 2+1 | | V |
| 15CH2 | Ondřej Holas, Petr Distler, Václav Čuba Petr Distler Petr Distler (Gar.) General Chemistry 2 | Z,ZK | 3 | 2+1 | | V |
| | Ondřej Holas, Petr Distler, Václav Čuba Petr Distler Petr Distler (Gar.) Operating Systems | | - | | | |
| 120SY | Miroslav Čech Miroslav Čech Miroslav Čech (Gar.) | ZK | 3 | 3+0 | | V |
| 12PAS | Computer Algebra Systems Milan Šiňor Milan Šiňor Milan Šiňor (Gar.) | Z | 2 | 1P+1C | Z | V |
| 01PRST | Probability and Statistics Tomáš Hobza Tomáš Hobza Tomáš Hobza (Gar.) | Z,ZK | 4 | 3+1 | Z | V |
| 18PRC1 | Programming in C++ 1 Vladimír Jarý, Miroslav Virius Miroslav Virius Miroslav Virius (Gar.) | Z | 4 | 2+2 | Z | V |
| 18PRC2 | Programming in C++ 2 Vladimír Jarý, Miroslav Virius, Jakub Klinkovský Miroslav Virius Miroslav Virius (Gar.) | KZ | 4 | 2+2 | L | ٧ |
| 12RSEN | Control Systems and Sensors David Vyhlidal David Vyhlidal (Gar.) | Z,ZK | 4 | 4 | Z | ٧ |
| TV-1 | Physical Education | Z | 1 | | Z | V |
| TV-2 | Physical Education | Z | 1 | | L | V |
| TV-3 | Physical education | Z | 1 | 0+2 | Z | V |
| TV-4 | Physical education | Z | 1 | 0+2 | L | V |
| 14TED | Creating Electronic Documents Aleš Materna, Jiří Martinčík Aleš Materna Aleš Materna (Gar.) | Z | 2 | 26C | | V |
| 11UFP | Introduction to Solid State Physics Petr Kolenko Petr Kolenko (Gar.) | ZK | 3 | | L | V |
| 11UFPLN | Introduction to Solid State Physics Petr Kolenko | ZK | 2 | 2+0 | L | V |
| 01UP1 | Introduction to Probability 1 Jan Vybíral Jan Vybíral (Gar.) | Z,ZK | 3 | 1P+1C | | V |
| 01UP2 | Introduction to Probability 2 Milan Krbálek, Michaela Krbálková Michaela Krbálková Milan Krbálek (Gar.) | Z,ZK | 3 | 1P+1C | | V |
| 12UNXAP | Introduction to UNIX Milan Kuchařík Milan Kuchařík (Gar.) | Z | 2 | 1P+1C | L | V |
| 12UVP | Introduction to Scientific Computing Milan Šiňor Milan Šiňor (Gar.) | Z | 2 | 1P+1C | L | V |
| 12VKT | Vacuum Technology | KZ | 4 | 2P+2L | Z | V |
| 12VTV | Richard Švejkar Vojtěch Petráček Vojtěch Petráček (Gar.) Scientific and Technical Computing | Z | 2 | 1+1 | L | V |
| 12VPMF | Ivan Procházka Ivan Procházka Ivan Procházka (Gar.) Selected Topics in Modern Physics | Z | 3 | 2P+1C | L | V |
| 12VFT | Jan Pšikal Jan Pšikal Jan Pšikal (Gar.) High Frequency and Impulse Circuitry | Z,ZK | 2 | 2+0 | L | V |
| 12EPR1 | Jaroslav Pavel Jaroslav Pavel (Gar.) Basic Electronics Practicum 1 | KZ | 3 | 0+2 | Z | V |
| 12EPR2 | Ivan Procházka, Jaroslav Pavel Ivan Procházka Jaroslav Pavel (Gar.) Basic Electronics Practicum 2 | KZ | 3 | 0+2 | L | V |
| 1221112 | Ivan Procházka, Jaroslav Pavel Ivan Procházka Jaroslav Pavel (Gar.) Basics of Algorithmization | 1\Z | | UTZ | | V |
| 18ZALG | Vladimír Jarý, Miroslav Virius, Petr Pauš, Jan Tomsa, Zuzana Petříčková, František Voldřich, František Gašpar Vladimír Jarý Miroslav Virius (Gar.) | Z,ZK | 4 | 2+2 | L | V |
| 12ZEL1 | Basic Electronics 1 Jaroslav Pavel Jaroslav Pavel (Gar.) | Z,ZK | 3 | 2+1 | Z | V |
| 12ZEL2 | Basic Electronics 2 Jaroslav Pavel Jaroslav Pavel (Gar.) | Z,ZK | 3 | 2+1 | L | V |
| 02ZM1 | Foundations of Physical Measurements 1 Solangel Rojas Torres, Petr Chaloupka Martin Štefaňák Petr Chaloupka (Gar.) | ZK | 2 | 2P+0C | Z | V |
| 02ZM2 | Foundations of Physical Measurements 2 Petr Chaloupka Martin Štefaňák Petr Chaloupka (Gar.) | KZ | 4 | 0P+4L | L | V |
| 12ZFP | Principles of Plasma Physics Martin Jirka, Jiří Limpouch Martin Jirka Jiří Limpouch (Gar.) | Z,ZK | 4 | 3+1 | L | V |
| | Physical Data Visualization | | + | + | | |

Characteristics of the courses of this group of Study Plan: Code=BSPFILTFV Name=BS P_FIB LTF Optional courses

| Applications of leasures in minutes and chronologies, emplaines, mention environity conferencement and other transforms. CODETE History of Physics Employer | 12APL | Application of Lasers | Z,ZK | 2 |
|--|---------------------------|---|-----------------------|------------------|
| Development of classed imechanics after Neutron, Bermoldt, Euric, Lagrange Historical executionment of opinics, organization and every approach. Eurichia dispression and received interests of active and travelation for control and extendent | | | | |
| altermotating, planeman, electrogrammics and electromagnations, Farraday and Manyale Thermodynamics and list lakes, statistical physics, Biotermon. The statistical provings prefixed and transfer planeman from the control of the con | | , , | | |
| and residence chapters. Planck and Enseith. Discovery of inducedity, shructure of atons, aborter nucleus. Rutherford and Soft. The way to nucleus energy. Elementary particles extended model. The connected National and Wilderse of Industry. 14ELM [Electron Microscopy] And the statestics are industrial to introduction of the control of the statestics are information of the control of the statestics are information of the control of the statestics and includes the formation of the control of the statestics and the statestics | | | - | |
| Abstant if the source the standars are interactions to the microscopy or an authorise control of the course is given to the interaction of interactions and to the availage of light and electron increasingly and is various system of increasingly and interaction of different systems of adultation with interactions and total season increasingly and is various system of increasing parts of the microscopy interactions and total season increasingly interactions and obligation increasingly increasing the increasing of the microscopy. Interactions and total season increasingly increasing and the interaction of different systems of adultation in the interaction of different systems of activated. In the interaction of different systems of adultation in the interaction of different systems of a control of a point of the interaction of the interacti | | | | |
| Albatas E. Nithis course the students are inductaced to the inducedance of the first chanced principles of the inducedance of i | | | | |
| to the aniactory of light an electron microscopy and to its rediscoption of principal parts of the microscopts, inclination is indicated and principles of descriptions, personal interaction and integring bedrinques are also convened. A particular stellarion in given to analytical methods and imaging bedrinques in anionic resolution. Upon of principles of Complex Variation. The Course seats from collinority as Uration control principles. Proprinciples of Complex Variations and imaging bedrinques are also convened. A particular stellarion is given to analytical methods and imaging bedrinques in anionic resolution. The Course seats from collinority as Uration control principles and the analytical methods and imaging bedrinques in an anionic resolution. The Course of the Course | | · • | | |
| mathematics armitations and tools used in microscopy and to the exception of particular parts of the microscopes introduction to kinematic and variant teles of admits of the control of the parts of th | | | | |
| OFFICE Surprise Municipal or Australian Procurements from cultury data from the cultury data f | , , , | | | |
| The course starts from outlining he Jordan curve theorem and the Remann-Biolities integral. Then basic results of complex analysis or now variables are explained in default the deviatable of a complex furnition of the Causch's period and analysis continuation, is colded an approximation, and the continuation, analysis continuation, is colded singularities, the maximum modulus principle. Liboville's theorem, the Causch's estimates, Laurent series, residue theorem. 22 2 2 The section of a dividence of the Causch's estimates of the Causch's estimates of the Causch's estimates of the course of Michaelica. The proclema are chosen, studied and presented by the student's thorough the section of the course of Michaelica. The proclema are chosen, studied and presented by the student's therefore, with the section of the course of Michaelica. The proclema are chosen, studied and presented by the student's therefore, with the section of the course of Michaelica. The proclema are chosen, studied and presented by the student's therefore, with the section of the section of the section of the student's communication all students of thoughout their provious studies. It similar to improve all aspects of oral communication. The student will develop their excellation by maximum and the section of the section | | n and imaging techniques are also covered. A particular attention is given to analytical methods and imaging techniques in | atomic resolution. | |
| of a complex function and the Cauthy-Filterisan equations, notionorpitic and analysis functions, the index of a point with respect to a closed curve, Cauchy's integral theorem, Morea's thrown, mode of holloworphic function, unjeic continuum, isolated engigianties, the maximum modulus principle, Louville's thrown, the Cauchy estimates, curved strategy, engiged thrown. DEFYST Physical Seminar 1 This saminar is devoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of physical problems. It should help students to deeper understanding of fundamentals of physical problems. It should help students to deeper understanding of fundamentals of physical problems in the course of Moteration of the problems are chosen, adulated and prosented by the students students with the possibility to use PC and physical absolutory aquipment in the course of the course of the problems are continued to the problems of the problems | | ' | , | - |
| intercent, notes of a hostomorphic fundion, analytic confinentiation, iterated singularities, the maximum modulus principle, Lovarite's theorem, the Cauchy estimates, Laurent series, reside theorem. 22 2 2 The sommar is devoted to detailed study of interesting physical problems, it should help students to desper understanding of fundamentals of physics presented in the course of Morchanics. The problems are chosen, studied and presented by the students themselves, with the possibility to use PC and physical laboratory experiments. 22 2 1 The course will develop the student's communication activity of the student's themselves, with the possibility to use PC and physical laboratory experiments. 23 2 1 The course will develop the student's communication activity and secondary to use the student's continuent of the student's communication and will research the continuent of the student's communication and will research the continuent of the student's communication and the stud | | | | |
| DEFYST Physical Seminar 1 Be seminar is divered to detailed study of interesting physical problems, it should help students to deeper understanding of fundamentals of physics presented in the course of Mechanics. The problems are chosen, studied and presented by the students themselves, with the possibility to use PC and physical absoratory equipments. A CAKS English Conversation The course of microscommunication students and with the possibility to use PC and physical absoratory equipments. English Conversation The course or vinus communication students and with marked their communication students. It will also proteible their listening skills in order 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 continued special production to quantum membranics with more general formalism of quantum theory, approximate membranic selections of the production of quantum field theory. IZAK 6 Abstract The lecture expands the introduction to quantum mechanics and propares the students for an effective scientific research and turner study, in particular, of the modern formalisms of quantum field theory. IZAK 6 Abstract The lecture expands the introduction to quantum mechanics and propares the students for an effective scientific research and turner study, in particular, of the modern formalisms of quantum field theory. IZAK 3 Pulsed solid state nanosecoral lasers. Processoral lasers. High energy laser systems. Laser fusion, Diode-pumped solid state lasers. Turnsbile lasers. Cyptical parametric generators and raman lasers. Semionductor lasers for purping of solid state lasers and profit of purpose continuous lasers. Informating the purpose to continuous lasers. Informating the purpose to continuous lasers. Informating the purpose of purpose students and interesting the purpose of purpose students and interesting the purpose of purpose students and interesting the purpose of purpose of purpose of purpose of purpose of | 1 | | | |
| The seminar is devoted to detailed study of interesting physical problems. It should help attaches to deeper understanding of fundamentals of physics presented in the occurse of Mechanics. The problems are chosen, studied and presented by the scludents fundaments, with the postbulents the provious studies, it aims to improve all aspects of oral communication in the formation of the current of the communication statistics and will master their communication statistics. It aims to improve all aspects of oral communication in the communication statistics and will master their communication statistics. It aims to improve all aspects of oral communication in the communication statistics and will master their communication statistics. It aims to improve all aspects of oral communication in the communication statistics and will master their communication statistics. They will used por naction the listening statistic interests and interests of the communication of communication of communications | | | | |
| Mechanics. The proteines are obsen, studied and presented by the students themselves, with the possibility to use PC and physical absoratory outperments. The course will develop the student's communication askills acquired throughout their previous studies. It aims to improve all sapects of one communication. The student will develop the two acquired by rovinces communication askills acquired throughout their previous studies. It aims to improve all sapects of one communication. The student will develop the two acquired by rovinces communication askills acquired throughout their previous studies. It aims to improve all sapects of one communication. The student will be trained to express their ideas obartly and according to current English usage, and become a more confident speaker. CZKK 6 | 1 | • | | |
| GAAKS English Conversation Z 1 | | | • | e course of |
| The course will develop the sulderfix communication sillates acquired throughout their previous studies. It aims to improve all aspects of continuous communication. The student will develop their vocabulary for various communication studies are will make their communication strategy. They will also preadite their listenting skills in order to bether 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. CEXEM Quantum Mechanics 2 Z,ZK 6 Abstract: The lecture expands the introduction to quantum mechanics and prepares the students for an effective scientific research and further study, in particular, of the modern formulations of quantum field theory. Laser Systems Pulsed solid state nancescoral lesers. Properson of lesers. High energy leser systems. Laser fusion. Diode-pumped solid state learns. Tunable lesers. Optical parameter generators and remains are introducted to mathematical concepts and their students of the properties of the students for an effective scientific research and further study, in particular, of the modern formulations of quantum field theory. Z,ZK 3 Pulsed solid state nancescoral lesers. Properson of state lesers. Special state lesers and particular state and concepts and remains and properties of the students of the state lesers. Tunable lesers. Optical parameters generated and remains are introducted to mathematical concepts and methods used in the introductory physics course. Z 1 Students are introduced to mathematical concepts and methods used in the introductory physics course. Z 1 To course introduces the fundamental areas of mathematics essential for university studies and practical applications. It covers sets, logic, proofs, functions, derivatives, integrals, analytic generate. Special properson introductions and particular development board. PMM module (Capture Company), parallel communication interface (controlling character LO development board sets a | | | | 1 |
| in discussions. The student will be trained to express their ideas clearly and according to current English usage, and become a more confident speaker. CZK 6 | - | | ication. The stude | ent will develop |
| OZAMA Apartant: The locare apards the includes on a part of the includes on the part of the includes on the part of the includes of part of the international part of the includes of part of the international part of the inter | | | | and participate |
| Abstract. The lecture segunds 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 vinorius applications of quantum methods used in vinorius applications of quantum field theory. 12 LAS Laser Systems Z, ZK 3 Pulsed sobilist atter nanosecond lasers. Picosecond tasers. High energy laser systems. Laser fusion. Diodr-pumped solid state lasers and further standard control of the propertion of the properties | | | | 6 |
| 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. 12.4.S Laser Systems Pulsed solid state neares Reconscional lasers. Ploasecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. Optical parametric generators and mann lasers. Semicanductor lasers for pumping of solid state lasers and diode pumped solid state lasers. Amplified apontaneous emission. Ultraviolet lasers. X-ray lasers. High power continuous lasers. Infrared high power lasers. Submilimeter lasers. Lasers with high degree of coherence. Free electron lasers. 00MAM1 Essentials of High School Course 1 Students are introduced to mathematical concepts and methods used in the introductory physics course. 00MAM2 Essentials of High School Math Course 2 1 The course introduces the fundamental areas of mathematics essential for university studies and practical applications. It covers sets, logic, proofs, functions, derivatives, integrals, analytic geometry, combinatorics, and problem solving. 12MPP1 Interoprocessor and mathematics essential for university studies and practical applications. It covers sets, logic, proofs, functions, derivatives, integrals, analytic geometry, combinatorics, and problem solving. 12MPP1 Interoprocessor Laboratory 1 Example Microprocessor Laboratory 1 Laserming to use more Pictofes774 internal modules on PVKI0 development board: PWM module (Capture-Compare), paraellal communication interface to controlling character LCD develop, setal communication interface to EART, serial communication interface to controlling character LCD develops and administration interface to EART, serial communication interface t | 1 | | | - |
| 12LAS Laser Systems Z,ZK 3 | | | | |
| Pulsed solid state nanoscoord lasers. Picosecond tasers. High energy laser systems. Laser fusion. Diode pumped solid state lasers. Tunable lasers. Optical parametric generators and manua lasers. Semiconductor lasers for pumping of solid state lasers and dode pumped solid state lasers. Amplified spontaneous emission. Ultraviolet lasers. X-ray lasers. High power continuous lasers. Infrared high power lasers. Submilimeter lasers. Lasers with high degree of coherence. Free electron lasers. ODMANI Essentials of High School Course 1 2 1 Suldents are infraoduced to mathematical concepts and methods used in the infraoductory physics course. ODMANI2 Essentials of High School Math Course 2 Z 1 The course introduces the fundamental areas of mathematics assential for university studies and practical applications. It covers sets, logic, proofs, functions, derivatives, integrals, analytic geometry, combinatorics, and probability, with emphasis on understanding principles, rigor, and problem solving. IZMPP1 Microprocessor Laboratory 1 KZ 4 Become acquainted with a development board based on PLO16873A and PIC16877A microcontrollers, development environment MPLAB K IDE, PRESTO programmer, ASIX UP program, and PICk16 abeuger. Programming in assentially and C language for microcontrollers, development observed based on PVK16 development board. PWM module (Capture/Compare), parallel communication interface (controlling haracter LCD device), serial communication interface (controlling haracter LCD device), serial communication interface (controlling haracter LCD device), serial communication interface (SSFH, improcontroller PIC16F87AC, Programming in C language for microcontrollers. State memory, procedure calls, 10 devices - program control, interrupt. Microprocessor Microchip PIC16F877A, Instruction codes- Assembler, description. 12MPR1 Microprocessors 2 XK 2 12MPR2 Microprocessors 2 XK 2 12MPR2 Microprocessors 2 XK 2 12MPR3 Microprocessors 2 XK 2 12MPR3 Micropr | formulations of quantum | field theory. | | |
| and mann lasers. Semiconductor lasers for pumping of solid state lasers and diote pumped solid state lasers Amplified spontaneous emission. Ultraviolet lasers. X-ray lasers. High power continuous lasers. Infrared high power lasers. Submilmited relasers. Lasers with high degree of coherence. Free electron lasers. OMAM1 | - 1 | · | , | - |
| DomAMT Essentials of High School Course 1 Students are introduced to mathematical concepts and methods used in the introductory physics course. Carrier Sesontials of High School Course 1 Students are introduced to mathematical concepts and methods used in the introductory physics course. Carrier Sesontials of High School Math Course 2 Carrier Microprocessor Laboratory 2 Become acquainted with a development based on PIC16F873A and PIC16F877A microcontrollers, development environment MPLAB X IDE, PRESTO programmer, ASIX UP program, and PIC16F877A microcontrollers. Besic operations with microcontroller modules. Carrier Microprocessor Laboratory 2 Learning to use more PIC16F877A internal modules on PVK40 development board: PPM module (CapturelCompare), parallel communication interface (controlling character LCD develop), serial communication interface bus PATI, serial communication interface bus PATI, serial communication interface controlling character LCD develop, serial communication interface bus PATI, serial communication interface controlling character LCD develop, serial communication interface bus PATI, serial communication interface controlling character LCD develop, procedure calls, 10 devices - program control, interrupt. Microprocessors 1 Carrier Carri | | | | - |
| Solutions are introduced to mathematical consepts and methods used in the introductory physics course. The course introduced to mathematical consepts and methods used in the introductory physics course. | | | aviolet lasers. A-li | ay lasers. High |
| DMAM2 Essentials of High School Math Course 2 1 1 | 00MAM1 | Essentials of High School Course 1 | Z | 1 |
| The course introduces the fundamental areas of mathematics essential for university studies and practical applications. It covers sets, logic, proofs, functions, derivatives, integrals, analytic geometry, combinatorics, and probability, with emphasis on understanding principles, rigor, and probability. With emphasis on understanding principles, rigor, and probability. With emphasis on understanding principles, rigor, and probability. With emphasis on understanding principles, and probability. With properties of the programman of | Students are introduced | to mathematical concepts and methods used in the introductory physics course. | | |
| analytic geometry, combinatorics, and probability, with emphasis on understanding principles, rigor, and problem solving. X | | | _ | |
| 12MPP1 Microprocessor Laboratory 1 | | | unctions, derivati | ves, integrals, |
| Become acquainted with a development board based on PIC16F373A and PIC16F37A indercontrollers, development environment MPLAB X IDE, PRESTO programmer, ASIX UP program, and PICk18 debugger. Programming in assembly and C language for microcontrollers. Basic operations with microcontroller modules. 12MPP2 Microprocessor Laboratory 2 Microprocessor and interface USATS, erial communication interface USATS, | | | KZ | 4 |
| 12MPP2 | 1 | , | | nmer, ASIX UP |
| Learning to use more PIC16F877A internal modules on PVK40 development board: PWM module (Capture/Compare), parallel communication interface (controlling character LCD device), serial communication interface USART, serial communication, input/output, drivers, queues, client-server, interest communication, Multilanguage emvironm | | | | |
| device), serial communication interface USART, serial communication interface I2C/SPI, microcontroller PIC18F45K20. Programming in C language for microcontrollers. 2K | | , | | |
| Microprocessor and microcomputer, microprocessor types, memory types CPU, memory, Input output. Code and data, addressing modes (direct, indirect, register, relative, stack memory, procedure calls, IO devices - program control, interrupt. Microprocessor Microchip PIC16F877A, Instruction codes- Assembler and Macroassembler, programming languages. RISC processors - principles ZK 2 | | | , , | |
| Microprocessor and microcomputer, microprocessor types, memory types CPU, memory, Input output. Code and data, addressing modes (direct, indirect, register, relative,, stack memory, procedure calls, IO devices - program control, interrupt. Microprocessor Microchip PIC16F877A, Instruction codes. Assembler and Macroassembler, programming languages. RISC processors - principles 12MPR2 Microprocessors 2 | | | | |
| RISC processors - principles 12MPR2 | | • | lirect, register, rel | ative,, stack |
| 12MPR2 | | | sembler, program | ming languages. |
| Architecture IA-32. Data types and addressing. Memory segmentation and paging. Real and privileged mode. Instruction set, Assembler. description. 12MOF | | | 7K | 2 |
| Basic ideas on physics of molecules and molecular matter, and on structure-to-physical properties relationship. Methods of molecular structure determination. 12NT Nanotechnology Lectures will introduce students mainly to modern technological methods of preparation of semiconductor, metal and dielectric nanostructures. Physical and chemical fundaments of different technologies (MBE, MOVPE, EBL, sol-gel and colloidal solution) will be explained. Substantive attention will be devoted to epitaxial technologies which are substantial for nanostructure preparation. Particular emphasis will be focused on detail characterization of "in situ" and "ex situ" techniques, their applications for heterostructure and nanostructure growths will be discussed as well. Some supportive technical methods - lithography, diffusion, evaporation, ion implantation, contact and dielectric layer preparation will be mentioned as well as soldering and encasement. 101NME2 Numerical Methods 2 KZ 2 The course is devoted to numerical solution of boundary-value problems and intial-boundary-value problems for ordinary and partial differential equations. It explains methods converting boundary-value problems to initial-value problems and finite-difference methods for elliptic, parabolic and first-order hyperbolic partial differential equations. 15CH1 General Chemistry 1 The most important concepts, quantities and units used in chemistry are introduced in the course General Chemistry 1. Their significance and practical use are illustrated by examples solved in exercises. 15CH2 General Chemistry 2 The subject is the continuation of the course General chemistry!. The main attention is paid to general principles governing chemical processes. Using various examples, the fact that the validity of these principles is not restricted only to chemical processes is documented. The significance and practical use of explained principles are illustrated by examples solved in exercises. 12OSY Operating Systems Computer Algebra Systems Computer Algebra S | | • | | _ |
| 12NT Nanotechnology ZK 2 | 12MOF | Molecular Physics | ZK | 2 |
| Lectures will introduce students mainly to modern technological methods of preparation of semiconductor, metal and dielectric nanostructures. Physical and chemical fundaments of different technologies (MBE, MOVPE, EBL, sol-gel and colloidal solution) will be explained. Substantive attention will be devoted to epitaxial technologies which are substantial for nanostructure preparation. Particular emphasis will be focused on detail characterization of "in situ" and "ex situ" techniques, their applications for heterostructure and nanostructure growths will be discussed as well. Some supportive technical methods - lithography, diffusion, evaporation, ion implantation, contact and dielectric layer preparation will be mentioned as well as soldering and encasement. 101NME2 Numerical Methods 2 KZ 2 The course is devoted to numerical solution of boundary-value problems and initial-boundary-value problems for ordinary and partial differential equations. It explains methods converting boundary-value problems to initial-value problems and finite-difference methods for elliptic, parabolic and first-order hyperbolic partial differential equations. 15CH1 General Chemistry 1 Z 3 The most important concepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practical use are illustrated by examples solved in exercises. 15CH2 General Chemistry 2 Z,ZK 3 The subject is the continuation of the course General chemistry I. The main attention is paid to general principles governing chemical processes. Using various examples, the fact that the validity of these principles is not restricted only to chemical processes is documented. The significance and practical use of explained principles are illustrated by examples solved in exercises. 12OSY Operating Systems ZK 3 Operating Systems kernel, memory management, process, multitasking, interprocess communication, input/output, drivers, queues, client-server, internet communication, Multiliangua | | f molecules and molecular matter, and on structure-to-physical properties relationship. Methods of molecular structure deter | | |
| different technologies (MBE, MOVPE, EBL, sol-gel and colloidal solution) will be explained. Substantive attention will be devoted to epitaxial technologies which are substantial for nanostructure preparation. Particular emphasis will be focused on detail characterization of "in situ" and "ex situ" techniques, their applications for heterostructure and nanostructure growths will be discussed as well. Some supportive technical methods - lithography, diffusion, evaporation, ion implantation, contact and dielectric layer preparation will be mentioned as well as soldering and encasement. O1NME2 Numerical Methods 2 KZ 2 The course is devoted to numerical solution of boundary-value problems and intial-boundary-value problems for ordinary and partial differential equations. It explains methods converting boundary-value problems to initial-value problems and finite-difference methods for elliptic, parabolic and first-order hyperbolic partial differential equations. 15CH1 General Chemistry 1 Z 3 The most important concepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practical use are illustrated by examples solved in exercises. 15CH2 General Chemistry 2 Z,ZK 3 The subject is the continuation of the course General chemistry I. The main attention is paid to general principles governing chemical processes. Using various examples, the fact that the validity of these principles is not restricted only to chemical processes is documented. The significance and practical use of explained principles are illustrated by examples solved in exercises. 12OSY Operating Systems Computer Algebra Systems Z 2 Practically oriented introduction to computer algebra systems (CAS): their main characteristics, ways and means of using them. Constituent part is realized in computer classrooms: | | 0; | | |
| nanostructure preparation. Particular emphasis will be focused on detail characterization of "in situ" and "ex situ" techniques, their applications for heterostructure and nanostructure growths will be discussed as well. Some supportive technical methods - lithography, diffusion, evaporation, ion implantation, contact and dielectric layer preparation will be mentioned as well as soldering and encasement. O1NME2 Numerical Methods 2 KZ 2 The course is devoted to numerical solution of boundary-value problems and initial-boundary-value problems for ordinary and partial differential equations. It explains methods converting boundary-value problems to initial-value problems and finite-difference methods for elliptic, parabolic and first-order hyperbolic partial differential equations. 15CH1 General Chemistry 1 Z 3 The most important concepts, quantities and units used in chemistry are introduced in the course General Chemistry I. Their significance and practical use are illustrated by examples solved in exercises. 15CH2 General Chemistry 2 Z,ZK 3 The subject is the continuation of the course General chemistry I. The main attention is paid to general principles governing chemical processes. Using various examples, the fact that the validity of these principles is not restricted only to chemical processes is documented. The significance and practical use of explained principles are illustrated by examples solved in exercises. 12OSY Operating Systems ZK 3 Operating systems kernel, memory management, process, multitasking, interprocess communication, input/output, drivers, queues, client-server, internet communication, Multilanguage environment, user interface, system security, open systems. 12PAS Computer Algebra Systems (CAS): their main characteristics, ways and means of using them. Constituent part is realized in computer classrooms: | | | | |
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| 12PAS Computer Algebra Systems Z 2 Practically oriented introduction to computer algebra systems (CAS): their main characteristics, ways and means of using them. Constituent part is realized in computer classrooms: | 1 | | net communicatio | n, Multilanguage |
| Practically oriented introduction to computer algebra systems (CAS): their main characteristics, ways and means of using them. Constituent part is realized in computer classrooms: | | | 7 | 2 |
| students acquire basic skills with CAS by solving relatively simple and basic tasks from mathematics and physics. | | | | |
| | students acquire basic sk | kills with CAS by solving relatively simple and basic tasks from mathematics and physics. | | |

| 01PRST | Probability and Statistics obability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition ar | Z,ZK | 4 ne Kolmogorov |
|---|--|---------------------------|---|
| · · | s random variable, distribution function of random variable and characteristics of random variable are treated and basic limit | = | _ |
| | bry the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testing are exp | olained. | |
| 18PRC1 | Programming in C++ 1 | Z | 4 |
| 18PRC2 | ly the C programming language and non-object oriented features of the C++ language. Programming in C++ 2 | KZ | 4 |
| | popiect oriented programming and othesr advanced constructs in the C+;+ programming language and the Standard Template | | 4 |
| 12RSEN | Control Systems and Sensors | Z,ZK | 4 |
| | he theory, analysis, and implementation of linear analog and digital control systems, as well as sensors for various physical of | • | |
| - | deling and simulation using MATLAB, along with practical measurements conducted by the students on a continuous system with r a continuous system with discrete control (temperature control using a thermoelectric cooler module). | analog control (a s | servomechanism |
| TV-1 | Physical Education | Z | 1 |
| TV-2 | Physical Education | Z | 1 |
| TV-3 | Physical education | Z | 1 |
| TV-4 | Physical education | Z | 1 |
| 14TED | Creating Electronic Documents | Z | 2 |
| Basic skills for creating a office suite. | and presenting student theses. Individual exercises focus on creating and formatting texts, equations, charts, tables, presenta | ations and entire | documents in an |
| 11UFP | Introduction to Solid State Physics | ZK | 3 |
| | fundamentals of diffraction stress analysis with a strong emphasis on the illustrations of the capability of X-ray diffraction to | | |
| 11UFPLN | Introduction to Solid State Physics | ZK | 2 |
| | ure is to introduce the undergraduate students to the study of the solid state physics. | | |
| 01UP1 | Introduction to Probability 1 | Z,ZK | 3 |
| | e set of possible results, classical probability, independent random events 2.Probability and combinatorics 3.Probability and <code>combinatorics 3.Probability</code> and <code>combinatorics 3</code> | = = | |
| | e 7.Probabilistic method in graph theory 8.Random algorithms, Morris algorithm and its variants | | |
| 01UP2 | Introduction to Probability 2 | Z,ZK | 3 |
| | tinuous random variable and its statistical description. 2. Distribution function and probability density. 3. Axiomatic introduction | | |
| | erical characteristics of continuous random variables. 5. Selected variants of continuous distributions and their characteristics ng pseudorandom numbers from the selected distribution. | s. 6. Elementary n | nethods for point |
| 12UNXAP | Introduction to UNIX | Z | 2 |
| - | systems. Personal computer, workstation and supercomputers. Processor, memory, bus, devices, hard disk, network interfa | ce. Hardware and | |
| | systems. Operating system UNIX. Basic principles, kernel, kernel services. Documentation. File system, file atributes, working | • | |
| | hell) bash and its programming (scripts). Controlling processes, process status, computer load a process priorities. Standard bal computer networks. Addresses and protocols TCP/IP. Network configutation of a computer. Network services: hardware s | · · | |
| applications | sal computer notificity additional distribution for the computer notificity and the computer notificity and the contract of the computer notificity and the contract of the computer notificity and the contract of the contra | maring, maii, cop, | olo. Notwork |
| 12UVP | Introduction to Scientific Computing | Z | 2 |
| <u>-</u> | duction to scientific computing. Constituent part of the course is realized in computer classroom. Students get acquinted with | some basic tools | fort scientific |
| <u> </u> | g, data analysis, data visualisation and algorithm development. | 1/7 | 4 |
| 12VKT | Vacuum Technology concepts and relations; diffusion,flow of rarefied gases. Flow and current of gas, conductivity. Interaction of gas with solid surf | KZ face: sorntion, de | 4 sorntion: gas |
| | natter; evaporation, condensation; Vacuum generation: Pumping proces, Ultimative pressure, Pumping speedPumps and their | | |
| pumps: Diaphragm, Slid | ing vane rotary, Diffusion, Molecular, Roots, Molecular and Turbomolecular pumps. Sorption pumps: Cryopumps, Cryo-Adsor | rption pumps, Sul | olimation and |
| | pumpsVacuum measurements: vacuum gauges of total and partial pressure; pumping speed; gas flow, search for leaks. Ma | aterials and vacuu | m components |
| and seals.Practical exer | Scientific and Technical Computing | Z | 2 |
| | r with methods of solving of computational problems in the scientific and technical practice, and with methods of their progra | | |
| mainly to programming i | | | |
| 12VPMF | Selected Topics in Modern Physics | Z | 3 |
| | s to improve students knowledge in modern parts of physics (such as measuring of gravitational waves, neutrinos, discovery a partial help of computer algebra systems (e.g. Maple). Apart from the other courses related to modern physics taught in this | | · - |
| | a partial help of computer algebra systems (e.g. Maple). Apart from the other courses related to modern physics taught in the attendance of students motivation for deeper | | |
| and its laws in their follo | | 3 | , |
| 12VFT | High Frequency and Impulse Circuitry | Z,ZK | 2 |
| _ | o collect advanced knowledge in high frequency technics and high speed events. The course is focused on Maxwell equation | solution, Gunn's | diodes, high |
| 12EPR1 | rowaves guidelines, striplines, oscillators, amplifiers and pulse generators. Basic Electronics Practicum 1 | KZ | 3 |
| | n is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formulation | | _ |
| consists of blocks lasting | | | |
| 12EPR2 | Basic Electronics Practicum 2 | KZ | 3 |
| · · | n is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formulation | on of the results. T | he practicum |
| consists of blocks lasting | Basics of Algorithmization | Z,ZK | 4 |
| | o selected algorithms and methods for algorithm design. This course intruduces selected methods for the determination of the | | |
| 12ZEL1 | Basic Electronics 1 | Z,ZK | 3 |
| | mary knowledge of circuit theory concerning principles of electronic circuits in both stationary and harmonic stable state. Circ | = | |
| | and complex method are explained. Proper circuit analysis is also lectured. The subject's final part deals with transient effective properties 2. | | |
| 12ZEL2 The subject follows up w | Basic Electronics 2 //th the Basic Electronics 1. Semiconductor elements basic properties are explained. Thecourse's final part deals with basic t | Z,ZK themes of logical | 3 circuits field. |
| | The state of the s | | |

| 02ZM1 | Foundations of Physical Measurements 1 | ZK | 2 |
|--------------------------|---|-----------------------|------------------|
| The lecture is designed | for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however | , it can be attended | by students of |
| other branches. The go | al of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired o | data on a PC. Stude | ents learn the |
| basic habits of work in | a physics lab. | | |
| 02ZM2 | Foundations of Physical Measurements 2 | KZ | 4 |
| The course is designed | for students of physical specializations FNSPE (Nuclear and Particle Physics, Physical engineering, Nuclear engineering), h | nowever, it can be a | attended by |
| students of other branc | hes. The goal of the course is to practically introduce students to the basics of physical measurements of the most important ${\sf qui}$ | antities, the method | ds of processing |
| and evaluation of acqu | ired data on a PC. Students learn the basic habits of work in a physics lab. | | |
| 12ZFP | Principles of Plasma Physics | Z,ZK | 4 |
| Basic physics of high to | properature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, | , linear theory of wa | aves in plasmas |
| and propagation of ele | ctromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and par | ametric instabilities | s are explained. |
| It comprises brief intro | duction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas are introduced. | | |
| 12ZFD | Physical Data Visualization | KZ | 2 |
| Vector graphics basics | scientific plots, dala visualization basics, measurements results presentation | | |

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 | Name of the course / Name of the group of courses | | | | | |
|---------------|---|------------|---------|-------|----------|------|
| Code | (in case of groups of courses the list of codes of their members) | Completion | Credits | Scope | Semester | Role |
| | Tutors, authors and guarantors (gar.) | | | | | |
| 04XAM1 | English for Intermediate Students M1 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | Z | V |
| 04XAM2 | English for Intermediate Students M2 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | L | ٧ |
| 04XAM3 | English for Intermediate Students M3 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XAP1 | English for Advanced Students P1 Jana Kovářová Darren Copeland (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XAP2 | English for Advanced Students P2 Jana Kovářová Darren Copeland (Gar.) | Z | 2 | 0+2 | L | V |
| 04XAP3 | English for Advanced Students P3 Jana Kovářová Darren Copeland (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XCESZ1 | Czech for Foreigners - Beginners 1 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XCESZ2 | Czech for Foreigners - Beginners 2 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | L | V |
| 04XCESZ3 | Czech for Foreigners - Beginners 3 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 2S | Z | V |
| 04XCESM1 | Czech for Foreigners - Intermediate 1 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XCESM2 | Czech for Foreigners - Intermediate 2 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | L | V |
| 04XCESM3 | Czech for Foreigners - Intermediate 3 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XCESP1 | Czech for Foreign Students - Advanced 1 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XCESP2 | Czech for Foreigners - Advanced 2 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | L | ٧ |
| 04XCESP3 | Czech for Foreigners - Advanced 3 Jana Kovářová Jana Kovářová (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XFM1 | French for Intermediate Students M1 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XFM2 | French for Intermediate Students M2 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+2 | L | ٧ |
| 04XFM3 | French for Intermediate Students M3 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+2 | Z | V |
| 04XFP1 | French for Advanced Students P1 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+2 | Z | V |
| 04XFP2 | French for Advanced Students P2 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+2 | L | ٧ |
| 04XFP3 | French for Advanded Students P3 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XFZ1 | French for Beginners Z1 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+4 | L | ٧ |
| 04XFZ2 | French for Beginners Z2 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+4 | Z | ٧ |

| 04XFZ3 | French for Beginners Z3 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+4 | L | V |
|--------|--|---|---|-----|---|---|
| 04XFZ4 | French for Beginners Z4 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+4 | Z | V |
| 04XFZ5 | French for Beginners Z5 Věra Šlechtová Věra Šlechtová (Gar.) | Z | 2 | 0+4 | L | V |
| 04XNM2 | German for Intermediate Students M2 Miloslava Čechová Miloslava Čechová (Gar.) | Z | 2 | 0+2 | L | V |
| 04XNM1 | German for Intermediate Students M1 Miloslava Čechová Miloslava Čechová (Gar.) | Z | 2 | 0+2 | Z | V |
| 04XNM3 | German for Intermediate Students M3 Miloslava Čechová Miloslava Čechová (Gar.) | Z | 2 | 0+2 | Z | V |
| 04XNP1 | German for Advanced Students P1 Miloslava Čechová Miloslava Čechová (Gar.) | Z | 2 | 0+2 | Z | V |
| 04XNP2 | German for Advanced Students P2 Miloslava Čechová Miloslava Čechová (Gar.) | Z | 2 | 0+2 | L | V |
| 04XNP3 | German for Advanced Students P3 Miloslava Čechová Miloslava Čechová (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 (Gar.) | Z | 2 | 0+2 | L | ٧ |
| 04XSM3 | Spanish for Intermediate Students M3 Beatriz Vadillo Gonzalo (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 04XSP1 | Spanish for Advanced Students P1 Beatriz Vadillo Gonzalo Beatriz Vadillo Gonzalo (Gar.) | Z | 2 | 0+2 | Z | ٧ |
| 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

D4XAM1 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.

D4XAM2 English for Intermediate Students M2

Z
2

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

| 04XAM3 | English for Intermediate Students M3 | Z | 2 |
|-------------------------------|--|------------------------|-----------------------|
| • | skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtech | - | • |
| | ional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communication | | |
| student's field. | also includes studying abstracts and rules for writing them as well as basic rules for preparing and giving a short presentation | on on a chosen to | oic related to the |
| | English for Advanced Students P1 | Z | 2 |
| | of advanced English, designed for students who have successfully completed the full secondary school English language | _ | |
| | ramework of Reference for Languages - CEFR). It provides an introduction into English for Specific and Academic Purpose | • | |
| - | vocabulary, grammar, and the purpose and style which is typical of academic and professional oral and written communicati | | |
| technology, engineering a | and mathematics (STEM) contexts. There is an emphasis on reading material and discussing ideas with colleagues prior to | participating in pl | enary sessions. |
| Full and active participation | | | |
| | English for Advanced Students P2 | Z | 2 |
| _ | or students who have successfully completed AP1 and is a continuation of the Advanced English course. The AP2 course b | | |
| _ | nts skills for working with texts relating to science, technology, engineering and mathematics (STEM), and honing spoken an Ends the students academic vocabulary, through exposure to a wide variety of diverse texts and broadens knowledge of key | | |
| | tinent to effective academic discourse and communication. There is a specific emphasis on responding to graphic data and t | | |
| | ons of such data. There is a focus on formal conventions in written communication including sentence and paragraph structure | , | • |
| As in AP1, considerations | s of the purpose and concomitant style which is typical of academic and professional oral and written communication is exp | lored through san | nple materials. |
| And once again, students | s are expected to discuss ideas with colleagues prior to participating in plenary sessions. Full and active participation is a base | asic expectation. | |
| 04XAP3 E | English for Advanced Students P3 | Z | 2 |
| _ | ed for students who have successfully completed AP2 and is a continuation of the Advanced English course leading to a zápod | _ | |
| | n content covered in both AP1 and AP2, and in terms of the final examinations, provides a summative assessment of the kr | • | |
| | emesters. The AP3 course places greater emphasis on student participation, training oral communication skills, particularly | | |
| | is in formal discussions. There is also focus on professional written communication in the context of applying for work placen his is their third year of studying for their bachelors degree and so there is a commitment to honing efficient and effective lang | | |
| - | n in English both in the academic context and in the wider world. Collaborating with colleagues to enable deeper understan | - | _ |
| goal. | 3 · · · · · · · · · · · · · · · · · · · | 3 | |
| 04XCESZ1 (| Czech for Foreigners - Beginners 1 | Z | 2 |
| | or students of the English programme. Students will become acquainted with the main characteristics of Czech (phonetic an | ıd grammar featur | es) and they will |
| | nd speaking skills. The course focuses on pronunciation exercises, simple social phrases, and oral and written communicat | ion in the most co | mmon everyday |
| situations. The course cov | vers roughly lessons 1-3 of Čeština Express (Czech Express) by L. Holá and P. Bořilová. | | |
| | Czech for Foreigners - Beginners 2 | Z | 2 |
| | unication competences acquired in CESZ1 are further developed. Students deepen their knowledge of the declension and | conjugation syste | m and practise |
| | ics. The course covers roughly lessons 3-5 in Czech Express by L. Holá and P. Bořilová. | 7 | |
| | Czech for Foreigners - Beginners 3 | Z | 2 |
| | ops the language and communication competences acquired in the XCESZ1 and XCESZ2 courses. The teaching focuses o On and deepening grammar, features through practice, as well as introducing the Czech culture. Students are asked to prod | | - |
| - ' | e. They also practise understanding texts in terms of main ideas or looking for specific details in texts. The course covers rough | - | |
| 1. | | g , | |
| 04XCESM1 (| Czech for Foreigners - Intermediate 1 | Z | 2 |
| The course is focused on o | correct pronunciation, important morphological phenomena, prepositional phrases, and verb forms as well as on extending th | ne student´s vocat | ulary for various |
| social situations. | | | |
| | Czech for Foreigners - Intermediate 2 | Z | 2 |
| • | topics covered in CESM1 and is then focused on more difficult grammar phenomena. It practices writing, speaking, and rea | ading skills and tra | ins the student |
| | n abbreviations, abbreviated words, and mathematical terms and formulas. | _ | |
| | Czech for Foreigners - Intermediate 3 | Z | |
| | norphological topics covered earlier and extends the student's knowledge of more difficult language phenomena. It is espec | cially focused on s | tylistics and |
| | oing the student's writing skills. | 7 | |
| | Czech for Foreign Students - Advanced 1 urse is very good knowledge of the Czech language, i.e., communicative competences at least at level B2 of the Common E | Z uropean Framewo | 2 ork of Reference |
| | ision of standard language structures, but mainly on practising more complex grammatical structures typical of the style of | - | |
| | of engineering and professional communication, both in spoken and written form. The topics include University Studies and | | - |
| includes communication v | 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 | and specialist texts | placing greater |
| emphasis on individual wo | | | |
| | Czech for Foreigners - Advanced 3 | Z | 2 |
| · · | student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation | on, and, finally, pr | esentation of the |
| | skills necessary for professional communication are trained. | _ | |
| | French for Intermediate Students M1 | Z | 2 |
| | l The objective of this three-semester course is to improve and further develop communication in the French language in bo ate in social interaction and in academic, scientific and professional environment. They will be able to use the language to tr | | |
| | problems. FM1 The course builds on and further develops linguistic competence acquired at secondary school. It revises, sy | _ | |
| - | study. The following topics are covered: University studies in our country and in France, writing of transactional letters, CV, pe | - | |
| · · | ire and geography, Paris. Topics of specialization: mathematics, physics. Reading technical and popular science texts, work | | - |
| 04XFM2 F | French for Intermediate Students M2 | Z | 2 |
| Course FM2 builds on FM | 11. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science | texts, features typ | ical for technical |
| " | passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French sciences. | ence and technological | ogy, French |
| | hitects. Description of an object, device, shapes, dimensions, material. | - | |
| | French for Intermediate Students M3 | | 2 |
| | improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures (| | |
| | pound tenses). Text summaryStudents prepare a written paper which will be delivered in form of an oral presentation in-cl pecialisation or to their interest and generally covers a technical /applied science topic. It is not a translation but a creative w | | |
| | e/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesion and of | | |
| | | | |

| 04XFP1 | French for Advanced Students P1 | Z | 2 |
|--|--|--|---|
| | e objective of this three-semester course is to improve and further develop communication in the French language in both wr | | |
| | 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 | | |
| | it, pronouns. The following specific topics are covered: University studies in our country and in France, writing of transactiona | | = |
| | vert, 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. | · | |
| 04XFP2 | French for Advanced Students P2 | Z | 2 |
| With the link to P1 conte | nts, the course further develops language skills. Focus is put on reading popular science texts and on oral communication o | n given topics. Fe | atures typical of |
| 1 | ommunication are stressed (passive voice, nominalization, word formation). | | |
| 04XFP3 | French for Advanded Students P3 | Z | 2 |
| | systemization and improvement of acquired linguistic competence, skills and knowledge, and their use for communication in | | • |
| | er texts (both from and into the language). Writing of a paper and making oral presentation in-class. The paper generally cov | ers a technical /a | pplied science |
| · | k compiled from 3 French sources. Preparation of several set topics for oral examination. | 7 | 0 |
| | French for Beginners Z1 e objective of this 5-level course is to be able to communicate in French orally and in writing in situations of everyday life, in s | Z | 2 professional life |
| - | nch for specific / technical communication and reading of popular science and scientific texts. FZ1 The objective is to be able | - | • |
| | knowledge of chosen elementary language. The contents is roughly outlined by lessons 1 - 7 of the textbook Pravda - Pravdo | | - |
| | tečky). It is extended with situations of communication and functions from the textbook Espaces I, lessons 1-4: introductions, | | - |
| giving the directions, sin | ple instructions and questions. Special attention is paid to pronunciation. Spelling is explained in connection with pronunciat | tion and grammar | • |
| 04XFZ2 | French for Beginners Z2 | Z | 2 |
| The course is linking up | with FZ1. Elementary linguistic knowledge and communication skills are expanded. The scope is given by lessons 8 - 13 of the s | the textbook: Prav | da - Pravdová : |
| • | dditional topics and skills are filled in from the textbook Espaces I, lesson 1 - 5 (introductions, invitation, welcoming, agreement | • | |
| | of France, food, expression of will, wish, order, prohibition, pleasure). Correct pronunciation is practiced. Stress on oral comm | unication. Specific | c topics covered: |
| | vork? A few expressions concerning the study. Name of University and Faculty. | | |
| 04XFZ3 | French for Beginners Z3 | Z | 2 |
| · · · · · · · · · · · · · · · · · · · | FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - P | | - |
| · · | uations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for in teading covers short adapted texts of general interest first, and later popular science texts. | normation and lot | iu as part oi |
| 04XFZ4 | French for Beginners Z4 | Z | 2 |
| | FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The c | | _ |
| | tbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lec | | |
| | urse covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, sho | | |
| country and in France, h | ow to write CV, application, topics in mathematics, reading physics - mechanics, informatics, internet. | | |
| 04XFZ5 | French for Beginners Z5 | Z | 2 |
| All four skills acquired in | FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topic. The | y present it orally | in the class. The |
| • | red by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other materials. | | |
| | n science and technology, information about France. Grammar is systemized and complemented with syntax (subordinate cla | auses, typical cor | ijunctions, |
| subjunctive clauses, ger | ` | 7 | |
| 04XNM2 | German for Intermediate Students M2 | Z n hatwaan taabna | 2 |
| | her more complex grammatical structures and their application in communication based on technical texts, such as the relation of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and | | |
| • | nation and reading aloud, and appropriate language for various purposes in oral and written communication. The course system | ٠. | |
| · - | r professional discourse (participles, relative clauses). | , | . |
| 04XNM1 | German for Intermediate Students M1 | Z | 2 |
| The objective of the cou | rse is to level off the students' skills in the German language. The course focuses on revision of more difficult phenomena and | d structures (e.g. | |
| word formation processe | es (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Repub | olic and Germany | current |
| environmental issues to | gether with all necessary expressions and phrases, expressions and phrases needed to chemists, mathematicians, physicist | ts, and the fundar | nentals of IT |
| | communication on related topics and is aimed at correct pronunciation, grammatical correctness and understandability. | | |
| 04XNM3 | German for Intermediate Students M3 | Z | 2 |
| | her more complex grammatical structures and their application in communication based on technical texts, such as the relation | | |
| | ig of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and | | |
| | nation and reading aloud, and appropriate language for various purposes in oral and written communication. The course systen or professional discourse (participles, relative clauses). | natically revises o | iner grammaticar |
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| U4XIVI I | | 7 | 2 |
| · · | German for Advanced Students P1 | Z | 2 eginning of the |
| This course requires go | German for Advanced Students P1 od grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be level. | velled off at the b | eginning of the |
| This course requires god course. The course is th | German for Advanced Students P1 | velled off at the bodetail). It revises | eginning of the and develops |
| This course requires god course. The course is th | German for Advanced Students P1 od grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be leven focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for | velled off at the bodetail). It revises | eginning of the and develops |
| This course requires god course. The course is the more difficult grammar sti.e., telephoning. | German for Advanced Students P1 od grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be leven focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for | velled off at the bodetail). It revises | eginning of the and develops |
| This course requires go course. The course is th more difficult grammar st i.e., telephoning. 04XNP2 | German for Advanced Students P1 Independent of the description of the | velled off at the bodetail). It revises practical everyday | eginning of the and develops communication, |
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| This course requires go course. The course is the more difficult grammar strice, telephoning. 04XNP2 The course develops the vocabulary range. It introboth written and oral (CV) | German for Advanced Students P1 Independent of the degree of the standard of the standard of the students of | velled off at the book detail). It revises practical everyday Z ding their general at practising formal | eginning of the and develops communication, 2 and subtechnical communication, |
| This course requires go course. The course is the more difficult grammar strice, telephoning. 04XNP2 The course develops the vocabulary range. It introducts both written and oral (CV 04XNP3 | German for Advanced Students P1 Independent of the degree of the state of the state of the state of the students of the stude | velled off at the bodetail). It revises practical everyday Z ding their general at practising formal | eginning of the and develops communication, 2 and subtechnical communication, |
| This course requires go course. The course is the more difficult grammar still.e., telephoning. 04XNP2 The course develops the vocabulary range. It introducts the written and oral (CV) 04XNP3 The course consists of 3 | German for Advanced Students P1 Independent of the degree of the state of the stat | velled off at the bedetail). It revises practical everyday Z ding their general appractising formal Z ariety of less communications. | eginning of the and develops communication, 2 and subtechnical communication, 2 mon situations |
| This course requires go course. The course is the more difficult grammar st i.e., telephoning. 04XNP2 The course develops the vocabulary range. It introboth written and oral (CV 04XNP3 The course consists of 3 (traffic problems and call | German for Advanced Students P1 Independent of the degree of the standard of | velled off at the bedetail). It revises practical everyday Z ding their general appractising formal Z ariety of less composabulary range i | eginning of the and develops communication, 2 and subtechnical communication, 2 mon situations n fields such as |
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| This course requires go course. The course is the more difficult grammar strice, telephoning. O4XNP2 The course develops the vocabulary range. It introboth written and oral (CVO4XNP3) The course consists of 3 (traffic problems and can nuclear power engineeristudents are trained to p practice to and from Gerouse CO4XRM1 | German for Advanced Students P1 Independent of the degree of the state of the stat | velled off at the bidetail). It revises practical everyday Z ding their general and practising formal ariety of less compocabulary range in did. By means of an ecourse also incomposed to the course also incomposed | eginning of the and develops of communication, 2 and subtechnical communication, 2 mon situations in fields such as presentation, ludes translation |
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| This course requires go course. The course is the more difficult grammar sti.e., telephoning. O4XNP2 The course develops the vocabulary range. It introboth written and oral (C O4XNP3) The course consists of 3 (traffic problems and can uclear power engineeristudents are trained to p practice to and from Gero O4XRM1 The course is designed to basic vocabulary for control they can use basic grammar. | German for Advanced Students P1 Independent of the processory of the processor of the processory of the processor of the proc | velled off at the bedetail). It revises practical everyday Z ding their general and practising formal ariety of less compocabulary range in decourse also incomplete to the printed and the way and get the way and get and get and the way and get and the way and get and the way and get | eginning of the and develops and develops are communication, 2 and subtechnical communication, 2 mon situations in fields such as presentation, ludes translation 2 ind handwritten), iving directions), |
| This course requires go course. The course is the more difficult grammar sti.e., telephoning. O4XNP2 The course develops the vocabulary range. It introboth written and oral (C O4XNP3) The course consists of 3 (traffic problems and can uclear power engineeristudents are trained to p practice to and from Gero O4XRM1 The course is designed to basic vocabulary for control they can use basic grammar. | German for Advanced Students P1 Independent of a degrammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be lever focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for ructures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on a students 'skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extend duces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and the degrammatical expressions, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indirect speech). German for Advanced Students P3 In main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a vertice accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the vertices information gained from their reading of complex and difficult texts and present it to the class in a simplified oral form. The man. Russian for Intermediate Students M1 or students with previous knowledge of Russian from secondary schools. Students are supposed to know the Russian alphabitation in everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday need, asking the previous in the class of everyday need, asking the previous interved as the provious interved as the provious interved as the provious should be everyday situations (introductions, socializing, greetings, shopping for food and objects of everyday need, asking the provious interved as | velled off at the bedetail). It revises practical everyday Z ding their general and practising formal ariety of less compocabulary range in decourse also incomplete to the printed and the way and get the way and get and get and the way and get and the way and get and the way and get | eginning of the and develops and develops are communication, 2 and subtechnical communication, 2 mon situations in fields such as presentation, ludes translation 2 ind handwritten), iving directions), |

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| 04XRM2 The course is based o | Russian for Intermediate Students M2 n the RM1 course, its contents and scope correspond roughly to RZ4, however, for half of the time allotted in the timetable. | Z | 2 |
| 04XRM3 | Russian for Intermediate Students M3 | Z | 2 |
| • | he knowledge and skills acquired in RM1 and RM2 and its contents and scope are roughly at the same level as those of RZ5, I | however, for half o | the time allotted |
| in the timetable. | Dispairs for Advanced Children D1 | 7 | |
| 04XRP1 The entrance requiren | Russian for Advanced Students P1 lent for the course is to achieve the B1 CEFR level. The objective of the course is revision of standard language structures, p | Z practicing more diff | 2 |
| · · · · · · · · · · · · · · · · · · · | ling the fundamentals of technical language and training writing skills. | aaaga.a a | ioun gramma |
| 04XRP2 | Russian for Advanced Students P2 | Z | 2 |
| | n RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives ut on independent oral and written communication. | s, verb aspects, spe | ecific syntactic |
| 04XRP3 | Russian for Advanced Students P3 | Z | 2 |
| | n RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraphra | ı | I |
| · - | previous knowledge of general language at secondary level (listening, reading, correct communication in everyday situations) | | |
| | udy is aimed at professional and technical skills (reading technical literature according to the students' specialization, oral an | · · · · · · · · · · · · · · · · · · · | • |
| technical topics. | ical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write | accurately and w | itii comidence o |
| 04XRZ1 | Russian for Beginners Z1 | Z | 2 |
| • | the first stage of the five-semester programme, its final aim being reading and understanding professional texts written in Rus | _ | |
| • | (for both reading and writing skills) and fundamentals of grammar necessary for everyday communication (listening and spea | ıking). Students wi | Il be able to read |
| 04XRZ2 | ed stress, understand its contents and summarize it. Russian for Beginners Z2 | Z | 2 |
| - | Nussian for Degrimers 22 of the programme is designed to teach skills for basic communication in everyday situations and for reading easy and short s | _ | _ |
| | ising short sentences and appropriate structures, and read aloud with confidence a short text without marked stress. They will | | |
| master further gramma | atical structures. They will have mastered with confidence the Russian alphabet and will be able to use it in writing. | | |
| 04XRZ3 | Russian for Beginners Z3 | Z | 2 |
| | n RZ2 and includes further everyday topics, develops understanding of short compact texts on new subtechnical topics (for tra | - | - |
| - : | oduces new grammar. Students will be trained to distinguish intonation patterns while listening to spoken language. They will press their opinion. Writing skills will be trained on guided writing tasks and note-taking. | be able to respond | a so as to be |
| 04XRZ4 | Russian for Beginners Z4 | Z | 2 |
| - | n RZ3. It improves and expands the knowledge of general language in all four skills (reading and understanding longer texts wit | . – | . – |
| | ation 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) | • | |
| | re specific topics (environment, addictions, the green movement). They become acquainted with various geographical data (e | e.g., Siberia), learr | now to till in |
| | | | |
| | rmation from the timetable, learn about Russian holidays and typical meals. Russian for Beginners 75 | 7 | 2 |
| 04XRZ5 | Russian for Beginners Z5 e student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understa | Z anding, extracting | 2 and summarizing |
| 04XRZ5 The course expects the | Russian for Beginners Z5 | anding, extracting | and summarizing |
| 04XRZ5 The course expects the information from a spee everyday topics. Study | Russian for Beginners Z5 e student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understacialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Or | anding, extracting a Communication ski ion (verbal adjectiv | and summarizino ills are trained or |
| 04XRZ5 The course expects th information from a spe everyday topics. Study passive voice). Studer | Russian for Beginners Z5 e student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understate cialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Or grammar is based on professional and technical texts and only includes items typically used in professional communications to develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, polite required). | anding, extracting a Communication ski ion (verbal adjectiv uest, etc.) | and summarizing all summarizing of the summarizing |
| 04XRZ5 The course expects th information from a spe everyday topics. Study passive voice). Studer 04XSM1 | Russian for Beginners Z5 e student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understate cialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Or ing grammar is based on professional and technical texts and only includes items typically used in professional communications to develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, polite required) Spanish for Intermediate Students M1 | Communication ski con (verbal adjectivuest, etc.) | and summarizing ills are trained or res, participles, |
| 04XRZ5 The course expects the information from a specyeryday topics. Study passive voice). Studer 04XSM1 The course is designe | Russian for Beginners Z5 e student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understate cialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Or grammar is based on professional and technical texts and only includes items typically used in professional communications to develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, polite required). | anding, extracting a Communication ski ion (verbal adjectiv uest, etc.) Z nester course deve | and summarizing and summarizing and summarizing all summarizing are trained or es, participles, |
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| 04XRZ5 The course expects the information from a specy everyday topics. Study passive voice). Studen 04XSM1 The course is designe vocabulary and pays a texts or listening to the 04XSM2 The course develops to the course develops t | Russian for Beginners Z5 e student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understate cialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Conting grammar is based on professional and technical texts and only includes items typically used in professional communications develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, polite requivers) Spanish for Intermediate Students M1 d for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-sem tention to further grammar topics, to written and oral communication on a given everyday or easy subtechnical topic, for which text. Spanish for Intermediate Students M3 the students' knowledge from the previous course (XSM1). Students are gradually acquainted with fundamentals of Spanish for | anding, extracting a Communication ski ion (verbal adjectivest, etc.) Z nester course development the students are to Z | and summarizing ills are trained or res, participles, 2 lops standard rained by reading |
| 04XRZ5 The course expects the information from a spectory everyday topics. Study passive voice). Studen 04XSM1 The course is designed vocabulary and pays a texts or listening to the 04XSM2 The course develops the able to work with spectors. | Russian for Beginners Z5 e student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understate cialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Continuous cialized text and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Continuous cialized text and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Continuous cialized texts and only includes items typically used in professional communication to same professional skills (writing a CV, polite requivers and sealing the students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-sem tention to further grammar topics, to written and oral communication on a given everyday or easy subtechnical topic, for which text. Spanish for Intermediate Students M3 he students' knowledge from the previous course (XSM1). Students are gradually acquainted with fundamentals of Spanish failized texts on the Internet. | anding, extracting a Communication ski communication ski con (verbal adjectivest, etc.) Z nester course develor the students are to Z for specific purpos | and summarizing ills are trained or les, participles, 2 clops standard rained by reading 2 es in order to be |
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| O4XRZ5 The course expects the information from a specy everyday topics. Study passive voice). Studen O4XSM1 The course is designed vocabulary and pays at texts or listening to the O4XSM2 The course develops the able to work with specy o4XSM3 The course books are enough to use the Interfinal part of the program O4XSP1 Course concentrates of CEFR. O4XSP2 Course XSP2 is the second with the second of CEFR. O4XSP3 Course XSP3 is the firm the program O4XSP3 Course XSP3 is the firm the second of CEFR. O4XSP3 Course XSP3 is the firm the second of CEFR. O4XSP3 Course XSP3 is the firm the second of CEFR. O4XSP3 Course XSP3 is the firm the second of CEFR. O4XSP3 Course XSP3 is the firm the second of CEFR. O4XSP3 Course XSZ1 is the firm the second of CEFR. O4XSZ3 This course builds upon and cultural context of indefinido, pretérito iminimal context of indefinido. | Russian for Beginners Z5 a student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understate inclinated by a speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Caing grammar is based on professional and technical texts and only includes items typically used in professional communications develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, polite requivers). Spanish for Intermediate Students M1 d for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-sem tention to further grammar topics, to written and oral communication on a given everyday or easy subtechnical topic, for which important in the secondary school of the secondary school. The 3-sem tention to further grammar topics, to written and oral communication on a given everyday or easy subtechnical topic, for which important in for intermediate Students M3 supplemented in the Intermet. Spanish for Intermediate Students M3 supplemented with additional subtechnical materials, so the students will be gradually acquainted with the peculiarities of acarnet in Spanish and search for information of their specialization or field of interest. Students will use the information to write imme, general Spanish course based on course books, covers presentations and, finally, a written and oral examination. Spanish for Advanced Students P1 on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communical spanish for Advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and subject of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and subject of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is to the | anding, extracting anding, extracting anding, extracting a Communication skillon (verbal adjectivest, etc.) Zonester course development of the students are to the st | and summarizin and summarizin sills are trained ores, participles, 2 elops standard rained by readin 2 es in order to be summaries. The summaries and point. 2 chosen so as to a sthe Czech 2 conto the realia perfecto, pretérite. |

| 04XSZ4 | Spanish for Beginners Z4 | Z | 2 |
|---------------------------------------|---|----------------------|-----------------|
| The course is base | d on course XSZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish | speaking countrie | es, mainly of |
| | tion to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the | imperative, and su | ıbjunctive), |
| to written and oral of | communication 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 |
| The course books a | are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish for | specific purposes | s. In its final |
| part, the general Sp | panish course based on the course book will end with a written and oral examination. | | |
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| | List of courses of this pass: | | |
| | | | |
| Code | Name of the course | Completion | Credits |
| 00EKOT | Economy in Technology | Z | 1 |
| 00=.10 | The course introduces the basics of micro- and macroeconomics. | _ | |
| 00ETV | Ethics of Science and Technology | Z | 1 |
| 00MAM1 | Essentials of High School Course 1 | Z | 1 |
| OOMAWII | Students are introduced to mathematical concepts and methods used in the introductory physics course. | _ | ' ' |
| 00MAM2 | Essentials of High School Math Course 2 | Z | 1 |
| | uces the fundamental areas of mathematics essential for university studies and practical applications. It covers sets, logic, proofs, fur | | |
| The course introdu | analytic geometry, combinatorics, and probability, with emphasis on understanding principles, rigor, and problem solving. | ictions, derivatives | s, integrais, |
| 00PT | Preparatory Week | Z | 2 |
| 00RET | Rhetoric | Z | 1 |
| l l | ised 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 an | | |
| 00UPRA | Introduction to Law | Z | 1 |
| 00UPSY | Introduction to Psychology | Z | 1 |
| | Calculus B 3 | Z,ZK | |
| 01ANB3 | υences and series - convergence range, criteria of uniform convergence, continuity, limit, differentiation and integration of functional | ' | 8 Sorios |
| - | r's theorem. 2. Ordinary differential equations - equations of first order (method of integration factor, equation of Bernoulli, separation | • | |
| - | equation) and equations of higher order (fundamental system, reduction of order, variation of parameters, equations with constant coe | | - 1 |
| • | ial equation). 3. Quadratic functions and quadrics. 4. Metric spaces - metric, norm, scalar product, neighborhood, interior and exterior p | - | - 1 |
| | pint, boundary of set, completeness of space, Hilbert spaces. Orthogonal polynomials. Complete orthogonal systems. 5. Differential c | | |
| · · · · · · · · · · · · · · · · · · · | ontinuity, partial and directional derivative, gradient, total derivatives and tangent plane. 6. Taylor series for functions of several variable | | |
| | analysis, Jacobi matrix. | | |
| 01ANB4 | Calculus B 4 | Z,ZK | 6 |
| [1] Implicitly defined | functions. [2] Regular mapping, transformation of coordinates, non-cartesian coordinate systems. [3] Local, constrained, and global | extrema of function | ns of several |
| independend variab | oles. [4] Basics of the measure theory, and construction of the Lebesgue measure. [5] Integral calculus of functions of several indeper | ndent variables - P | Riemann and |
| Lebesgue integrals, | , basic properties, theorem of Fubini, substitution theorem, theorems of Levi and Lebesgue. Limit, continuity and differentiability of pa | rametric integrals. | [6] Line and |
| | surface integrals. Integral theorems. | | |
| 01FKO | Functions of Complex Variable | Z,ZK | 3 |
| | om outlining the Jordan curve theorem and the Riemann-Stieltjes integral. Then basic results of complex analysis in one variable are ex | • | |
| | on and the Cauchy-Riemann equations, holomorphic and analytic functions, the index of a point with respect to a closed curve, Cauch | | |
| theorem, roots of a | holomorphic function, analytic continuation, isolated singularities, the maximum modulus principle, Liouville's theorem, the Cauchy esti | mates, Laurent se | ries, residue |
| 041.41 | theorem. | | |
| 01LAL | Linear Algebra 1 | Z | 2 |
| 1. vector space. 2. | Linear dependence and independence. 3. Basis and dimension. 4. Subspaces of vector spaces. 5. Linear mappings. 6. Matrices of litheram | near mappings. 7. | . Frobenius |
| 01LAL2 | theorem. Linear Algebra 2 | Z,ZK | 4 |
| | Elliear Algebra 2 se matrix and operator. 2. Permutation and determinant. 3. Spectral theory (eigenvalue, eigenvector, diagonalization). 4. Hermitian an | · ' | |
| | onality. 6. Metric geometry. 7. Riesz theorem and adjoint operator. Outline of the exercises: 1. Methods for calculation of inverse matri | • | |
| - | 3. Calculation of eigenvalues and eigenvectors. 4. Hermitian and quadratic forms. Canonical form. 5. Scalar product and orthogonalit | | |
| 0. 00.0 | complements. 6. Geometry exercises and examples. 7. Adjoint operators. | y. Gardalandir di di | . u.ogo.iai |
| 01LALZ | Linear Algebra 1, exam | ZK | 2 |
| 01MAN | Calculus 1 | Z | 4 |
| O HVI/ HV | Basic calculus (real analysis, functions of one real variable, differential calculus). | _ | · • |
| 01MAN2 | Calculus 2 | Z,ZK | 8 |
| | differential calculus: Taylor's Polynomials, Taylor's formula 2. Infinite series: criteria of convergence, operations on series, absolute ar | ' | |
| | power series, the Cauchy-Hadamard theorem, expansion of function into power series, summation of infinite series. 4. Theory of integr | | - |
| F F | (Riemann definition), techniques of integration and application of integrals, Generalized Riemann integral | | 3 |
| 01MANZ | Calculus 1, exam | ZK | 4 |
| 01NME2 | Numerical Methods 2 | KZ | 2 |
| - | ed to numerical solution of boundary-value problems and intial-boundary-value problems for ordinary and partial differential equations. | | |
| | lary-value problems to initial-value problems and finite-difference methods for elliptic, parabolic and first-order hyperbolic partial difference methods for elliptic, parabolic and first-order hyperbolic partial difference | = | |
| 01PRST | Probability and Statistics | Z,ZK | 4 |
| l l | e of probability theory and mathematical statistics. The probability theory is build gradually beginning with the classical definition and | | |
| | ons as random variable, distribution function of random variable and characteristics of random variable are treated and basic limit the | - | - 1 |
| On the | e basis of this theory the basic methods of mathematical statistics such as estimation of distribution parameters and hypothesis testing | ng are explained. | |
| | | | |

| 01RMFB | Equations of Mathematical Physics B | Z,ZK | 5 |
|--|--|--|--|
| The subject of this | course is solving integral equations, theory of generalized functions, classification of partial differential equations, theory of integral to | ansformations, and | d solution of |
| | partial differential equations. | | |
| 01UP1 | Introduction to Probability 1 | Z,ZK | 3 |
| 1.Random trial v | vith finite set of possible results, classical probability, independent random events 2.Probability and combinatorics 3.Probability and g | eometry, Bertrands | s paradox |
| 4.Conditional proba | ability, Bayes theorem, medical diagnosis, Simpsons paradox 5.Random variable with discrete state space, its distribution and mean | value 6.Problems i | involving the |
| | calculation of mean value 7.Probabilistic method in graph theory 8.Random algorithms, Morris algorithm and its variants | | |
| 01UP2 | Introduction to Probability 2 | Z,ZK | 3 |
| 1. One-dimensiona | al continuous random variable and its statistical description. 2. Distribution function and probability density. 3. Axiomatic introduction o | f probability and co | onnection to |
| measure theory. 4. | Numerical characteristics of continuous random variables. 5. Selected variants of continuous distributions and their characteristics. 6 | . Elementary metho | ods for point |
| | estimations. 7. Generating pseudorandom numbers from the selected distribution. | | |
| 02DEF1 | History of Physics 1 | Z | 2 |
| Physics and its pla | ace in the system of sciences. The relationship of man and nature. Natural sciences in ancient Orientand Greece, Greek natural philo | sophers, Aristotle. | Physics in |
| Helenistic period, | Archimed. Arabic science, European science in Middle Ages. Renaissance - da Vinci, Giordano Bruno. Copernicus, Kepler, Galileo, I | Huygens. The birth | of physics |
| | as experimental science. Newton and his work. | | |
| 02DEF2 | History of Physics 2 | Z | 2 |
| Development of | f classical mechanics after Newton, Bernoulli's, Euler, Lagrange. Historical development of optics, corpuscular and wave approach. E | Electricity and mag | netism - |
| electrostatics, galv | vanism, electrodynamics and electromagnetism, Faraday and Maxwell. Thermodynamics and its laws, statistical physics, Boltzmann. | The birth of moder | rn quantum |
| and relativistic p | physics, Planck and Einstein. Discovery of radioaktivity, structure of atom, atomic nucleus, Rutherford and Bohr. The way to nuclear ei | nergy, Elementary | particles, |
| | standard model. The concept of Nature and Universe of today. | | |
| 02ELMA | Electricity and Magnetism | Z,ZK | 6 |
| Electric charge, Co | oulomb's law, electrostatic field, Gauss' law. Electric dipole, polarization. Conductors and dielectrics. Electric current and circuits, conc | ductivity. Basics of t | the relativity |
| theory. | Electrodynamic forces, magnetic field. Magnetic dipole, magnetics. Electromagnetic induction, RLC circuits. Electromagnetic waves, | Maxwell equations | i. |
| 02FYS1 | Physical Seminar 1 | Z | 2 |
| The seminar is o | evoted to detailed study of interesting physical problems. It should help students to deeper understanding of fundamentals of physic | s presented in the | course of |
| Mecha | anics. The problems are chosen, studied and presented by the students themselves, with the possibility to use PC and physical labor | atory equipments. | |
| 02KM1 | Quantum Mechanics 1 | Z,ZK | 6 |
| Abstract: The lectur | re describes the birth of quantum mechanics and description of one particle and more particles by elements of the Hilbert space as we | ll as its time evolut | ion. Besides |
| | that it includes description of observable quantities by operators in the Hilbert space and calculation of their spectra. | | |
| 02KM2 | Quantum Mechanics 2 | Z,ZK | 6 |
| Abstract: The led | ture expands the introduction to quantum mechanics with more general formalism of quantum theory, approximate methods and pat | h integral. It summa | arizes the |
| terminology and me | ethods used in various applications of quantum mechanics and prepares the students for an effective scientific research and further stu | ıdy, in particular, of | f the modern |
| | formulations of quantum field theory. | | |
| 00145011 | | | |
| 02MECH | Mechanics | Z | 4 |
| | Mechanics ysics, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, so | _ | |
| Introduction to ph | | olving equations of | motion for |
| Introduction to ph | rysics, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, so | olving equations of | motion for |
| Introduction to ph | rysics, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, so notion, motion in a central force field, forces in non-inertial reference frames. Mechanics of a system of particles, two-body problems, | olving equations of | motion for |
| Introduction to ph one-dimensional n | rysics, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, so 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. | plving equations of particle collisions. | motion for Mechanics |
| Introduction to ph one-dimensional n | nysics, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, so 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. Mechanics - Examination | plving equations of particle collisions. | motion for Mechanics |
| Introduction to ph one-dimensional n 02MECHZ 02PRA1 | visics, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, so 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. Mechanics - Examination The content of the subject is the examination according to the plan of studies. | lylving equations of particle collisions. ZK KZ | motion for Mechanics |
| Introduction to phone-dimensional notation of the one-dimensional notation of the one-dimensio | ysics, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, so 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. Mechanics - Examination The content of the subject is the examination according to the plan of studies. Experimental Laboratory 1 | olving equations of particle collisions. ZK KZ ngineering). But it describes the collisions of the collisions. | motion for Mechanics 2 6 can be also |
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| Introduction to phone-dimensional notation of the one-dimensional notation of the one-dimensio | ysics, physical quantities and units. Kinematics of a particle, basic types of motion and their superposition. Dynamics of a particle, so 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. Mechanics - Examination The content of the subject is the examination according to the plan of studies. Experimental Laboratory 1 d especially for students who intend to study some of the physical specializations of FNSPE(branch Physical Engineering, Nuclear E ts interested in the otherspecializations. In Experimental laboratory students learn how to prepare for experiments (including work with the | plying equations of particle collisions. ZK KZ ngineering). But it deliterature), the imp | motion for Mechanics 2 6 can be also blementation |
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| 02ZM1 | Foundations of Physical Measurements 1 | ZK | 2 |
| | gned for students of physical specializations (Experimental particle physics, Physical engineering, Nuclear engineering), however, it can be a supplied to the control of t | | - |
| other branches. I | ne goal of the lecture is to introduce the basics of physical measurements, the methods of processing and evaluation of acquired data | on a PC. Stude | nts learn the |
| | basic habits of work in a physics lab. | | |
| 02ZM2 | Foundations of Physical Measurements 2 | KZ | 4 |
| | signed for students of physical specializations FNSPE (Nuclear and Particle Physics, Physical engineering, Nuclear engineering), how | | - |
| udents of other bi | ranches. The goal of the course is to practically introduce students to the basics of physical measurements of the most important quantiti | es, the methods | of processir |
| | and evaluation of acquired data on a PC. Students learn the basic habits of work in a physics lab. | | |
| 04AKS | English Conversation | Z | 1 |
| | velop the student's communication skills acquired throughout their previous studies. It aims to improve all aspects of oral communicat | | |
| • | r various communication situations and will master their communication strategy. They will also practise their listening skills in order to | | d participat |
| in d | iscussions. The student will be trained to express their ideas clearly and according to current English usage, and become a more cont | fident speaker. | |
| 04XAM1 | English for Intermediate Students M1 | Z | 2 |
| ne course is desig | gned for students who have successfully completed the full secondary school English language course at least at the A2 level of the Co | ommon Europea | n Framewo |
| Reference for La | inguages (CEFR). It provides an introduction into English for Specific and Academic Purposes (ESP, EAP), i.e., into fundamentals of v | ocabulary and s | tyle typical |
| rofessional oral a | ind written communication situations. Thus it covers topics related to the student's life and needs as well as topics of subtechnical interest. | erest. Attention is | also paid t |
| | extending the knowledge of grammar issues used in EAP. | | |
| 04XAM2 | English for Intermediate Students M2 | Z | 2 |
| he 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 gramma | ır, functions |
| d lexical items ty | pical of ESP and EAP (e.g., definition, existence and classification of phenomena, object descriptions). Part of the course is also guided | writing. If necess | ary, gramm |
| | revision is included. | | |
| 04XAM3 | English for Intermediate Students M3 | Z | 2 |
| | os the skills that enable students to cope with features typical of professional style. Increasing attention is paid to developing subtechnica | - | - |
| understanding of | professional texts. Great emphasis is placed on distinguishing different levels of formal and informal oral and written communication a | and their approp | riate Czech |
| uivalents. The co | ourse also includes studying abstracts and rules for writing them as well as basic rules for preparing and giving a short presentation or | n a chosen topic | related to th |
| | student's field. | | |
| 04XAMZK | English for Intermediate Students Examination | ZK | 4 |
| The course conte | ent 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 m | in) 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 E | nglish courses. | |
| 04XAP1 | English for Advanced Students P1 | Z | 2 |
| he course is at th | le level of advanced English, designed for students who have successfully completed the full secondary school English language cou | rse (at least to th | e B1 level |
| ne Common Euro | pean Framework of Reference for Languages - CEFR). It provides an introduction into English for Specific and Academic Purposes (I | ESP, EAP), provi | ding insight |
| to the fundament | als of vocabulary, grammar, and the purpose and style which is typical of academic and professional oral and written communication s | situations concer | ning scienc |
| ممامم بسماممطم | | | |
| echnology, engine | ering and mathematics (STEM) contexts. There is an emphasis on reading material and discussing ideas with colleagues prior to part | ticipating in plen | ary session |
| echnology, engine | ering and mathematics (STEM) contexts. There is an emphasis on reading material and discussing ideas with colleagues prior to participation is a basic expectation. | ticipating in plen | ary session: |
| 04XAP2 | | ticipating in plen | ary sessions |
| 04XAP2 | Full and active participation is a basic expectation. | Z | 2 |
| 04XAP2 The course is desi | Full and active participation is a basic expectation. English for Advanced Students P2 | Z s on content cov | 2 rered in AP1 |
| 04XAP2 The course is desirus extending the contexts. The cour | Full and active participation is a basic expectation. English for Advanced Students P2 gned for students who have successfully completed AP1 and is a continuation of the Advanced English course. The AP2 course build students skills for working with texts relating to science, technology, engineering and mathematics (STEM), and honing spoken and wr se extends the students academic vocabulary, through exposure to a wide variety of diverse texts and broadens knowledge of key as | Z s on content covritten communicate | 2 rered in AP1 tion in STE r (referred to |
| 04XAP2 The course is designed extending the contexts. The course Language Topic | Full and active participation is a basic expectation. English for Advanced Students P2 gned for students who have successfully completed AP1 and is a continuation of the Advanced English course. The AP2 course build students skills for working with texts relating to science, technology, engineering and mathematics (STEM), and honing spoken and wr se extends the students academic vocabulary, through exposure to a wide variety of diverse texts and broadens knowledge of key as (s), pertinent to effective academic discourse and communication. There is a specific emphasis on responding to graphic data and the significant contents. | Z s on content covitten communicate pects of gramma ynthesizing of co | 2 rered in AP1 ation in STE or (referred to omprehensive |
| 04XAP2 The course is designed extending the contexts. The course Language Topic and nuanced interpretable. | Full and active participation is a basic expectation. English for Advanced Students P2 gned for students who have successfully completed AP1 and is a continuation of the Advanced English course. The AP2 course build students skills for working with texts relating to science, technology, engineering and mathematics (STEM), and honing spoken and wr se extends the students academic vocabulary, through exposure to a wide variety of diverse texts and broadens knowledge of key as (s), pertinent to effective academic discourse and communication. There is a specific emphasis on responding to graphic data and the suretations of such data. There is a focus on formal conventions in written communication including sentence and paragraph structure, discrete | Z s on content cov ritten communica pects of gramma ynthesizing of co | 2 rered in AP1 ation in STE r (referred to pmprehension and cohesio |
| 04XAP2 The course is designed extending the contexts. The course Language Topic and nuanced interpas in AP1, conside | Full and active participation is a basic expectation. English for Advanced Students P2 gned for students who have successfully completed AP1 and is a continuation of the Advanced English course. The AP2 course build students skills for working with texts relating to science, technology, engineering and mathematics (STEM), and honing spoken and wr se extends the students academic vocabulary, through exposure to a wide variety of diverse texts and broadens knowledge of key as (s), pertinent to effective academic discourse and communication. There is a specific emphasis on responding to graphic data and the suretations of such data. There is a focus on formal conventions in written communication including sentence and paragraph structure, discernations of the purpose and concomitant style which is typical of academic and professional oral and written communication is explored. | Z s on content cov ritten communica pects of gramma ynthesizing of co course marking a ed through samp | 2 ered in AP1 tition in STE r (referred t imprehension and cohesion le materials |
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| 04XAP2 he course is desi us extending the contexts. The cour s Language Topic d nuanced interp as in AP1, consid And once 04XAP3 he AP3 course is the course of the greement, and ob udy. For most stu | Full and active participation is a basic expectation. English for Advanced Students P2 gned for students who have successfully completed AP1 and is a continuation of the Advanced English course. The AP2 course build students skills for working with texts relating to science, technology, engineering and mathematics (STEM), and honing spoken and wrise extends the students academic vocabulary, through exposure to a wide variety of diverse texts and broadens knowledge of key as so, pertinent to effective academic discourse and communication. There is a specific emphasis on responding to graphic data and the so retations of such data. There is a focus on formal conventions in written communication including sentence and paragraph structure, discertations of the purpose and concomitant style which is typical of academic and professional oral and written communication is explore again, students are expected to discuss ideas with colleagues prior to participating in plenary sessions. Full and active participation is English for Advanced Students P3 designed for students who have successfully completed AP2 and is a continuation of the Advanced English course leading to a zápočet a wilds on content covered in both AP1 and AP2, and in terms of the final examinations, provides a summative assessment of the knowled three semesters. The AP3 course places greater emphasis on student participation, training oral communication skills, particularly we jections in formal discussions. There is also focus on professional written communication in the context of applying for work placement dents this is their third year of studying for their bachelors degree and so there is a commitment to honing efficient and effective language. | Z s on content covitten communicated for some services of gramma ynthesizing of cocourse marking and through samps a basic expectate Z and a final graded edge and skills a hen expressing a and opportunities skills with a vie | 2 rered in AP- ation in STE r (referred to proper the materials and cohesion le materials ation. 2 examination acquired over an opinion, ies for furth w to enablin |
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| 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 g emphasis on individual work. | י ס |
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| emphasis on individual work. | 2 |
| · | reater |
| 04XCESP3 Czech for Foreigners - Advanced 3 Z | 2 |
| The course develops the student's knowledge from CESP2. It includes working with authentic specialist materials, their interpretation and presentation, and, finally, presentation student's project. Writing skills necessary for professional communication are trained. | |
| 04XCESPZK Czech for Foreign Students - Advanced Examination ZK | 4 |
| The course content is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the CESP1,2,3 courses and can be taken after successful completion of the 3 courses. Detailed information is to be obtained from the teacher. | only |
| 04XCESZ1 Czech for Foreigners - Beginners 1 Z | 2 |
| The course is designed for students of the English programme. Students will become acquainted with the main characteristics of Czech (phonetic and grammar features) and the | ey 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 ever | eryday |
| situations. The course covers roughly lessons 1-3 of Čeština Express (Czech Express) by L. Holá and P. Bořilová. | |
| 04XCESZ2 Czech for Foreigners - Beginners 2 Z | 2 |
| The language and communication competences acquired in CESZ1 are further developed. Students deepen their knowledge of the declension and conjugation system and pro- | actise |
| basic communication topics. The course covers roughly lessons 3-5 in Czech Express by L. Holá and P. Bořilová. | |
| 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 vocabu | - 1 |
| 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 pr | |
| 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 Ceština 6. | expres |
| 04XCESZZK Czech for Foreigners Beginners - Examination ZK | 4 |
| The course content is the examination as given by the study plan. The examination consisting of a written and oral part covers all the topics of the 04XCESZ1,2,3 courses and | - 1 |
| 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 Z | 2 |
| French - intermediate FM The objective of this three-semester course is to improve and further develop communication in the French language in both written and oral form. Stu | |
| 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 techn | ical |
| 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 | guage |
| 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, a | nswer |
| 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 French for Intermediate Students M2 Z | 2 |
| Course FM2 builds on FM1. Linguistic structures and competence acquired in previous study are systemized and expanded. Reading popular science texts, features typical for tec | |
| and scientific language (passives, nominalization, word formation). Topics: physics, power engineering, environment, Internet, success of French science and technology, French science an | nch |
| scientists, artists and architects. Description of an object, device, shapes, dimensions, material. O4XFM3 French for Intermediate Students M3 Z | 2 |
| The course is focused on improvement and further development of linguistic competence acquired during the follow-up courses. Syntactic structures (subordinate and infinitive class) | - |
| The course is locased on improvement and further development of inigalistic competence acquired during the follow up courses. Cyntactic structures (suboralitate and immittee die | 202116 |
| 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 | |
| participle structures, compound tenses). Text summaryStudents prepare a written paper which will be delivered in form of an oral presentation in-class. The paper is linked to 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 a | the |
| participle structures, compound tenses). Text summaryStudents prepare a written paper which will be delivered in form of an oral presentation in-class. The paper is linked to 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 a and one's own knowledge/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesion and coherence. | the |
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| 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 a and one's own knowledge/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesion and coherence. O4XFMZK French for Intermediate Students Examination ZK The content is the examination as given by the study programme. The whole French programme is ended with an examination covering the contents of FM1-FM3. The examination consists of a written and oral part and is organized according to Examination Instructions, a document available on the web. | the articles |
| 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 as and one's own knowledge/experienceLonger monologues on topics /situations set for the examination are prepared. Text structure, cohesion and coherence. O4XFMZK | the articles 4 ation 2 ts will |
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| | French for Beginners Z3 | 7 | |
|--|--|--|--|
| | Treflor to beginners 25 | Z | 2 |
| Tonico functione | upon FZ2. Basic linguistic knowledge and skills are developed. The contents is given by lessons 14 - 18 of the textbook: Pravda - Prav | | • |
| Topics, furictions | s and situations are complemented from other materials. Stress is put on oral communication in dialogues and on reading, both for info | rmation and loud | d as part of |
| | pronunciation practice. Reading covers short adapted texts of general interest first, and later popular science texts. | | 1 - |
| 04XFZ4 | French for Beginners Z4 | Z | 2 |
| | s up on FZ3. Basic linguistic knowledge and skills are further developed. Oral communication and reading skills are practiced. The con the textbook French for Beginners, and is expanded with topics and functions from other materials. Reading is developed from the lecture | | |
| | The course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shopping the course covers generals and specific topics: health- illness, sport, free time, environment, study, travelling in France, Paris, shopping the course covers generals and specific topics: | | |
| Cladorilo or r or i. | country and in France, how to write CV, application, topics in mathematics, reading physics - mechanics, informatics, interne | _ | orony iii oui |
| 04XFZ5 | French for Beginners Z5 | Z | 2 |
| | ired in FZ4 are further developed, as well as technical language. Students prepare a paper on a chosen popular science topic. They pre | esent it orally in t | he class. The |
| general contents | s is covered by lessons 24 - 26 of the textbook: Pravda-Pravdova, French for Beginners, and is complemented from other materials. Top | oics: on physics f | rom lecture |
| notes, success | of French science and technology, information about France. Grammar is systemized and complemented with syntax (subordinate cla | uses, typical cor | junctions, |
| | subjunctive clauses, gerund, passive. | | |
| 04XFZZK | French for Beginners Examination | ZK | 3 |
| The content is the | examination as given by the study plan. The course is terminated with an examination consisting of oral and written part. The examination consisting of oral and written part. The examination consisting of oral and written part. The examination consisting of oral and written part. | ation is ruled by t | he document |
| 04771144 | Instruction for examination. Its content covers the levels FZ1 - FZ5. | 7 | |
| 04XNM1 | German for Intermediate Students M1 le course is to level off the students' skills in the German language. The course focuses on revision of more difficult phenomena and str | Z | 2 |
| | n processes (e.g. importance of verb prefixes). In the lexical part, it covers topics referring to higher education in both the Czech Reput | | |
| | 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 underst | | |
| 04XNM2 | German for Intermediate Students M2 | Z | 2 |
| The course introdu | ices other more complex grammatical structures and their application in communication based on technical texts, such as the relation be | tween technolog | y and society, |
| | beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and c | ٠. | |
| practise reading for | r information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systematic | cally revises other | r grammatical |
| | phenomena important for professional discourse (participles, relative clauses). | | |
| 04XNM3 | German for Intermediate Students M3 | . Z | 2 |
| | ices other more complex grammatical structures and their application in communication based on technical texts, such as the relation be | | - |
| | beginning of the 21st century, linguistically more demanding texts on the environment, the language of mathematics, computers and c r information and reading aloud, and appropriate language for various purposes in oral and written communication. The course systematic | | |
| practice reading to | phenomena important for professional discourse (participles, relative clauses). | any reviews enter | grammanoar |
| 04XNMZK | German for Intermediate Students Examination | ZK | 4 |
| | | | 1 |
| The course conten | nt is the examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examination o | onsisting of two p | oarts - written |
| | nt is the examination as given by the study plan. The whole German for Intermediate Students Course is completed by an examination cover the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme | | |
| | | | |
| and oral, which co | over the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme is to be obtained from the teacher. German for Advanced Students P1 | ent. More detailed | d information 2 |
| 04XNP1 This course requi | over the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme is to be obtained from the teacher. German for Advanced Students P1 ires good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be levell | ent. More detailed Z ed off at the beg | information 2 inning of the |
| 04XNP1 This course requi | over the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme is to be obtained from the teacher. German for Advanced Students P1 ires good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be levell se is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for details). | Z ed off at the begetail). It revises an | 2 inning of the and develops |
| 04XNP1 This course requi | over the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme is to be obtained from the teacher. German for Advanced Students P1 ires good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be levell se is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for demar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on practiciples. | Z ed off at the begetail). It revises an | 2 inning of the and develops |
| 04XNP1 This course requi course. The course more difficult gramm | over the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme is to be obtained from the teacher. German for Advanced Students P1 ires good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be levell se is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for demar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on practiculary. | Z ed off at the beg stail). It revises au tical everyday co | 2 inning of the nd develops mmunication, |
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| and oral, which co | over the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme is to be obtained from the teacher. German for Advanced Students P1 res good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be levell se is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for de mar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on practice, telephoning. German for Advanced Students P2 ps the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending in thirtoduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and praction written and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indirect of a main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a varieting of a main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a varieting of a main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a varieting the environment, computer science, and car technology, will also be extended. Only authentic professional texts, the vocal angineering, the environment, computer science, and car technology, will also be extended. Only authentic professional texts are used. In the control of the case in a simplified oral form. The complex and difficult texts and present it to the class in a simplified oral form. The confidence information as given by the study plan. The whole German for Advanced Students Examination It is the examination as given by the study plan | ent. More detailed Z ed off at the beg etail). It revises an etical everyday co Z their general and ctising formal core ect speech). Z ty of less commo bulary range in fi By means of a pr burse also includ ZK onsisting of two p assessment. Mo Z both printed and he way and givin evel of the RZ2 of e. Z et imetable. Z ver, for half of the ZK ge and skills acq | d information 2 dinning of the and develops mmunication, 2 subtechnical mmunication, 2 subtechnical mmunication, 4 dinning and a sees entation, es translation 4 dinning and a sees translation 4 dinning directions), ourse. The 2 dinning allotted 4 duired in RM1 |
| and oral, which co | over the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme is to be obtained from the leacher. German for Advanced Students P1 res good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be levell se is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for de mar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on practive, the students of sudents power engineering, Increasing emphasis is placed on understanding and practive interference in the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending the interference in the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending the interference in the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending by the written and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, individual and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, individual care accidents, accident report, filling in a form, complaints). Based on presentations and technical and subtechnical texts, the vocal under care accidents, accident report, filling in a form, and difficult texts and present it to the class in a simplified oral form. The complex and difficult texts and present it to the class in a simplified oral form. The complex information gained from their reading of complex and difficult texts and present it to the class in a simplified oral form. The complex information as given by the study plan. The whole German for Advanced | ent. More detailed Z ed off at the beg etail). It revises an etical everyday co Z their general and ctising formal cor- ect speech). Z ty of less commod bulary range in file By means of a propurse also includ ZK onsisting of two propurse also includ assessment. More Z both printed and he way and giving evel of the RZ2 creation in the correct of the RZ2 creation in the creation in the correct of the correct of the RZ2 creation in the correct of the RZ2 creation in the creation in | d information 2 dinning of the and develops mmunication, 2 subtechnical mmunication, 2 subtechnical mmunication, 2 on situations elds such as resentation, es translation 4 arts - written ore detailed 2 handwritten), g directions), ourse. The 2 time allotted 4 uired in RM1 acher. |
| and oral, which co | over the courses NM1 - NM3. The oral part follows after passing the written part successfully and after obtaining the 04NM3 assessme is to be obtained from the teacher. German for Advanced Students P1 res good grammar knowledge, extended general vocabulary, and good communication skills acquired at secondary school to be levell se is then focused on working with technical and scientific texts and practising reading techniques (skimming, scanning, reading for de mar structures necessary for understanding a subtechnical text (passive voice, participles, participle structures) and it also focuses on practice, telephoning. German for Advanced Students P2 ps the students' skills in working with professional scientific texts (understanding, summarising, note-taking, interpreting) while extending in thirtoduces mathematical expressions and texts of nuclear power engineering. Increasing emphasis is placed on understanding and praction written and oral (CV, letter of application, interview, scholarship), and more complex grammatical structures (i.e., subjunctive, indirect of a main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a varieting of a main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a varieting of a main parts (general communicative situations, grammar and technical topics). Students will develop their vocabulary in a varieting the environment, computer science, and car technology, will also be extended. Only authentic professional texts, the vocal angineering, the environment, computer science, and car technology, will also be extended. Only authentic professional texts are used. In the control of the case in a simplified oral form. The complex and difficult texts and present it to the class in a simplified oral form. The confidence information as given by the study plan. The whole German for Advanced Students Examination It is the examination as given by the study plan | ent. More detailed Z ed off at the beg etail). It revises an tical everyday co Z their general and ctising formal col ect speech). Z ty of less commod bulary range in file By means of a propurse also include ZK onsisting of two propurse also include Z both printed and he way and giving evel of the RZ2 of etail etail etail evel of the RZ2 of etail etail etail etail evel, for half of the Z ge and skills acquetions by the te | d information 2 dinning of the and develops mmunication, 2 subtechnical mmunication, 2 subtechnical mmunication, 2 on situations elds such as resentation, es translation 4 arts - written ore detailed 2 handwritten), g directions), ourse. The 2 1 2 time allotted 4 uired in RM1 acher. 2 |

| 04XRP2 | Russian for Advanced Students P2 | Z | 2 |
|---------------------|--|-------------------------|----------------|
| The course is bas | ied on RP1. It expands grammatical structures important for understanding technical texts (verbal adjectives, participles, passives, ve structures). Stress is put on independent oral and written communication. | erb aspects, speci | tic syntactic |
| 04XRP3 | Russian for Advanced Students P3 | Z | 2 |
| | ed on RP2 and is mainly focused on working with technical and scientific texts (reading comprehension, oral and written paraphrasin | I | 1 |
| | 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 w | = | • |
| develop their subte | chnical vocabulary and practice quick and correct communication in professional situations. They will be able to both speak write acc technical topics. | urately and with c | onfidence on |
| 04XRPZK | Russian for Advanced Students Examination | ZK | 4 |
| | it is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled | I | 1 |
| - RP3. Stud | ents are eligible for the oral examination only after a prior pass in RP3 and a successful written examination. Students are given instr | ructions by the tea | acher. |
| 04XRZ1 | Russian for Beginners Z1 | Z | 2 |
| | ents the first stage of the five-semester programme, its final aim being reading and understanding professional texts written in Russian | - | _ |
| tne Hussian aipnat | pet (for both reading and writing skills) and fundamentals of grammar necessary for everyday communication (listening and speaking a short text with marked stress, understand its contents and summarize it. |). Students will be | able to read |
| 04XRZ2 | Russian for Beginners Z2 | Z | 2 |
| - | ster of the programme is designed to teach skills for basic communication in everyday situations and for reading easy and short subte | _ | _ |
| able to communicat | te using short sentences and appropriate structures, and read aloud with confidence a short text without marked stress. They will als | o develop their vo | cabulary and |
| | master further grammatical structures. They will have mastered with confidence the Russian alphabet and will be able to use it in | | |
| 04XRZ3 | Russian for Beginners Z3 | Z | 2 |
| | d on RZ2 and includes further everyday topics, develops understanding of short compact texts on new subtechnical topics (for training d introduces new grammar. Students will be trained to distinguish intonation patterns while listening to spoken language. They will be | | _ |
| and notering) dil | understood, and to express their opinion. Writing skills will be trained on guided writing tasks and note-taking. | abic to respond s | us iU DE |
| 04XRZ4 | Russian for Beginners Z4 | Z | 2 |
| The course is base | d on RZ3. It improves and expands the knowledge of general language in all four skills (reading and understanding longer texts with a c | । :ertain percentage | of unfamiliar |
| words, oral comm | nunication in everyday situations, writing longer texts). Students are trained to use grammar structures effectively (e.g., irregular verbs | s, differences in ve | erb patterns |
| | dality, imperatives, conditionals). They practice and develop communication skills for everyday situations (food, travelling, free time), a | • | |
| communication o | in more specific topics (environment, addictions, the green movement). They become acquainted with various geographical data (e.g. | ., Siberia), learn h | now to fill in |
| 04XRZ5 | forms, look up the information from the timetable, learn about Russian holidays and typical meals. Russian for Beginners Z5 | Z | 2 |
| - | rtussian for Degrimers 23 s the student to have completed RZ4. It concentrates predominantly on reading skills (working with professional texts, i.e. understandin | _ | 1 |
| - | specialized text) and speaking, and to a certain extent, writing about the professional information obtained by reading the texts. Com | - | _ |
| everyday topics. S | studying grammar is based on professional and technical texts and only includes items typically used in professional communication | (verbal adjectives, | , participles, |
| • | re voice). Students develop their technical and economic vocabulary, and are also trained in some professional skills (writing a CV, po | | 1 |
| 04XRZZK | Russian for Beginners Examination | ZK | 3 |
| | it is the examination as given by the study plan. The course is completed by taking a written and oral examination testing the knowled ents are eligible for the oral examination only after a prior pass in RZ5 and a successful written examination. Students are given instr | - | |
| 04XSM1 | Spanish for Intermediate Students M1 | 7 | 2 |
| | signed for students whose competence is at level B1 of CEFR, i.e. those who studied Spanish in the secondary school. The 3-semes | ter course develor | I |
| vocabulary and pay | rs attention to further grammar topics, to written and oral communication on a given everyday or easy subtechnical topic, for which the | students are traine | ed by reading |
| | texts or listening to them. | | |
| 04XSM2 | Spanish for Intermediate Students M3 | Z | 2 |
| The course develop | ps the students' knowledge from the previous course (XSM1). Students are gradually acquainted with fundamentals of Spanish for s able to work with specialized texts on the Internet. | pecilic purposes i | n 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 | I | 1 |
| | Internet in Spanish and search for information of their specialization or field of interest. Students will use the information to write sho | | - |
| | final part of the programme, general Spanish course based on course books, covers presentations and, finally, a written and oral ex | | |
| 04XSMZK | Spanish for Intermediate Students Examination | ZK | 4 |
| The course conte | ent is the examination as given by the study plan. XSMZK examination consists of two parts: written and oral; to be eligible for the wr obtained non-graded assessment for course XSM3. Oral examination follows the written part. | itten part, student | s will have |
| 04XSP1 | Spanish for Advanced Students P1 | Z | 2 |
| | panish for Advanced Students F1 es on more difficult grammar topics, revision of vocabulary, basics of Spanish for specific purposes as well as written communication. | I . | |
| 004.00 0000 | of CEFR. | oou.oo p.o.oqu.o | |
| 04XSP2 | Spanish for Advanced Students P2 | Z | 2 |
| | e second part of the advanced Spanish course, extending Spanish for specific purposes topics. It comprises more grammar and synta | ax and focuses on | independent |
| | written communication. | | |
| 04XSP3 | Spanish for Advanced Students P3 | Z | 2 |
| Course XSP3 is the | e final part of the advanced Spanish course. It is based on texts chosen by the students according to their future specialization. It is focu | used on written co | mmunication |
| 04XSPZK | based on what students will need in their career. Spanish for Advanced Students Examination | ZK | 4 |
| | partist for Advanced Students Examination. The examination as given by the study plan. Examination XSPZK consists of two parts, namely oral and written. The prerequisite | I | I |
| | ng passed the written test. Examination content is based on syllabi of courses XSP1, XSP2, and XSP3 or on an individual study plar | | F |
| 04XSZ1 | Spanish for Beginners Z1 | Z | 2 |
| Course XSZ1 is the | e first stage of the five-semester programme of Spanish studies; during the first stage the students will master phonetics and fundam | - | |
| | o communicate at an elementary level on topics of everyday life. They will acquire and extend fundamental vocabulary of general Spi | | |
| 04XSZ2 | Spanish for Beginners Students Z2 | Z | 2 |
| | ased on course XSZ1, and expects students to develop and extend the knowledge and skills acquired so far. Grammar structures and expectand short adapted written texts and speech. Attention is also paid to sultural differences between Spenish speech acquirties of | | |
| enable triem to un | nderstand short adapted written texts and speech. Attention is also paid to cultural differences between Spanish-speaking countries a Republic. Realia of Spanish-speaking countries are also included. | una ouners such as | s trie Czech |
| | The state of the s | | |
| | | | |

| 04XSZ3 | Spanish for Beginners Z3 | Z | 2 |
|--|---|--|--|
| | upon the foundations established in course XSZ2 and further develops students vocabulary and grammatical competence. It include | _ | |
| | tof Spanish-speaking countries, with a primary focus on Spain. Particular attention is given to key grammatical structures, including t | | |
| | imperfecto, the gerund, and the imperative. The course also focuses on both written and spoken communication on general topics. | | |
| | through targeted reading and listening activities. | | |
| 04XSZ4 | Spanish for Beginners Z4 | Z | 2 |
| | d on course XSZ3. It develops the student's vocabulary and extends the knowledge of the culture and social customs of the Spanish | speaking countries | |
| Spain. It pays atter | ntion to further grammar topics (perifrasis verbales, futuro imperfecto, direct object and indirect object pronouns, negative form of the | imperative, and su | bjunctive), |
| , | to written and oral communication on a given general or subtechnical topic, for which the student is trained by reading texts or listening | ng to them. | |
| 04XSZ5 | Spanish for Beginners Z5 | Z | 2 |
| The course books | are supplemented with additional subtechnical materials, so the students will be gradually acquainted with peculiarities of Spanish fo | r specific purposes | . In its final |
| | part, the general Spanish course based on the course book will end with a written and oral examination. | | |
| 04XSZZK | Spanish for Beginners Examination | ZK | 3 |
| The course content | is the examination as given by the study plan. Examination consists of two parts: written and oral. Students can register for oral examination | nation only if they h | ave passed |
| | the written examination test. | | |
| 11BSEM | Bachelor Seminar | Z | 1 |
| In the first part of th | e seminar, students familiarize themselves with the general principles of publishing and presenting scientific work and the formal requ | irements for bache | lors degree |
| projects at the fact | ulty. The second part is designed as a practical training for the defence of the bachelors degree project. The students give oral preser | tations of the curre | nt 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 possibi | lities of improving t | ne students |
| | performance. | | |
| 11UFP | Introduction to Solid State Physics | ZK | 3 |
| The course conta | ains the fundamentals of diffraction stress analysis with a strong emphasis on the illustrations of the capability of X-ray diffraction to s | olve engineering p | roblems. |
| 11UFPLN | Introduction to Solid State Physics | ZK | 2 |
| • | The purpose of this lecture is to introduce the undergraduate students to the study of the solid state physics. | ' | |
| 11ZFP | Basic to Solid State Physics | ZK | 3 |
| Description of funda | amental properties of solids following the regular long distance ordering of atoms in a crystal lattice. Based on the introduced bonding | interaction between | en atoms in |
| solids, various types | s of crystals and their properties are defined. The model of crystalline lattice dynamics in harmonic approximation is described and basic | thermal properties | of crystals |
| are derived. The p | eriodic potential of the crystal lattice is introduced and its relation to the following model describing the energetic state of electrons in | solids by means o | f electron |
| energy bands ex | plained. The special consequences of band approach to the physical properties of solids are elucidated. The aim of the course is to s | ystematically intro | duce and |
| | interpret a broad phenomenological basis of physical properties of crystalline solids | | |
| 11ZFPL | Basic to Solid State Physics | KZ | 2 |
| Description of funda | amental properties of solids following the regular long distance ordering of atoms in a crystal lattice. Based on the introduced bonding | interaction between | en atoms in |
| solids, various types | s of crystals and their properties are defined. The model of crystalline lattice dynamics in harmonic approximation is described and basic | thermal properties | of crystals |
| • | eriodic potential of the crystal lattice is introduced and its relation to the following model describing the energetic state of electrons ir | • | |
| energy bands ex | plained. The special consequences of band approach to the physical properties of solids are elucidated. The aim of the course is to s | ystematically introd | duce and |
| | interpret a broad phenomenological basis of physical properties of crystalline solids | | |
| 12APL | Application of Lasers | Z,ZK | 2 |
| | plication of lasers in industrial technologies, medicine, remote sensing, energetics, telecommunication, military, entertainment and ot | | |
| 12BPFI1 | Bachelor Project 1 | Z | 5 |
| The bachelor project | et is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the proj | ect supervisor duri | ng common |
| | regular meetings and discussions. | _ | |
| 12BPFI2 | Bachelor Project 2 | Z | 10 |
| The bachelor project | et is based on a topic approved by the administrators of the programme, department and by the dean. The student is guided by the proj | ect supervisor durii | ng common |
| ===. | regular meetings and discussions. | | |
| 12EPR1 | Basic Electronics Practicum 1 | KZ | 3 |
| The aim of the pra | acticum is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formulation | of the results. The | practicum |
| | consists of blocks lasting 4 hours. | | _ |
| 12EPR2 | Basic Electronics Practicum 2 | KZ | 3 |
| The aim of the pra | acticum is 1) to acquire basics skills in electronics and 2) to learn independent problem solving, formulation of a task and formulation | | practicum |
| | , , , | of the results. The | |
| | consists of blocks lasting 4 hours. | | |
| 12LAS | consists of blocks lasting 4 hours. Laser Systems | Z,ZK | 3 |
| Pulsed solid state | consists of blocks lasting 4 hours. Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. O | Z,ZK ptical parametric g | enerators |
| Pulsed solid state | consists of blocks lasting 4 hours. Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. O Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultravi | Z,ZK ptical parametric g olet lasers. X-ray la | enerators |
| Pulsed solid state and raman lasers. | consists of blocks lasting 4 hours. Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. Of Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultravi power continuous lasers. Infrared high power lasers. Submillimeter lasers. Lasers with high degree of coherence. Free electron lasers. | Z,ZK ptical parametric g plet lasers. X-ray la asers. | enerators sers. High |
| Pulsed solid state and raman lasers. | consists of blocks lasting 4 hours. Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. Of Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultravi power continuous lasers. Infrared high power lasers. Submillimeter lasers. Lasers with high degree of coherence. Free electron lates Technique 1 | Z,ZK ptical parametric g olet lasers. X-ray la asers. Z,ZK | enerators sers. High |
| Pulsed solid state and raman lasers. 12LTB1 Open resonators. S | consists of blocks lasting 4 hours. Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. Of Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultravice power continuous lasers. Infrared high power lasers. Submillimeter lasers. Lasers with high degree of coherence. Free electron laser Technique 1 Laser Technique 1 Stability. Transverse and Longitudinal Modes. Elements of Open Resonators. Threshold of laser oscillations. Gausian beam as an app | Z,ZK ptical parametric g olet lasers. X-ray la asers. Z,ZK roximation of the fu | enerators sers. High 3 Indamental |
| Pulsed solid state and raman lasers. 12LTB1 Open resonators. \$ mode. ABCD me | consists of blocks lasting 4 hours. Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. Of Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultravice power continuous lasers. Infrared high power lasers. Submillimeter lasers. Lasers with high degree of coherence. Free electron laser Technique 1 Stability. Transverse and Longitudinal Modes. Elements of Open Resonators. Threshold of laser oscillations. Gausian beam as an appethod. Optical radiation propagation in resonant medium. Two-level approximation. Equations for polarisation and inversion, dispersion | Z,ZK ptical parametric g plet lasers. X-ray la asers. Z,ZK roximation of the function, saturation. Cohe | enerators sers. High 3 Indamental |
| Pulsed solid state and raman lasers. 12LTB1 Open resonators. S mode. ABCD me | consists of blocks lasting 4 hours. Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. Of Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultraving power continuous lasers. Infrared high power lasers. Submillimeter lasers. Lasers with high degree of coherence. Free electron is Laser Technique 1 Stability. Transverse and Longitudinal Modes. Elements of Open Resonators. Threshold of laser oscillations. Gausian beam as an appethod. Optical radiation propagation in resonant medium. Two-level approximation. Equations for polarisation and inversion, dispersion on-coherent pulse propagation. Optical solitons. Photon echo. Superradiation. Amplified spontaneous emission Lasers without optical | Z,ZK ptical parametric g olet lasers. X-ray la asers. Z,ZK roximation of the fu n, saturation. Cohe ll resonator. | enerators sers. High 3 Indamental rent and |
| Pulsed solid state and raman lasers. 12LTB1 Open resonators. \$ mode. ABCD me | consists of blocks lasting 4 hours. Laser Systems nanosecond lasers. Picosecond lasers. High energy laser systems. Laser fusion. Diode-pumped solid state lasers. Tunable lasers. Of Semiconductor lasers for pumping of solid state lasers and diode pumped solid state lasers Amplified spontaneous emission. Ultraving power continuous lasers. Infrared high power lasers. Submillimeter lasers. Lasers with high degree of coherence. Free electron last action in the continuous lasers. Infrared high power lasers. Submillimeter lasers. Lasers with high degree of coherence. Free electron last action in the coherence in the continuous lasers and Longitudinal Modes. Elements of Open Resonators. Threshold of laser oscillations. Gausian beam as an apposition. Optical radiation propagation in resonant medium. Two-level approximation. Equations for polarisation and inversion, dispersion on-coherent pulse propagation. Optical solitons. Photon echo. Superradiation. Amplified spontaneous emission Lasers without optical Laser Technique 2 | Z,ZK ptical parametric g plet lasers. X-ray la asers. Z,ZK roximation of the function, saturation. Cohe | enerators sers. High 3 Indamental |
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| The betture addresses the theory, analysis, and implementation of linear analog and digital control systems, as well as sensors for various physical quantities. Part of the beture is develoted to computer modeling and simulation using MATIAS, allow pully mortice control (temperature control using a thermoelectric cooler modulo). 12UFN Introduction to Photonics and Manostructures KZ 3 Overview of nanostructures and nanotechnologies; quantum technologies; quantum nanostructures; photonic structures; particulor, student presentations. 12UTB Introduction to Laser Technique Cercitive of electromagnetic radiation sources; laser principic; classification of lusers; characterization student presentations. WZ 3 Overview of electromagnetic radiation sources; laser principic; classification of lusers; characterization and urough application of various types of lasers; laser safety procurations. The lasers amplifer, Caveltiding, mode-boding. 12UNXP Introduction to UNIX Computer and operating systems. Personal computer, workstation and suspectoropulers. Processor, memory, bus, devices, hard disk, network interface, Hardware and software. Principles of operating systems. Operating systems UNIX. Sasis principles, kernel, kernel services. Documentation. File system, file attributes, working with files. Test editors: via, emacs. Command interprete (shelf) beats and its programming lego-processes, processes status, computer load a process principler relevants. Local computer networks. Coloral computer networks. Addresses and protocals TCP/IP. Network configuration of a computer. Network services: hardware sharing, mail, scp., etc. Network applications. 12UVP Practically oriented Introduction to scientific computing, Costa analysis, data visualisation and algorithm development. 12VFT Manoracteristic computing, costa analysis, data visualisation and algorithm development. 12VFT Manoracteristic consults is to collect advanced knowledge in high frequency technics and high speed events. The course is focused on Maxwe | | students acquire basic skills with CAS by solving relatively simple and basic tasks from mathematics and physics. | | |
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| 12ZELD | Fundamentals of Electrodynamics | Z.ZK | 2 |
|--|--|---|--|
| | erivation of Maxwell-Lorentz microscopic equations followed by transition to Maxwell macroscopic theory. Using special theory of rela | , | 1 |
| | d vectors between two inertial systems of coordinates with appropriate invariants. Wave and Helmholtz equations are derived. By expans | • | |
| | f solving these equations are studied in homogeneous media with gradually increasing complexity: isotropic without losses, with abs | • | |
| | . Finally, solution in weakly non-homogeneous madia is presented using the method of eiconal. Individual chapters are illustrated by | | |
| 12ZFD | Physical Data Visualization | KZ | 2 |
| IZZFD | Vector graphics basics, scientific plots, dala visualization basics, measurements results presentation | ΝZ | 2 |
| 12ZFP | Principles of Plasma Physics | Z,ZK | 4 |
| 1 | r timeliples of Flasma Fhysics n temperature plasmas is explained using particle, kinetic and fluid approaches. It includes drift motions and adiabatic invariants, line | • | |
| | Premperature plasmas is explained using particle, kinetic and huld approaches. It includes that motions and adiabatic invariants, line electromagnetic waves in inhomogeneous plasmas. Basic non-linear effects, such as ponderomotive force, self-focusing and parame | • | • |
| · · · | omprises brief introduction into magnetohydrodynamics and nuclear fusion. Basics of atomic physics od multiply-ionized plasmas are | | c explained. |
| 12ZFS | Fundamentals of Photonic Structures | Z,ZK | 2 |
| | he basics of photonic structures, it classifies photonic structures compares them with the electronic structures, summarizes their pre | , | 1 |
| | ecture discusses the basic physics and technology of optical waveguides; it introduces basic linear, nonlinear, and active structures | | |
| | tical communications and sensors. Next, the attention is given to introduction of plasmonic structures and plasmonics, periodic struct | | |
| | etasurfaces, and finally to photonic structures for quantum technologies. Finally, the lecture is closed with student presentations on s | • | |
| motamatorialo, m | excursions to selected photonic laboratories. | | op.00 aa |
| 12ZMDT | Measurement and Data Processing | Z,ZK | 2 |
| | or the measurements and data processing and result interpretation: errors, precision, accuracy, normal distribution and its propeties, | • | 1 |
| Daoio kilowicago io | signal from the noise. | data mang, copa | anon or mo |
| 12ZPLT | Basic Laser Technique Laboratory | KZ | 6 |
| | d:YAG laser, laser crystal, laser discharge lamp, laser cavity, resonator, free-running, Q-switching, laser amplifier. second harmonic, | | 1 |
| | e pumped Nd:YAG laser, CO2 laser marking, laser materials properties, non-linear transmission, laser beam transverse profile, acou | _ | - |
| 12ZPOP | Basic Optical Laboratory | KZ | 6 |
| 1221 01 | Basic Optical Laboratory | 114 | 0 |
| The | e practical laboratories give advanced practical skills by experimental work in ontics and optoelectronics. Laboratory records must be | elahorated | |
| | e practical laboratories give advanced practical skills by experimental work in optics and optoelectronics. Laboratory records must be | | |
| 14ELM | Electron Microscopy | KZ | 2 |
| 14ELM Abstract: In this cours | Electron Microscopy se the students are introduced to the microscopic methods used for the characterization of materials, thin layers or nanoparticles. The | KZ introductory part | is dedicated |
| 14ELM Abstract: In this cours to the analogy of ligh | Electron Microscopy se the students are introduced to the microscopic methods used for the characterization of materials, thin layers or nanoparticles. The at and electron microscopy and to various types of microscopes. An important part of the course is given to the interaction of different | KZ introductory part types of radiation | is dedicated with matter, |
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