### Study plan

### Name of study plan: 10 62 67 00 DTZI 2012 P základ

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch: Program of study: Welcome page Type of study: unknown full-time

Required credits: 219
Elective courses credits: 1
Sum of credits in the plan: 220

Note on the plan: SP12BTZI--P # první pokus SP12BTZI-P BTZI 2012 P základ

Name of the block: Compulsory courses in the program

Minimal number of credits of the block: 209

The role of the block: P

Code of the group: 12B-KMENP TZI STR

Name of the group: 01 2012 souhrn skupin 12B\*PiP-KMEN pro i od 1 do 6 Requirement credits in the group: In this group you have to gain 156 credits Requirement courses in the group: In this group you have to complete 37 courses

Credits in the group: 156

Note on the group:

Společné povinné předměty bakalářských programů STR a TZSI

| Note on the group |  | anaiaisnytii | program | IU SIK      | a 1231   |      |
|-------------------|--|--------------|---------|-------------|----------|------|
| 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 |
| 2371047           | Automatic Control Milan Hofreiter, R žena Petrová, Tomáš Vyhlídal, Jaromír Fišer <b>Tomáš</b> Vyhlídal Tomáš Vyhlídal (Gar.)   | Z,ZK         | 5       | 3P+15C+05L  | *        | Р    |
| 2182019           | Chemistry Radek Šulc, Martin Dostál, Vojt ch B lohlav, Stanislav Solna , Jan Sko ilas Radek Šulc Radek Šulc (Gar.)   | KZ           | 3       | 2P+1C       | 1        | Р    |
| 2131512           | Machine Elements and Mechanisms I. František Lopot   | Z,ZK         | 6       | 3P+2C       | *        | Р    |
| 2131026           | Machine Elements and Mechanisms II Eliška Cézová, Zden k ešpíro, Martin Dub, Jan Flek, Ji í Houkal, Jan Kanaval, František Lopot, Karel Petr František Lopot František Lopot (Gar.)                    | ZK           | 3       | 3P+0C       | *        | Р    |
| 2141504           | Electric Circuits and Electronics<br>Stanislava Papežová, Jan Chyský, Jaroslav Novák, Lukáš Novák <b>Zuzana</b><br>Sedlecká Jan Chyský (Gar.)  | Z,ZK         | 4       | 2P+08C+1.4L | *        | Р    |
| 2141505           | Electrical machines and drives<br>Jan Chyský, Jaroslav Novák, Lukáš Novák <b>Jaroslav Novák</b> Jaroslav Novák<br>(Gar.)   | Z,ZK         | 4       | 2P+08C+14L  | *        | Р    |
| 2021041           | Physics I.   | Z,ZK         | 7       | 4P+1L       | *        | Р    |
| 2021025           | Physics II.  | Z,ZK         | 4       | 1P+2L       | 3        | Р    |
| 2133025           | <b>Design</b> František Lopot František Lopot (Gar.)   | Z            | 4       | 0P+4C       | *        | Р    |
| 2011021           | Constructive Geometry Ivana Linkeová   | Z,ZK         | 6       | 3P+2C       | *        | Р    |
| 2381054           | Management and Economics of the Enterprise Theodor Beran, Št pánka Uli ná, Vladimír Brdek, Ladislav Vaniš, Petr Žemli ka Theodor Beran Theodor Beran (Gar.)  | Z,ZK         | 4       | 2P+2C       | *        | Р    |
| 2011056           | Mathematics I<br>Radka Keslerová, Marta Hlavová, Ji í Holman, Gejza Dohnal, Marta ertíková,<br>Vladimír Hric, Nikola Pajerová, Petr Louda, Lukáš Hájek, Radka<br>Keslerová Gejza Dohnal (Gar.)         | Z,ZK         | 8       | 4P+4C       | *        | Р    |
| 2011062           | Matematika II.<br>Radka Keslerová  | Z,ZK         | 8       | 4P+4C       | *        | Р    |
| 2011009           | Mathematics III<br>Radka Keslerová, Ji í Holman, Gejza Dohnal, Marta ertíková, Vladimír Hric,<br>Jan Valášek, Lud k Beneš, Tomáš Bodnár, Tomáš Neustupa, Stanislav<br>Kra mar Stanislav Kra mar (Gar.) | Z,ZK         | 5       | 2P+2C       | *        | Р    |

| 2311101 | Mechanics I. Pavel Bastl, Václav Bauma, Petr Beneš, Ivo Bukovský, Martin Ne as, Zden k Neusser, Jan Pelikán, Pavel Steinbauer, Zbyn k Šika, Zbyn k Šika Zbyn k Šika (Gar.)                               | Z,ZK | 4 | 2P+2C    | * | Р |
|---------|--|------|---|----------|---|---|
| 2311102 | Mechanics II. Pavel Bastl, Václav Bauma, Petr Beneš, Ivo Bukovský, Martin Ne as, Zden k Neusser, Jan Pelikán, Pavel Steinbauer, Zbyn k Šika, Václav Bauma Václav Bauma (Gar.)                            | Z,ZK | 4 | 2P+2C    | * | Р |
| 2322029 | Materials Science I.  Jana Sobotová, Eliška Gal íková, Ji í Cejp, Pavlína Hájková, Jan Kr il, Vladimír Mára, Lucie Pilsová, Ta ana Vacková Jana Sobotová Jana Sobotová (Gar.)                            | KZ   | 3 | 2P+1L    | 2 | Р |
| 2321039 | Materials Science II. Jana Sobotová, Eliška Gal íková, Ji í Cejp, Pavlína Hájková, Jan Kr il, Vladimír<br>Mára, Lucie Pilsová, Ta ana Vacková, Jan Walter, Jana Sobotová<br>Jana Sobotová (Gar.)         | Z,ZK | 4 | 2P+2L    | * | Р |
| 2011049 | Numerical Mathematics Radka Keslerová, Ji í Holman, Marta ertíková, Vladimír Hric, Petr Louda, Lukáš Hájek, Jan Valášek, Lud k Beneš, Tomáš Bodnár, Petr Svá ek Petr Svá ek (Gar.)                       | Z,ZK | 4 | 2P+2C    | 4 | Р |
| 2012037 | Computer Graphics<br>Marta Hlavová, Ji í Holman, Nikola Pajerová, Martin Hanek, Jan Karel, Ivana<br>Linkeová, Jaroslav Cibulka <b>Ivana Linkeová</b> Ivana Linkeová (Gar.)                               | KZ   | 3 | 1P+1C    | * | Р |
| 2372041 | Computer Support for Study Vladimír Hlavá  | KZ   | 3 | 1P+1C    | * | Р |
| 2181026 | Momentum, Mass and Heat Transfer Martin Dostál, Vojt ch B lohlav, Stanislav Solna, Jan Sko ilas, Tomáš Jirout, Adam Krupica, Ji í Moravec Tomáš Jirout Tomáš Jirout (Gar.)                               | Z,ZK | 5 | 3P+1C    | * | Р |
| 2131002 | Engineering Design II Eliška Cézová, Martin Dub, Jan Flek, Jan Kanaval, František Lopot, Karel Petr, Martin Havlí ek, Jan Hoidekr, Roman Uhlí Karel Petr Karel Petr (Gar.)                               | Z,ZK | 4 | 2P+3C    | 2 | Р |
| 2133013 | Engineering Design III.  Jan Kanaval, František Lopot, Jan Hoidekr, David Skalický, Roman Uhlí Jan Kanaval Jan Kanaval (Gar.)  | Z    | 2 | 0P+2C    | Z | Р |
| 2133014 | Engineering Design IV. František Lopot František Lopot (Gar.)  | Z    | 2 | 0P+2C    | L | Р |
| 2372083 | Measurement in Engineering  Martin Novák, Vladimír Hlavá Martin Novák Martin Novák (Gar.)  | KZ   | 3 | 1P+0C+2L | * | Р |
| 2331068 | Technology I.  | Z,ZK | 5 | 2P+2C    | * | Р |
| 2341014 | Technology II.   | Z,ZK | 5 | 2P+0C+2L | * | Р |
| 2012035 | Algorithmization and Programming Fundamentals Ji í Holman, Marta ertíková, Vladimír Hric, Lukáš Hájek, Jan Halama, Vladimír Prokop, Martin Hanek, Jan Karel, Josef Musil, Petr Svá ek Petr Svá ek (Gar.) | KZ   | 4 | 1P+2C    | * | Р |
| 2153005 | Fundamentals of Energy Conversions   | Z    | 1 | 1P+1C    | * | Р |
| 2383001 | Fundamentals of Law<br>Václav Pilík Václav Pilík (Gar.)  | Z    | 2 | 1P+1C    | * | Р |

## Characteristics of the courses of this group of Study Plan: Code=12B-KMENP TZI STR Name=01 2012 souhrn skupin 12B\*PiP-KMEN pro i od 1 do 6

2371047 Automatic Control Z,ZK 5

Automatic controllers are important part of many industrial processes. The goal of this course is to introduce students into basic knowledge of automatic control theory and practice like transfer functions, open versus closed loop control, design of controllers and frequency based analysis of control systems. The course also concentrates on logic control and control via programmable logic controllers. Some seminaries are arranged in laboratories where practical skills and control engineering methods are trained. Students begin to work with

MATLAB software as a common platform of control engineers.

2182019 Chemistry KZ 3

General chemistry from the point of view of mechanical and process engineering. Physical chemistry forms 2/3 of the course (structure and properties of matter, thermodynamics, phase equilibrium, chemical reactions, reaction engineering), the remaining 1/3 is devoted to organic chemistry (hydrocarbons, polymers) and biochemistry. Laboratory practice is oriented upon the material properties measurement.

2131512 Machine Elements and Mechanisms I. Z,ZK 6

Joints and joining elements (screwed, clamped, splined, welded, riveted, soldered and adhesive joints; joints with use of feathers, pins, tenons, cotters, keys). Mechanical transmissions (belt, chain, friction, gear drives). Seminars are devoted to practical individual solution of simple design projects - tasks with motion screws, preloaded connecting bolts, clamped, pressed, splined and key joints between shafts and hubs and tasks with welded and riveted joints. Sketching of machine elements and their simple assembly units is also indispensable seminar work.

2131026 Machine Elements and Mechanisms II ZK 3
Preliminary design, design calculations and aplication of axles and shafts, sliding and rolling bearings, shaft connections, elements of crank mechanism, pipelines and their accessories

and fittings.

2141504 Electric Circuits and Electronics Z,ZK 4

Introduction into theory of electrical circuits, analysis special types of electrical circuits as DC and AC. Transient states in circuits with accumulators of energy. El. Power and Energy. Introduction into electronics. Principle and typical parameters of basic semiconductor components. Application in electronic circuits (rectifier, stabilizer, power control, operational amplifier). Analogue and digital circuits. Principle of analogue and digital signal processing. Logical circuits, converters, microprocessor.

2141505 Electrical machines and drives Z,ZK 4
AC el. curcuits. Electrical power and energy. Calculation, measurement, power factor. Magnetic circuit, materials, hysteresis loop. Electromagnet. Transformer, principle, construction,

AC el. curcuits. Electrical power and energy. Calculation, measurement, power factor. Magnetic circuit, materials, hysteresis loop. Electromagnet. Iransformer, principle, construction, 3-phase transformer, operating conditions, rated (scheduled) values. Induction machine, principle, construction, operating conditions. Starting, speed-torque characteristic, speed control. Synchronous machines. DC-machines, principle, parameters, operating conditions, construction, starting, speed control, speed-torque characteristic. Low-voltage instruments. Low-voltage distribution system.

| 2021041   Physics I.   | Z,ZK                 | 7                   |
|--|----------------------|---------------------|
| Kinematics and dynamics of a particle motion. Principle of conservation of energy. System of particles, centre of mass. Rigid body. Continuum, elastic waves. Fluid mechanics. Temperature and heat transfer. Kinetic theory of gases. Thermodynamics. Electric field, current, conductivity, resistance. Co   |                      |                     |
| insulators. Magnetic field. Magnetic materials. Laboratories - accuracy of measurements, systematic and random errors, uncertainty of direct and inc   |                      |                     |
| measurements of 11 various experiments related to the lectures.  |                      |                     |
| 2021025 Physics II.  | Z,ZK                 | 4                   |
| Faraday's law of electromagnetic induction. Maxwell's equations, electromagnetic waves. Light, wave optics, geometrical optics. Quantum properties of  | _                    |                     |
| of radiation with matter. Photoelectric effect. Wave-particle mature of matter. Quantum-mechanical description of particle's motion. Hydrogen atom a Spectra, x-rays, ;laser. Band theory of solids, semiconductors. Nucleus, radioactivity, sources of nuclear energy. Laboratories - measurements of 6 e.  |                      |                     |
| 2133025 Design   | 7                    | 4                   |
| Design, design calculations and their aplications in case of geared transmissions, axles and shafts, sliding and rolling bearings, shaft couplings and   |                      | 7                   |
| 2011021 Constructive Geometry  | Z,ZK                 | 6                   |
| The subject is focused on geometric objects in the space - curves, surfaces and solids and their properties and mutual relations.  | ,                    |                     |
| 2381054 Management and Economics of the Enterprise   | Z,ZK                 | 4                   |
| The subject is intended to teach the students of the Faculty of Mechanical Engineering the basic economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for technical reasonable relationships between economic starting points necessary for the results of the results | -                    |                     |
| the basic relationships between economic quantities costs - revenues, expenses - incomes and other basic economic terms. The goal is for the audi with economists in organizations, every product or service is valued at a selling price and therefore it is necessary to understand the simple costing   |                      |                     |
| technician will encounter reports and should understand the basic structure of financial statements. As a future manager, he will compile and approve  | -                    |                     |
| of management, they will learn basic managerial functions and their content. Furthermore, they will learn how to use network analysis in project man   | nagement. For dec    | cision-making       |
| purposes, they will learn the applications of multi-criteria decision-making. The basics of marketing and strategic management will be introduced.   |                      |                     |
| 2011056   Mathematics I  | Z,ZK                 | 8                   |
| In the course, greater emphasis is placed on the theoretical basis of the concepts discussed and on the derivation of basic relationships and connect will also get to know the procedures for solving problems with parametric input. In addition, students will gain extended knowledge in some thematic area  |                      | -                   |
| of a matrix, Taylor polynomial, integral as a limit function, integration of some special functions.   | 3. cigerinaribers    | and eigenvectors    |
| 2011062 Matematika II.   | Z,ZK                 | 8                   |
| Open and closed set, boundary in E^k. Real function of k-variables. Partial derivatives and differentiability. Gradient and directional derivative. Differentiability.   | ntial operators div  | (divergence)        |
| and curl (rotation). Function given implicitly. Local and global (= absolute) extremes of a function of more variables. Double integral, volume (=triple) integral.  |                      |                     |
| of integrals to polar, cylindrical and spherical coordinates. A simple smooth curve and line integral of a scalar and vector function. Circulation and Gr  |                      |                     |
| field, independence of a line integral on the path. Simple smooth surface and surface integral of a scalar function and a vector function. Flow of a vector function are gauss-Ostrogradskij theorem.  | ctor field through a | a surface. The      |
| 2011009 Mathematics III  | Z,ZK                 | 5                   |
| An introductory course in ordinary differential equation and infinite series.  | _,                   | _                   |
| 2311101 Mechanics I.   | Z,ZK                 | 4                   |
| Mechanics I deals with the basic concepts of statics. There are described the methods of solution of equilibrium of particles and rigid bodies and their   | systems with and     | I without friction. |
| There are introduced the methods of description of position and motion of particles and rigid bodies.  | 7.71                 |                     |
| 2311102   Mechanics II.  Kinematics of point and of rigid bodies. Transformation matrix. Kinematics of concurrent movements. Motion: translation, rotation, general planar motio   | Z,ZK                 | 4                   |
| general spatial motion. Composition of mechanisms. Basic planar mechanisms. Analytical methods in kinematics of mechanisms - Trigonometric and   | •                    |                     |
| in kinematics. Basic theory of gearing. Transmition mechanisms with geers. Strutting and seezing in mechanisms. Cable mechanisms.  |                      |                     |
| 2322029 Materials Science I.   | KZ                   | 3                   |
| History and present state of materials engineering, overview of technical materials, internal structure of metals, crystal lattices and their defects, def   | -                    |                     |
| fracture of materials, structure and properties of materials and their testing, fundamentals of thermodynamics, phases and phase transformations, in   |                      |                     |
| Materials Science II. Fundamentals of metallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal are  | Z,ZK                 | 4                   |
| technical iron-carbon alloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials.  | u trierino-mechai    | lical processing,   |
| 2011049 Numerical Mathematics  | Z,ZK                 | 4                   |
| Numerical solution of systems of linear equations, iterative methods. Numerical solution of nonlinear algebraic equations. Least squares method. Numerical solution of nonlinear algebraic equations.  |                      | linary differential |
| equations, initial and boundary value problems. Numerical solution of basic linear partial differential equations by finite difference method.   |                      |                     |
| 2012037 Computer Graphics  | KZ                   | 3                   |
| 2372041 Computer Support for Study   | KZ                   | 3                   |
| The course introduces students into creating technical and professional documents on computers or Web and into realizing technical computations w gain practical skills by creating an essay in a text editor, by realizing technical computations with a spreadsheet calculator, and by creating technical  |                      |                     |
| 2181026 Momentum, Mass and Heat Transfer   | Z,ZK                 | 5                   |
| Fundamentals of transport phenomena balances in homogeneous fluids. Navier-Stokes equations. Momentum transport in turbulent flows. Mechanic   | ,                    | _                   |
| time distributions in continuous systems. Conduction heat transfer. Forced and natural convection heat transfer. Heat transfer with phase changes and  |                      |                     |
| systems. Mass transfer by molecular diffusion, convection, with chemical reactions and interphase mass transfer.   |                      |                     |
| 2131002 Engineering Design II  | Z,ZK                 | 4                   |
| Principles of ISO GPS (Geometrical Products Specification). Students will get critical knowledge about ISO system of limits and fits, tolerancing, surface and leaves to the specification of the second lateral part of accuracy is a project where a tride to apply and progress to the second lateral part of accuracy is a project where a tride to apply and progress to the second lateral part of accuracy is a project where a tride to apply and progress to the second lateral part of accuracy is a project where a tride to a project to the second lateral part of accuracy is a project where a tride to a project to the second lateral part of accuracy is a project to the second lateral part of acc | -                    |                     |
| dimensional loops, tolerancing of angles and cones, tolerancing of threads. Integral part of course is a project where students apply and practice the   | Z                    | 2                   |
| 2133013   Engineering Design III.  Design of assembly unit (draft drawing, detail drawing, assembly drawing, technical report)   | ۷                    | ۷                   |
| 2133014 Engineering Design IV.   | Z                    | 2                   |
| 2372083 Measurement in Engineering   | KZ                   | 3                   |
| Overview of sensor principles for measurement of non-electrical variables (temperature, position, force, speed, acceleration, torque). Calibration and   |                      | -                   |
| instruments.   |                      |                     |
| 2331068 Technology I.  | z,zk                 | 5                   |
| Foundry properties of metals. Treatment. Pouring. Casting solidification. Moulding and core making. Thermal treatment. Plastic deformation. Division of the sting up. Cutting. Cold and bot forming. Welder Welderbillty, Welderbi | orming processes     | . Semi-products,    |
| heating-up. Cutting. Cold and hot forming. Welds. Weldability. Weldment testing. Thermal cutting. Brazing. Surface treatments.  2341014 Technology II.   | Z,ZK                 | 5                   |
| mechanics of chip formation, cutting processes, finishing operations, non-traditional machining processes. Production rates calculation, machining eco   |                      | _                   |
| programming of manufacture. Engineering metrology. Assembly techniques. Introduction to process planing.   |                      | ,                   |
|  |                      |                     |

2012035 Algorithmization and Programming Fundamentals KZ 4
Programming in MATLAB and its programming language. MATLAB command line. Elementary commands, variable, assignment and expression. Matrices, vectors and operations.
Writting M-script. Input and output. Condition and cycle. Algorithmization of simple problems in MATLAB. Graphical commands. Matrix operations. Systems of linear equations. Scripts and functions. Structure of program. Variables, expressions, assignment, and input / output commands. switch. For cycle. Arrays and files. Pointers. Structures. Algorithmization of simple programs: minimum, mean, norm, numerical integration, bisection method, Newton method, matrix operations. Direct methods for solution of systems of linear equations.

2 153005 Fundamentals of Energy Conversions

Basic orientation in legal system is a necessary part of professional equipment of each expert with university degree. The aim of this course is to provide a view into the Czech Legal Order, particular sources of law and system of law (branch of law), using tutorials, lectures, specialised literature and significant legal regulations. It is necessary for students to know our legal institutions, that will be regularly in touch with, especially during their professional career and to learn how to work with the collection of laws. At the same time the course leads students to know some practical habits and processes while putting the law on, especially in domain of contracts and other important legal relationships and to make them ready to prepare professional presentations and to understand basic structures between law and engineering

Code of the group: 12DTP1P-KMEN

Fundamentals of Law

Name of the group: 00 2012 D kmenové 1. semestr TZI prezen ní

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

Credits in the group: 0

Note on the group:

2383001

12B\*\*1P-KMEN #

2

| NOTE OF THE | group.   |            |         |       |          |      |
|-------------|--|------------|---------|-------|----------|------|
| Code        | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members)  Tutors, authors and guarantors (gar.)                                     | Completion | Credits | Scope | Semester | Role |
| 2182019     | Chemistry Radek Šulc, Martin Dostál, Vojt ch B lohlav, Stanislav Solna , Jan Sko ilas Radek Šulc Radek Šulc (Gar.)   | KZ         | 3       | 2P+1C | 1        | Р    |
| 2011021     | Constructive Geometry Ivana Linkeová   | Z,ZK       | 6       | 3P+2C | *        | Р    |
| 201A021     | Constructive Geometry A  Ivana Linkeová  | ZK         | 3       | 0P+0C | *        | Р    |
| 2011056     | Mathematics I<br>Radka Keslerová, Marta Hlavová, Ji í Holman, Gejza Dohnal, Marta ertíková,<br>Vladimír Hric, Nikola Pajerová, Petr Louda, Lukáš Hájek, Radka<br>Keslerová Gejza Dohnal (Gar.) | Z,ZK       | 8       | 4P+4C | *        | Р    |
| 201A056     | Mathematics I.A Radka Keslerová  | ZK         | 4       | 0P+0C | *        | Р    |
| 2372041     | Computer Support for Study Vladimír Hlavá  | KZ         | 3       | 1P+1C | *        | Р    |
| 2333038     | Fundamentals of Technology I.  | Z          | 3       | 1P+1C | *        | Р    |

# Characteristics of the courses of this group of Study Plan: Code=12DTP1P-KMEN Name=00 2012 D kmenové 1. semestr TZI prezen ní 2182019 Chemistry KZ 3

General chemistry from the point of view of mechanical and process engineering. Physical chemistry forms 2/3 of the course (structure and properties of matter, thermodynamics, phase equilibrium, chemical reactions, reaction engineering), the remaining 1/3 is devoted to organic chemistry (hydrocarbons, polymers) and biochemistry. Laboratory practice is oriented upon the material properties measurement.

| onomed apon the mate      | tal proportion measurement   |      |   |
|---------------------------|--|------|---|
| 2011021                   | Constructive Geometry  | Z,ZK | 6 |
| The subject is focused of | on geometric objects in the space - curves, surfaces and solids and their properties and mutual relations. |      |   |
| 2011056                   | Mathematics I  | Z,ZK | 8 |

In the course, greater emphasis is placed on the theoretical basis of the concepts discussed and on the derivation of basic relationships and connections between concepts. Students will also get to know the procedures for solving problems with parametric input. In addition, students will gain extended knowledge in some thematic areas: eigennumbers and eigenvectors of a matrix. Taylor polynomial, integral as a limit function, integration of some special functions.

| of a matrix, Taylor polyn | omial, integral as a limit function, integration | n of some special funct | tions. | - | _  | _ |
|---------------------------|--|-------------------------|--------|---|----|---|
| 2372041                   | Computer Support for Study                       |                         |        |   | KZ | 3 |

The course introduces students into creating technical and professional documents on computers or Web and into realizing technical computations with the use of computers. Students gain practical skills by creating an essay in a text editor, by realizing technical computations with a spreadsheet calculator, and by creating technical-based WWW page.

| 3 p                        | g  | тана т т т т т т т т т т т т т т т т т т | j |  |
|----------------------------|--|--|---|--|
| 201A021                    | Constructive Geometry A  | ZK                                       | 3 |  |
| The subject is focused of  | on geometric objects in the space - curves, surfaces and solids and their properties and mutual relations. |  |   |  |
| 201A056                    | Mathematics I.A  | ZK                                       | 4 |  |
| Introduction to linear alo | gebra, analytic geometry of straight lines and planes in E3, calculus of functions of one variable         |  |   |  |
| 2333038                    | Fundamentals of Technology I.  | Z  | 3 |  |
| 1                          | '  | ' <u>-</u> '                             |   |  |

Production processes in engineering production. Technology of engineering production. Materials in engineering. Concepts of steel and cast iron, technical metals. Production of pig iron and steel. Casting: modeling devices, molding materials, molding and castings. Foundry alloys. Overview of basic casting technology. Forming technology. Hot and cold forging. Free and drop forging. Rolling. Production of pipes. Bulk and sheet metal forming. Welding technology. The characteristics of the various types of welding. Fusion welding: Flame welding and arc welding with coated electrodes. Thermal cutting.

Code of the group: 12DTP2P-KMEN

Name of the group: 00 2012 D kmenové 2. semestr TZI prezen ní

Requirement credits in the group: In this group you have to gain 25 credits

Requirement courses in the group: In this group you have to complete 5 courses

Credits in the group: 25

| 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 |
|---------|--|------------|---------|-------|----------|------|
| 2021041 | Physics I.   | Z,ZK       | 7       | 4P+1L | *        | Р    |
| 202A041 | Physics I.   | ZK         | 3       | 0P+0L | *        | Р    |
| 2011062 | Matematika II. Radka Keslerová   | Z,ZK       | 8       | 4P+4C | *        | Р    |
| 201A062 | Mathematics II.A<br>Radka Keslerová  | ZK         | 4       | 0P+0C | *        | Р    |
| 2322029 | Materials Science I.  Jana Sobotová, Eliška Gal íková, Ji í Cejp, Pavlína Hájková, Jan Kr il, Vladimír  Mára, Lucie Pilsová, Ta ana Vacková Jana Sobotová Jana Sobotová (Gar.) | KZ         | 3       | 2P+1L | 2        | Р    |
| 2012037 | Computer Graphics Marta Hlavová, Ji i Holman, Nikola Pajerová, Martin Hanek, Jan Karel, Ivana Linkeová, Jaroslav Cibulka Ivana Linkeová Ivana Linkeová (Gar.)                  | KZ         | 3       | 1P+1C | *        | Р    |
| 2131002 | Engineering Design II  Eliška Cézová, Martin Dub, Jan Flek, Jan Kanaval, František Lopot, Karel  Petr, Martin Havlí ek, Jan Hoidekr, Roman Uhlí Karel Petr Karel Petr (Gar.)   | Z,ZK       | 4       | 2P+3C | 2        | Р    |

#### Characteristics of the courses of this group of Study Plan: Code=12DTP2P-KMEN Name=00 2012 D kmenové 2. semestr TZI prezen ní

2021041 Physics I.

Kinematics and dynamics of a particle motion. Principle of conservation of energy. System of particles, centre of mass. Rigid body. Continuum, elastic properties of bodies. Oscillations, waves. Fluid mechanics. Temperature and heat transfer. Kinetic theory of gases. Thermodynamics. Electric field, current, conductivity, resistance. Conductors, semiconductors, insulators. Magnetic field. Magnetic materials. Laboratories - accuracy of measurements, systematic and random errors, uncertainty of direct and indirect measurements, regression,

2011062 Matematika II. Z,ZK 8

Open and closed set, boundary in E^k. Real function of k-variables. Partial derivatives and differentiability. Gradient and directional derivative. Differential operators div (divergence) and curl (rotation). Function given implicitly. Local and global (= absolute) extremes of a function of more variables. Double integral, volume (=triple) integral, Fubini theorem. Transformation of integrals to polar, cylindrical and spherical coordinates. A simple smooth curve and line integral of a scalar and vector function. Circulation and Green's theorem. A potential vector field, independence of a line integral on the path. Simple smooth surface and surface integral of a scalar function and a vector function. Flow of a vector field through a surface. The Gauss-Ostrogradskij theorem.

2322029 Materials Science I. KZ 3

History and present state of materials engineering, overview of technical materials, internal structure of metals, crystal lattices and their defects, deformation, recrystallization and fracture of materials, structure and properties of materials and their testing, fundamentals of thermodynamics, phases and phase transformations, iron-carbon phase diagram.

 2012037
 Computer Graphics
 KZ
 3

 2131002
 Engineering Design II
 Z,ZK
 4

Principles of ISO GPS (Geometrical Products Specification). Students will get critical knowledge about ISO system of limits and fits, tolerancing, surface texture, geometrical tolerance, dimensional loops, tolerancing of angles and cones, tolerancing of threads. Integral part of course is a project where students apply and practice their knowledge from lectures.

202A041 Physics I. ZK 3

Kinematics and dynamics of a particle motion. Principle of conservation of energy. System of particles, centre of mass. Rigid body. Continuum, elastic properties of bodies. Oscillations, waves. Fluid mechanics. Temperature and heat transfer. Kinetic theory of gases. Thermodynamics. Electric field, current, conductivity, resistance. Conductors, semiconductors, insulators. Magnetic field. Magnetic materials. Laboratories - accuracy of measurements, systematic and random errors, uncertainty of direct and indirect measurements, regression, measurements of 11 various experiments related to the lectures.

201A062 | Mathematics II.A | ZK | 4

Open and closed set, boundary in E^k. Real function of k-variables. Partial derivatives and differentiability. Gradient and directional derivative. Differential operators div (divergence) and curl (rotation). Function given implicitly. Local and global (= absolute) extremes of a function of more variables. Double integral, volume (=triple) integral, Fubini theorem. Transformation of integrals to polar, cylindrical and spherical coordinates. A simple smooth curve and line integral of a scalar and vector function. Circulation and Green's theorem. A potential vector field, independence of a line integral on the path. Simple smooth surface and surface integral of a scalar function and a vector function. Flow of a vector field through a surface. The Gauss-Ostrogradskij theorem.

Code of the group: 12DTP3P-KMEN

measurements of 11 various experiments related to the lectures.

Name of the group: 00 2012 D kmenové 3. semestr TZI prezen ní

Requirement credits in the group: In this group you have to gain 28 credits

Requirement courses in the group: In this group you have to complete 7 courses

Credits in the group: 28

Note on the group:

12B\*\*3P-KMEN #

| 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 |
|---------|---|------------|---------|-------|----------|------|
| 2021025 | Physics II.   | Z,ZK       | 4       | 1P+2L | 3        | Р    |
| 202A025 | Physics II.A  | ZK         | 2       | 0P+0C | *        | Р    |
| 2011009 | Mathematics III Radka Keslerová, Ji í Holman, Gejza Dohnal, Marta ertíková, Vladimír Hric, Jan Valášek, Lud k Beneš, Tomáš Bodnár, Tomáš Neustupa, Stanislav Kra mar Stanislav Kra mar (Gar.) | Z,ZK       | 5       | 2P+2C | *        | Р    |
| 201A009 | Mathematics III.A Stanislav Kra mar   | ZK         | 2       | 0P+0C | *        | Р    |

| 2311101 <b>Mechanics I.</b> Pavel Bastl, Václav Bauma, Petr Beneš, Ivo Bukovský, Martin Ne as, Z Neusser, Jan Pelikán, Pavel Steinbauer, Zbyn k Šika, <b>Zbyn k</b> Š. Zbyn k Šika (Gar.)       |                              | 4            | 2P+2C          | *              | Р               |
|---|------------------------------|--------------|----------------|----------------|-----------------|
| 2321039 Materials Science II.  Jana Sobotová, Eliška Gal íková, Ji í Cejp, Pavlína Hájková, Jan Kr il, V  Mára, Lucie Pilsová, Ta ana Vacková, Jan Walter, Jana Sobotov  Jana Sobotová (Gar.)   |                              | 4            | 2P+2L          | *              | Р               |
| 2133013 Engineering Design III.  Jan Kanaval, František Lopot, Jan Hoidekr, David Skalický, Roman Uhl Kanaval Jan Kanaval (Gar.)  | lí <b>Jan</b> Z              | 2            | 0P+2C          | Z              | Р               |
| Algorithmization and Programming Fundamentals  Ji i Holman, Marta ertiková, Vladimír Hric, Lukáš Hájek, Jan Halama, V  Prokop, Martin Hanek, Jan Karel, Josef Musil, Petr Svá ek Petr S  (Gar.) |                              | 4            | 1P+2C          | *              | Р               |
| Characteristics of the courses of this group of Study Plan: Code=12DTP3P-KN   | /IEN Name=00 2012            | D kmen       | ové 3. se      | mestr TZI      | prezen n        |
| 2021025 Physics II.   |                              |              |                | ,ZK            | 4               |
| Faraday's law of electromagnetic induction. Maxwell's equations, electromagnetic waves. Light, wave optics, g   | geometrical optics. Quantu   | ım propertie | es of electron | nagnetic wave  | es. Interaction |
| of radiation with matter. Photoelectric effect. Wave-particle mature of matter. Quantum-mechanical descript   | tion of particle's motion. H | ydrogen at   | om and perio   | dic system o   | f elements.     |
| Spectra, x-rays, ;laser. Band theory of solids, semiconductors. Nucleus, radioactivity, sources of nuclear en   | nergy. Laboratories - meas   | urements c   | f 6 experime   | nts related to | the lectures.   |
| 2011009 Mathematics III   |                              |              | Z              | ,ZK            | 5               |
| An introductory course in ordinary differential equation and infinite series.   |                              |              | ·              |                |                 |
| 2311101 Mechanics I.  |                              |              | Z              | ,ZK            | 4               |
| Mechanics I deals with the basic concepts of statics. There are described the methods of solution of equilib  | rium of particles and rigid  | bodies and   | their system   | s with and wi  | thout friction. |
| There are introduced the methods of description of position and motion of particles and rigid bodies.   |                              |              |                |                |                 |
| 2321039 Materials Science II.   |                              |              | Z              | ,ZK            | 4               |
| Fundamentals of metallurgy, iron-carbon alloys and influence of other elements, phase transformations, the  | ermal, combined chemica      | I and therm  | al and therm   | o-mechanica    | I processing,   |
| technical iron-carbon alloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites,   | selection of materials.      |              |                |                |                 |
| 2133013 Engineering Design III.   |                              |              |                | Z              | 2               |
| Design of assembly unit (draft drawing, detail drawing, assembly drawing, technical report)   |                              |              | <u>'</u>       |                |                 |
| 2012035 Algorithmization and Programming Fundamentals   |                              |              |                | KZ             | 4               |
| Programming in MATLAB and its programming language. MATLAB command line. Elementary commands,   | , variable, assignment and   | expression   | n. Matrices, v | ectors and or  | perations.      |
| Writting M-script. Input and output. Condition and cycle. Algorithmization of simple problems in MATLAB. G  | Graphical commands. Matr     | ix operatior | ns. Systems o  | of linear equa | tions. Scripts  |
| and functions. Structure of program. Variables, expressions, assignment, and input / output commands. swi   | ritch. For cycle. Arrays and | files. Point | ers. Structure | es. Algorithmi | zation of       |

simple programs: minimum, mean, norm, numerical integration, bisection method, Newton method, matrix operations. Direct methods for solution of systems of linear equations.

Faraday's law of electromagnetic induction. Maxwell's equations, electromagnetic waves. Light, wave optics, geometrical optics. Quantum properties of electromagnetic waves. Interaction of radiation with matter. Photoelectric effect. Wave-particle mature of matter. Quantum-mechanical description of particle's motion. Hydrogen atom and periodic system of elements. Spectra, x-rays, ;laser. Band theory of solids, semiconductors. Nucleus, radioactivity, sources of nuclear energy. Laboratories - measurements of 6 experiments related to the lectures.

Code of the group: 12DTP4P-KMEN

Mathematics III.A

Physics II.A

Name of the group: 00 2012 D kmenové 4. semestr TZI prezen ní

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

Credits in the group: 0

Note on the group:

201A009

12B\*P4P-KMEN #

ZK

| Note on the group | J  |            |         |       |          |      |
|-------------------|--|------------|---------|-------|----------|------|
| 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 |
| 2311102           | Mechanics II. Pavel Bastl, Václav Bauma, Petr Beneš, Ivo Bukovský, Martin Ne as, Zden k Neusser, Jan Pelikán, Pavel Steinbauer, Zbyn k Šika, Václav Bauma Václav Bauma (Gar.)      | Z,ZK       | 4       | 2P+2C | *        | Р    |
| 2011049           | Numerical Mathematics Radka Keslerová, Ji í Holman, Marta ertíková, Vladimír Hric, Petr Louda, Lukáš Hájek, Jan Valášek, Lud k Beneš, Tomáš Bodnár, Petr Svá ek Petr Svá ek (Gar.) | Z,ZK       | 4       | 2P+2C | 4        | Р    |
| 201A049           | Numerical Mathematics A  Lud k Beneš   | ZK         | 2       | 0P+0C | *        | Р    |
| 2133014           | Engineering Design IV. František Lopot František Lopot (Gar.)  | Z          | 2       | 0P+2C | L        | Р    |
| 2331068           | Technology I.  | Z,ZK       | 5       | 2P+2C | *        | Р    |

# Characteristics of the courses of this group of Study Plan: Code=12DTP4P-KMEN Name=00 2012 D kmenové 4. semestr TZI prezen ní 2311102 Mechanics II. Z.ZK 4

Kinematics of point and of rigid bodies. Transformation matrix. Kinematics of concurrent movements. Motion: translation, rotation, general planar motion, spherical motion, screw motion, general spatial motion. Composition of mechanisms. Basic planar mechanisms. Analytical methods in kinematics of mechanisms - Trigonometric and vector method. Graphical methods in kinematics. Basic theory of gearing. Transmition mechanisms with geers. Strutting and seezing in mechanisms. Cable mechanisms.

| 2011049                   | Numerical Mathematics  | Z,ZK              | 4                 |  |  |
|---------------------------|--|-------------------|-------------------|--|--|
| Numerical solution of sy  | lumerical solution of systems of linear equations, iterative methods. Numerical solution of nonlinear algebraic equations. Least squares method. Numerical solution of ordinary differ |                   |                   |  |  |
| equations, initial and bo | undary value problems. Numerical solution of basic linear partial differential equations by finite difference method.  |                   |                   |  |  |
| 2133014                   | Engineering Design IV.   | Z                 | 2                 |  |  |
| 2331068                   | Technology I.  | Z,ZK              | 5                 |  |  |
| Foundry properties of m   | etals. Treatment. Pouring. Casting solidification. Moulding and core making. Thermal treatment. Plastic deformation. Division of   | forming processes | s. Semi-products, |  |  |
| heating-up. Cutting. Col- | neating-up. Cutting. Cold and hot forming. Welds. Weldability. Weldment testing. Thermal cutting. Brazing. Surface treatments.   |                   |                   |  |  |
| 201A049                   | ZK   | 2                 |                   |  |  |

Code of the group: 12DTP5P-KMEN

Name of the group: 00 2012 D kmenové 5. semestr TZI prezen ní

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

Credits in the group: 0

Note on the group: 12B\*P5P-KMEN#

| mote on the group | ).  | -IXIVILIN # |         |             |          |      |
|-------------------|---|-------------|---------|-------------|----------|------|
| 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 |
| 2131512           | Machine Elements and Mechanisms I. František Lopot  | Z,ZK        | 6       | 3P+2C       | *        | Р    |
| 2141504           | Electric Circuits and Electronics<br>Stanislava Papežová, Jan Chyský, Jaroslav Novák, Lukáš Novák <b>Zuzana</b><br>Sedlecká Jan Chyský (Gar.)             | Z,ZK        | 4       | 2P+06C+1.4L | *        | Р    |
| 2311107           | Mechanics III.<br>Tomáš Vampola   | Z,ZK        | 7       | 2P+3C       | 5        | Р    |
| 2372083           | Measurement in Engineering Martin Novák, Vladimír Hlavá Martin Novák Martin Novák (Gar.)  | KZ          | 3       | 1P+0C+2L    | *        | Р    |
| 2341014           | Technology II.  | Z,ZK        | 5       | 2P+0C+2L    | *        | Р    |
| 2153005           | Fundamentals of Energy Conversions  | Z           | 1       | 1P+1C       | *        | Р    |
| 2383001           | Fundamentals of Law<br>Václav Pilík Václav Pilík (Gar.)   | Z           | 2       | 1P+1C       | *        | Р    |

### Characteristics of the courses of this group of Study Plan: Code=12DTP5P-KMEN Name=00 2012 D kmenové 5. semestr TZI prezen ní

2131512 | Machine Elements and Mechanisms I.

Joints and joining elements (screwed, clamped, splined, welded, riveted, soldered and adhesive joints; joints with use of feathers, pins, tenons, cotters, keys). Mechanical transmissions (belt, chain, friction, gear drives). Seminars are devoted to practical individual solution of simple design projects - tasks with motion screws, preloaded connecting bolts, clamped, pressed, splined and key joints between shafts and hubs and tasks with welded and riveted joints. Sketching of machine elements and their simple assembly units is also indispensable seminar work.

2141504 Electric Circuits and Electronics Z,ZK 4
Introduction into theory of electrical circuits, analysis special types of electrical circuits as DC and AC. Transient states in circuits with accumulators of energy. El. Power and Energy.

Introduction into theory of electrical circuits, analysis special types of electrical circuits as DC and AC. transfer states in circuits with accumulators of energy. Et. Power and Energy Introduction into electronic circuits (rectifier, stabilizer, power control, operational amplifier). Analogue and digital circuits. Principle of analogue and digital signal processing. Logical circuits, converters, microprocessor.

2372083 Measurement in Engineering KZ 3
Overview of sensor principles for measurement of non-electrical variables (temperature, position, force, speed, acceleration, torque). Calibration and verification of measurement

2341014 | Technology II. | Z,ZK | 5 mechanics of chip formation, cutting processes, finishing operations, non-traditional machining processes. Production rates calculation, machining economics. Automation of processes,

programming of manufacture. Engineering metrology. Assembly techniques. Introduction to process planing.

2153005 Fundamentals of Energy Conversions Z 1

2383001 Fundamentals of Law Z 2

Basic orientation in legal system is a necessary part of professional equipment of each expert with university degree. The aim of this course is to provide a view into the Czech Legal Order, particular sources of law and system of law (branch of law), using tutorials, lectures, specialised literature and significant legal regulations. It is necessary for students to know our legal institutions, that will be regularly in touch with, especially during their professional career and to learn how to work with the collection of laws. At the same time the course leads students to know some practical habits and processes while putting the law on, especially in domain of contracts and other important legal relationships and to make them ready to prepare professional presentations and to understand basic structures between law and engineering

2311107 | Mechanics III. | Z,ZK | 7

Mechanics III deals with the basic concepts of dynamics. Methods of solving the dynamics of mass particle and body motion and their systems are described. Methods for describing and solving vibrations of systems.

Code of the group: 12DTP6P-KMEN

Name of the group: 00 2012 D kmenové 6. semestr TZI prezen ní

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

Credits in the group: 0

instruments.

Note on the group: 12B\*\*6P-KMEN #

| 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 |
|---------|---|------------|---------|-------------|----------|------|
| 2371047 | Automatic Control Milan Hofreiter, R žena Petrová, Tomáš Vyhlídal, Jaromír Fišer Tomáš Vyhlídal Tomáš Vyhlídal (Gar.)   | Z,ZK       | 5       | 3P+15C+05L  | *        | Р    |
| 2131026 | Machine Elements and Mechanisms II  Eliška Cézová, Zden k ešpíro, Martin Dub, Jan Flek, Ji í Houkal, Jan  Kanaval, František Lopot, Karel Petr František Lopot František Lopot (Gar.) | ZK         | 3       | 3P+0C       | *        | Р    |
| 2141505 | Electrical machines and drives<br>Jan Chyský, Jaroslav Novák, Lukáš Novák <b>Jaroslav Novák</b> Jaroslav Novák<br>(Gar.)  | Z,ZK       | 4       | 2P+06C+1.4L | *        | Р    |
| 2133025 | Design František Lopot František Lopot (Gar.)   | Z          | 4       | 0P+4C       | *        | Р    |
| 2381054 | Management and Economics of the Enterprise Theodor Beran, Št pánka Uli ná, Vladimír Brdek, Ladislav Vaniš, Petr Žemli ka Theodor Beran Theodor Beran (Gar.)                           | Z,ZK       | 4       | 2P+2C       | *        | Р    |
| 2181026 | Momentum, Mass and Heat Transfer Martin Dostál, Vojt ch B lohlav, Stanislav Solna, Jan Sko ilas, Tomáš Jirout, Adam Krupica, Ji í Moravec Tomáš Jirout Tomáš Jirout (Gar.)            | Z,ZK       | 5       | 3P+1C       | *        | Р    |

Characteristics of the courses of this group of Study Plan: Code=12DTP6P-KMEN Name=00 2012 D kmenové 6. semestr TZI prezen ní

Automatic controllers are important part of many industrial processes. The goal of this course is to introduce students into basic knowledge of automatic control theory and practice like transfer functions, open versus closed loop control, design of controllers and frequency based analysis of control systems. The course also concentrates on logic control and control via programmable logic controllers. Some seminaries are arranged in laboratories where practical skills and control engineering methods are trained. Students begin to work with MATLAB software as a common platform of control engineers.

2131026 Machine Elements and Mechanisms II Preliminary design, design calculations and aplication of axles and shafts, sliding and rolling bearings, shaft connections, elements of crank mechanism, pipelines and their accessories

and fittings. 2141505 Electrical machines and drives

AC el. curcuits. Electrical power and energy. Calculation, measurement, power factor. Magnetic circuit, materials, hysteresis loop. Electromagnet. Transformer, principle, construction, 3-phase transformer, operating conditions, rated (scheduled) values. Induction machine, principle, construction, operating conditions. Starting, speed-torque characteristic, speed control. Synchronous machines. DC-machines, principle, parameters, operating conditions, construction, starting, speed control, speed-torque characteristic. Low-voltage instruments. Low-voltage distribution system.

2133025 Design Design, design calculations and their aplications in case of geared transmissions, axles and shafts, sliding and rolling bearings, shaft couplings and clutches.

Management and Economics of the Enterprise 4

The subject is intended to teach the students of the Faculty of Mechanical Engineering the basic economic starting points necessary for technical reasoning and to help them understand the basic relationships between economic quantities costs - revenues, expenses - incomes and other basic economic terms. The goal is for the audience to be able to communicate with economists in organizations, every product or service is valued at a selling price and therefore it is necessary to understand the simple costing of products and services. Every technician will encounter reports and should understand the basic structure of financial statements. As a future manager, he will compile and approve the operating budget. In the field of management, they will learn basic managerial functions and their content. Furthermore, they will learn how to use network analysis in project management. For decision-making purposes, they will learn the applications of multi-criteria decision-making. The basics of marketing and strategic management will be introduced.

2181026 Momentum, Mass and Heat Transfer

Z,ZK Fundamentals of transport phenomena balances in homogeneous fluids. Navier-Stokes equations. Momentum transport in turbulent flows. Mechanical energy equation. Residence time distributions in continuous systems. Conduction heat transfer. Forced and natural convection heat transfer. Heat transfer with phase changes and thermal radiation. Multicomponent systems. Mass transfer by molecular diffusion, convection, with chemical reactions and interphase mass transfer.

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 10

The role of the block: PV

Code of the group: 12B\*\*1Q-HUM

Name of the group: 03 2012 bakalá ské povinn volitelné humanitární

Requirement credits in the group: In this group you have to gain at least 2 credits (at most 6)

Requirement courses in the group: In this group you have to complete at least 1 course (at most 3)

Credits in the group: 2

Note on the group:

Ze skupiny humanitních předmětů nutno j e d e n absolvovat

| 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 |
|---------|---|------------|---------|-------|----------|------|
| 2383009 | Communication and Dealing with People Vladimír Brdek, Jan Horejc Jan Horejc Jan Horejc (Gar.)   | Z          | 2       | 1P+1C | *        | PV   |

Characteristics of the courses of this group of Study Plan: Code=12B\*\*1Q-HUM Name=03 2012 bakalá ské povinn volitelné humanitární

2383009 Communication and Dealing with People

Human communication represents an irreplaceable phenomenon in human activity, as it is present in practically all of his activities. The same applies (with specific modifications) to the activities of managers. So you can't not communicate - you can only communicate badly, well and excellently.

Code of the group: 12B\*\*4Q-BZJ S+T

Name of the group: 08 2012 bakalá ské zkoušky z jazyk pro STR a TZIS

Requirement credits in the group: In this group you have to gain at least 2 credits (at most 10)

Requirement courses in the group: In this group you have to complete at least 1 course (at most 5)

Credits in the group: 2

Note on the group:

Součástí tohoto bakalářského studijního programu je povinnost vykonat zkoušku z jednoho cizího jazyka. Student ji může vykonat kdykoliv v průběhu studia. Administrativně je předmět přiřazen ke studijnímu plánu čtvrtého semestru druhého ročníku, neboť se předpokládá, že si student během předcházejících semestrů nejprve doplňuje v jazykových kurzech (volitelných předmětech) jazykové znalosti zejména v oblasti odborné terminologie

| 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 |
|---------|---|------------|---------|-------|----------|------|
| 2041061 | English-Bachelor Exam<br>Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová,<br>Michael Le Blanc Ilona Šimice (Gar.)               | Z,ZK       | 2       | 0P+2C | *        | PV   |
| 2041063 | French - Bachelor Exam /FME Michaela Schusová, Dušana Jirovská Eliška Vítková Dušana Jirovská (Gar.)  | Z,ZK       | 2       | 0P+2C | *        | PV   |
| 2041062 | German - Bachelor Exam / FME Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich Jaroslava Kommová Jaroslava Kommová (Gar.)                | Z,ZK       | 2       | 0P+2C | *        | PV   |
| 2041065 | Russian - Bachelor Exam / FME<br>Michaela Schusová, Hana Volejníková, Dušana Jirovská Eliška Vítková<br>Dušana Jirovská (Gar.)                            | Z,ZK       | 2       | 0P+2C | *        | PV   |
| 2041064 | Spanish - Bachelor Exam / FME Michaela Schusová, Jaime Andrés Villagómez Eliška Vítková Jaime Andrés Villagómez (Gar.)                                    | Z,ZK       | 2       | 0P+2C | *        | PV   |

## Characteristics of the courses of this group of Study Plan: Code=12B\*\*4Q-BZJ S+T Name=08 2012 bakalá ské zkoušky z jazyk pro STR a TZIS

| 2041061                  | English-Bachelor Exam  | Z,ZK                 | 2                  |  |  |  |  |  |  |  |
|--------------------------|--|----------------------|--------------------|--|--|--|--|--|--|--|
| Mapped to the Commor     | Mapped to the Common European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficulties, to take part in discussions, |                      |                    |  |  |  |  |  |  |  |
| to write a summary, a re | eport and an essay, to read technical texts, to master grammar at advanced level.  |                      |                    |  |  |  |  |  |  |  |
| 2041063                  | French - Bachelor Exam /FME  | Z,ZK                 | 2                  |  |  |  |  |  |  |  |
| Mapped to the Commor     | Mapped to the Common European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficulties, to take part in discussions, |                      |                    |  |  |  |  |  |  |  |
| to write a summary, a re | eport and an essay, to read technical texts, to master grammar at advanced level.  |                      |                    |  |  |  |  |  |  |  |
| 2041062                  | German - Bachelor Exam / FME   | Z,ZK                 | 2                  |  |  |  |  |  |  |  |
| Mapped to the Commor     | European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater diff  | iculties, to take pa | rt in discussions, |  |  |  |  |  |  |  |
| to write a summary, a re | eport and an essay, to read technical texts, to master grammar at advanced level.  |                      |                    |  |  |  |  |  |  |  |
| 2041065                  | Russian - Bachelor Exam / FME  | Z,ZK                 | 2                  |  |  |  |  |  |  |  |
| Mapped to the Commor     | European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater diff  | iculties, to take pa | rt in discussions, |  |  |  |  |  |  |  |
| to write a summary, a re | eport and an essay, to read technical texts, to master grammar at advanced level.  |                      |                    |  |  |  |  |  |  |  |
| 2041064                  | Spanish - Bachelor Exam / FME  | Z,ZK                 | 2                  |  |  |  |  |  |  |  |
| Mapped to the Commor     | Mapped to the Common European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficulties, to take part in discussions, |                      |                    |  |  |  |  |  |  |  |
| to write a summary, a re | o write a summary, a report and an essay, to read technical texts, to master grammar at advanced level.  |                      |                    |  |  |  |  |  |  |  |

Code of the group: 12BT\*6Q-OP

Name of the group: 10 2012 BTZI 6. sem oborové projekty

Requirement credits in the group: In this group you have to gain 2 credits

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

Credits in the group: 2 Note on the group:

| Code    | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)                      | Completion | Credits | Scope | Semester | Role |
|---------|--|------------|---------|-------|----------|------|
| 2012091 | Project Ji i Fürst   | KZ         | 2       | 0P+2C | *        | PV   |
| 2152091 | Deparmental Project  | KZ         | 2       | 0P+2C | *        | PV   |
| 2182091 | Project Tomáš Jirout   | KZ         | 2       | 0P+2C | *        | PV   |
| 2322091 | Project Jana Sobotová, Ji í Cejp, Pavlína Hájková, Jan Kr il, Vladimír Mára, Ta ana Vacková, Jakub Horník, Ladislav Cvr ek, Elena ižmárová, Jana Sobotová Jana Sobotová (Gar.) | KZ         | 2       | 0P+2C | *        | PV   |
| 2332091 | Project  | KZ         | 2       | 0P+2C | *        | PV   |

| 2342091 | Project                | KZ | 2 | 0P+2C    | * | PV |
|---------|------------------------|----|---|----------|---|----|
| 2352091 | Specialization Project | KZ | 2 | 0P+2C+0L | * | PV |
| 2362091 | Project                | KZ | 2 | 0P+2C    | * | PV |
| 2372091 | Project                | KZ | 2 | 0P+2C    | * | PV |

Characteristics of the courses of this group of Study Plan: Code=12BT\*6Q-OP Name=10 2012 BTZI 6. sem oborové projekty

| 2012091                  | Project   | KZ                  | 2                  |  |  |  |  |  |
|--------------------------|---|---------------------|--------------------|--|--|--|--|--|
| 2152091                  | Deparmental Project   | KZ                  | 2                  |  |  |  |  |  |
| 2182091                  | Project   | KZ                  | 2                  |  |  |  |  |  |
| Absolvent se seznámí     |   |                     |                    |  |  |  |  |  |
| 2322091                  | Project   | KZ                  | 2                  |  |  |  |  |  |
| On the basis of the pre  | liminary submission of a bachelor thesis the students, under supervision of their supervisors, prepare a review summarizing a | nd evaluating the   | studied literature |  |  |  |  |  |
| with particular emphas   | is on experimental technologies which can be applied in their bachelor theses. They can also mention a planned experiment of  | or evaluate hithert | o obtained         |  |  |  |  |  |
| knowledge or results.    |   |                     |                    |  |  |  |  |  |
| 2332091                  | Project   | KZ                  | 2                  |  |  |  |  |  |
| 2342091                  | Project   | KZ                  | 2                  |  |  |  |  |  |
| Work on specialized ta   | sks.  |                     |                    |  |  |  |  |  |
| 2352091                  | Specialization Project  | KZ                  | 2                  |  |  |  |  |  |
| 2362091                  | Project   | KZ                  | 2                  |  |  |  |  |  |
| 2372091                  | Project   | KZ                  | 2                  |  |  |  |  |  |
| An individual project fr | An individual project from the branch of specialisation, which student will study on his/her magister level                   |                     |                    |  |  |  |  |  |

Code of the group: 12BT\*6Q-BP

Name of the group: 11 2012 BTZI 6. sem bakalá ské práce

Requirement credits in the group: In this group you have to gain 4 credits

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

Credits in the group: 4

Note on the group:

poznámka 12BT\*6Q-BP 2012 BTZI 6. sem bakalářské práce

| 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 |
|---------|---|------------|---------|-------|----------|------|
| 2213991 | Bachelor Thesis   | Z          | 4       | 0P+8C | *        | PV   |
| 2373991 | Bachelor Thesis   | Z          | 4       | 0P+0C | *        | PV   |
| 2363991 | Bachelor Thesis   | Z          | 4       | 0P+0C | *        | PV   |
| 2153991 | Bachelor Thesis   | Z          | 4       | 0P+0C | *        | PV   |
| 2323991 | Bachelor thesis   | Z          | 4       | 0P+6C | *        | PV   |
| 2183991 | Bachelor Thesis Tomáš Jirout  | Z          | 4       | 0P+0C | *        | PV   |
| 2333991 | Bachelor Thesis   | Z          | 4       | 0P+0C | *        | PV   |
| 2013991 | Bachelor Thesis   | Z          | 4       | 0P+0C | *        | PV   |

Characteristics of the courses of this group of Study Plan: Code=12BT\*6Q-BP Name=11 2012 BTZI 6. sem bakalá ské práce

| 2213991                 | Bachelor Thesis   | Z | 4 |  |  |  |  |
|-------------------------|---|---|---|--|--|--|--|
| 2373991                 | Bachelor Thesis   | Z | 4 |  |  |  |  |
| Each student will solve | ach student will solve his individual theme under guiding of his individual supervising department specialist. Result is his/her bachelor thesis. |   |   |  |  |  |  |
| 2363991                 | Bachelor Thesis   | Z | 4 |  |  |  |  |
| 2153991                 | Bachelor Thesis   | Z | 4 |  |  |  |  |
| 2323991                 | Bachelor thesis   | Z | 4 |  |  |  |  |
| Development of the bad  | chelor thesis on an assignment under the supervision.   | ' | • |  |  |  |  |
| 2183991                 | Bachelor Thesis   | Z | 4 |  |  |  |  |
| 2333991                 | Bachelor Thesis   | Z | 4 |  |  |  |  |
| 2013991                 | Bachelor Thesis   | Z | 4 |  |  |  |  |

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

The role of the block: V

Code of the group: 12B\*\*1V-DOP SEMI

Name of the group: 05 2012 doporu ené seminá e

Requirement credits in the group: Requirement courses in the group: Credits in the group: 0 Note on the group:

Pokud si chce student své dosud získané znalosti (například z matematiky, fyziky, cizích jazyků atd.) doplnit, může si zapsat některý z volitelných předmětů, které příslušné ústavy pro 1. semestr (zimní) vypisují. Doporučujeme zejména předměty uvedené v této skupině

|         | (=) . , p   | ,          |         | P     |          |      |
|---------|---|------------|---------|-------|----------|------|
| Code    | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) | Completion | Credits | Scope | Semester | Role |
| 2026016 | Physics - Seminar   | Z          | 2       | 0P+2C | 1        | V    |
| 2016007 | Mathematics I Seminar<br>Radka Keslerová, Hynek ezní ek, Olga Majlingová Radka Keslerová Gejza<br>Dohnal (Gar.)   | Z          | 2       | 0P+2C | 1        | V    |

Characteristics of the courses of this group of Study Plan: Code=12B\*\*1V-DOP SEMI Name=05 2012 doporu ené seminá e

| 2026016                 | Physics - Seminar   | Z | 2 |  |  |  |
|-------------------------|---|---|---|--|--|--|
| The subject is mainly m | The subject is mainly meant for high-school students for repetition of high-school physics. |   |   |  |  |  |
| 2016007                 | Mathematics I Seminar   | Z | 2 |  |  |  |

Code of the group: 12B\*\*1V-DOP ZJK

Name of the group: 06 2012 doporu ené základní jazykové kurzy a prezentace

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

Credits in the group: 0 Note on the group:

| Code    | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.) | Completion | Credits | Scope | Semester | Role |
|---------|---|------------|---------|-------|----------|------|
| 2046155 | English Conversation Ilona Šimice, Michele Le Blanc Ilona Šimice Michele Le Blanc (Gar.)  | Z          | 2       | 0P+2C | *        | V    |
| 2046156 | English Conversation Ilona Šimice, Michele Le Blanc   | Z          | 2       | 0P+2C | L        | V    |
| 2046071 | English - Lower Intermediate<br>Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová   | Z          | 2       | 0P+2C | L        | V    |
| 2046070 | English - Lower Intermediate Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Ilona Šimice (Gar.)              | Z          | 2       | 0P+2C | Z        | V    |
| 2046074 | English - Advanced Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová, Michaela Le Blanc Michaela Schusová Ilona Šimice (Gar.)     | Z          | 2       | 0P+2C | Z        | V    |
| 2046075 | English - Advanced Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová, Michele Le Blanc Ilona Šimice Ilona Šimice (Gar.)           | Z          | 2       | 0P+2C | L        | V    |
| 2046072 | English - Upper Intermediate Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Ilona Šimice (Gar.)              | Z          | 2       | 0P+2C | Z        | V    |
| 2046073 | English - Upper Intermediate Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová Ilona Šimice Ilona Šimice (Gar.)                   | Z          | 2       | 0P+2C | L        | V    |
| 2046068 | English - Beginners Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Ilona Šimice (Gar.)                       | Z          | 2       | 0P+2C | Z        | V    |
| 2046069 | English - Beginners Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová Ilona Šimice  | Z          | 2       | 0P+2C | L        | V    |
| 2046126 | Czech Lower Intermediate  Jaroslava Kommová   | Z          | 2       | 0P+2C | L        | V    |
| 2046125 | Czech Lower Intermediate  Jaroslava Kommová   | Z          | 2       | 0P+2C | Z        | V    |
| 2046118 | Czech -Advanced Jaroslava Kommová   | Z          | 2       | 0P+2C | L        | ٧    |
| 2046117 | Czech -Advanced Jaroslava Kommová   | Z          | 2       | 0P+2C | Z        | V    |
| 2046127 | Czech - Upper Intermediate  Jaroslava Kommová   | Z          | 2       | 0P+2C | Z        | ٧    |
| 2046128 | Czech - Upper Intermediate  Jaroslava Kommová   | Z          | 2       | 0P+2C | L        | V    |
| 2046119 | Czech Language for Beginners I.  Jaroslava Kommová  | Z          | 2       | 0P+2C | Z        | V    |
| 2046120 | Czech Language for Beginners II.  Jaroslava Kommová   | Z          | 2       | 0P+2C | L        | ٧    |

| 2046086 | French - Lower Intermediate Course Michaela Schusová, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)                                    | Z    | 2 | 0P+2C | Z | V |
|---------|---|------|---|-------|---|---|
| 2046087 | French - Lower Intermediate Course Michaela Schusová, Dušana Jirovská Dušana Jirovská (Gar.)  | Z    | 2 | 0P+2C | L | ٧ |
| 2046091 | French - Advanced Michaela Schusová, Dušana Jirovská Dušana Jirovská (Gar.)   | Z    | 2 | 0P+2C | L | ٧ |
| 2046090 | French - Advanced Michaela Schusová, Dušana Jirovská, Eliška Vítková Eliška Vítková Eliška Vítková (Gar.)   | Z    | 2 | 0P+2C | Z | V |
| 2046089 | French - Upper Intermediate Michaela Schusová, Dušana Jirovská Dušana Jirovská (Gar.)   | Z    | 2 | 0P+2C | L | V |
| 2046088 | French - Upper Intermediate Michaela Schusová, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)   | Z    | 2 | 0P+2C | Z | ٧ |
| 2046084 | French - Beginners Michaela Schusová, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)  | Z    | 2 | 0P+2C | Z | V |
| 2046085 | French - Beginners´ Course Michaela Schusová, Dušana Jirovská Michaela Schusová Dušana Jirovská (Gar.)  | Z    | 2 | 0P+2C | L | V |
| 2146060 | Indonesian Language Course for Exchange   | Z    | 2 | 0P+2C | * | V |
| 2146061 | Technical Indonesian - Course I.  | Z    | 2 | 0P+2C | Z | V |
| 2144062 | Technical Indonesian - Course II.   | Z,ZK | 3 | 1P+2C | L | V |
| 2046078 | German - Lower Intermediate Course Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich Michaela Schusová Michaela Schusová (Gar.)    | Z    | 2 | 0P+2C | Z | V |
| 2046079 | German - Lower Intermediate Course Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich Eliška Vítková Jaroslava Kommová (Gar.)       | Z    | 2 | 0P+2C | L | V |
| 2046083 | German - Advanced Course Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich Jaroslava Kommová Jaroslava Kommová (Gar.)              | Z    | 2 | 0P+2C | L | V |
| 2046082 | German - Advanced Course Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich Michaela Schusová Michaela Schusová (Gar.)              | Z    | 2 | 0P+2C | Z | V |
| 2046081 | German - Upper Intermediate Course Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich Eliška Vítková Jaroslava Kommová (Gar.)       | Z    | 2 | 0P+2C | L | ٧ |
| 2046080 | German - Upper Intermediate Course Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich Michaela Schusová Michaela Schusová (Gar.)    | Z    | 2 | 0P+2C | Z | ٧ |
| 2046076 | German - Beginners Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich Michaela Schusová Petr Laurich (Gar.)                         | Z    | 2 | 0P+2C | Z | V |
| 2046077 | German - Beginners Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich Eliška Vítková Jaroslava Kommová (Gar.)                       | Z    | 2 | 0P+2C | L | ٧ |
| 2046161 | Presentations in English Michaela Schusová  | Z    | 2 | 0P+2C | * | V |
| 2046166 | Presentations in Czech  Jaroslava Kommová   | Z    | 2 | 0P+2C | * | V |
| 2046162 | Presentations in German Jaroslava Kommová, Eliška Vítková, Petr Laurich Jaroslava Kommová   | Z    | 2 | 0P+2C | * | V |
| 2046164 | Jaroslava Kommová (Gar.)  Presentations in Russian  | Z    | 2 | 0P+2C | * | V |
| 2046163 | Dušana Jirovská  Presentations in French language   | Z    | 2 | 0P+2C | * | V |
| 2046165 | Dušana Jirovská <b>Dušana Jirovská</b> Presentations in Spanish Eliška Vítková  | Z    | 2 | 0P+2C | * | V |
| 2046137 | Russian - Lower Intermediate Course Michaela Schusová, Hana Volejníková, Dušana Jirovská, Eliška Vítková Michaela Schusová Michaela Schusová (Gar.) | Z    | 2 | 0P+2C | Z | V |
| 2046138 | Russian - Lower Intermediate Course Michaela Schusová, Hana Volejníková, Dušana Jirovská Dušana Jirovská  | Z    | 2 | 0P+2C | L | V |
| 2046141 | Russian - Advanced Michaela Schusová, Hana Volejníková, Dušana Jirovská, Eliška Vítková Michaela Schusová Michaela Schusová (Gar.)                  | Z    | 2 | 0P+2C | Z | V |
| 2046142 | Russian - Advanced Michaela Schusová, Hana Volejníková, Dušana Jirovská Dušana Jirovská   | Z    | 2 | 0P+2C | L | V |
| 2046140 | Russian - Upper Intermediate<br>Michaela Schusová, Hana Volejníková, Dušana Jirovská <b>Dušana Jirovská</b>   | Z    | 2 | 0P+2C | L | V |

| 2046139 | Russian - Upper Intermediate<br>Michaela Schusová, Hana Volejníková, Dušana Jirovská, Eliška Vítková<br>Michaela Schusová Michaela Schusová (Gar.) | Z | 2 | 0P+2C | Z | V |
|---------|--|---|---|-------|---|---|
| 2046136 | Russian - Beginners<br>Michaela Schusová, Hana Volejníková, Dušana Jirovská <b>Dušana Jirovská</b>   | Z | 2 | 0P+2C | L | V |
| 2046135 | Russian - Beginners<br>Michaela Schusová, Hana Volejníková, Dušana Jirovská, Eliška Vítková<br>Michaela Schusová Michaela Schusová (Gar.)          | Z | 2 | 0P+2C | Z | V |
| 2046099 | Spanish - Lower Intermediate Michaela Schusová, Jaime Andrés Villagómez Eliška Vítková Jaime Andrés Villagómez (Gar.)                              | Z | 2 | 0P+2C | L | V |
| 2046098 | Spanish - Lower Intermediate Michaela Schusová, Eliška Vítková, Jaime Andrés Villagómez Eliška Vítková Eliška Vítková (Gar.)                       | Z | 2 | 0P+2C | Z | V |
| 2046096 | Spanish - Beginners<br>Michaela Schusová, Eliška Vítková, Jaime Andrés Villagómez Eliška Vítková<br>Eliška Vítková (Gar.)                          | Z | 2 | 0P+2C | Z | V |
| 2046097 | Spanish - Beginners<br>Michaela Schusová, Jaime Andrés Villagómez Jaime Andrés Villagómez<br>Jaime Andrés Villagómez (Gar.)                        | Z | 2 | 0P+2C | L | V |

Characteristics of the courses of this group of Study Plan: Code=12B\*\*1V-DOP ZJK Name=06 2012 doporu ené základní jazykové kurzy a prezentace

| improving communicative sitils in speaking on general topics and general technical topics.  2 2 2 2046156 English Convertisation mproving communicative sitils in speaking on general topics and general technical topics.  2 2 2 2046071 English - Lower Intermediate Major of the Common European Framework of Reterence Level A2 Arm: Understanding clearly spoken language about everyday situations which a student meets either at school or art harber free time and speaking about them. Writing is a simple way about smallist ropics, reading and comprehension of simple tests. Improvement of professional language.  2046070 English - Lower Intermediate  2 2 2 2 4 Im. Understanding clearly what is spoken about everyday situations which a student meets at the control of simple tests. Improvement of professional language.  2046074 English - Advanced  English - Description and explication of speaker testing and comprehension of speaker testing and advanced level.  English - Description and explication of explored testing and explication in a discussion. Written and ontal skills on advanced level.  English - Upper Intermediate  English - Upper Intermediate  English - Upper Intermediate explored testing the explored testing and explored testing testing the explored testing the explored testing testing the explored testing testing the explored testing testing the explored testing testing the  | kurzy a prezentace  |                               |                     |
|--|---|-------------------------------|---------------------|
| 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2  | 2046155 English Conversation  | Z                             | 2                   |
| improving communicative skills in speaking on general topics and general technical topics.  2 2 depped to the Common European Framework of Reference Level A2 Aim: Understanding clearly spoken language about everyday situations which a student meets either at school or at his/her free time and speaking about them. Writing in a simple way about similar topics. Reading and comprehension of simple texts. Improvement of professional language.  2 2 Imm. Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about similar topics. Reading and comprehension of simple texts. Improvement of professional language. A1 - A2.  2 2 Imm. Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about aminist ropics. Reading and comprehension of spoken facilities and science in the air comprehension of spoken facilities and science in the air comprehension of spoken facilities and science in a scientific and scie | Improving communicative skills in speaking on general topics and general technical topics.  |                               |                     |
| 2 2 depend to the Common European Framework of Reference Level B1 - B2. The aim: comprehension of spoken surgue, askills taking into consideration professional English speech and conversation advanced level. B1 - B2. The aim: to extend language skills taking into consideration professional English speech and conversations of standard English speech and conversation advanced level. B1   English - B2   English | 2046156 English Conversation  | Z                             | 2                   |
| Aspect to the Common European Framework of Reference Level &Z Aim: Understanding clearly spoken language about everyday situations which a student meets and tableshing bout them. Writing in a simple way about afmilliar topics, reading and comprehension of simple texts. Improvement of professional language.  2046070   | Improving communicative skills in speaking on general topics and general technical topics.  | '                             | •                   |
| Valepoed to the Common European Framework of Reference Level AZ Alm. Understanding clearly spoken language about everyday situations which a student meets and tables free free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.  2046070   | 2046071 English - Lower Intermediate  | Z                             | 2                   |
| 2046070   English - Lower Intermediate Wirth Chartestanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple teats. Improvement of professional language. A1 - A2.  2046074   English - Advanced   Z   2   2   2   2   2   2   2   2   2  |   | ons which a student meets     | either at school    |
| Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliator topics. Reading and comprehension of simple tests. Improvement of professional language. A1 - A2.  2046074  | or at his/her free time and speaking about them. Writing in a simple way about familiar topics, reading and comprehension of simple texts.      | Improvement of profession     | al language.        |
| Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliator topics. Reading and comprehension of simple tests. Improvement of professional language. A1 - A2.  2046074  | 2046070 English - Lower Intermediate  | 7                             | 2                   |
| amiliar topics. Reading and comprehension of simple texts. Improvement of professional language. A1 - A2.  2046074   | 9   | about them. Writing in a si   | . –                 |
| Page 2006/07   English - Advanced   Z   2  |   |                               | ,,                  |
| The aim comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced evel. Bit 1. B2.  2 (Wapped to the Common European Farmework of Reference Level B1 - B2. The aim: comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced level. B1 - B2. The aim: comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay, reading and comprehension of popular-scientific and scientific articles or texts from students' field of studies without difficulties. Grammar structures on advanced level.  2 (Paglish - Upper Intermediate and common professional terminology. Comprehension of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening grammar knowledge. A2 - B1.  2 (Paglish - Upper Intermediate)  3 (Paglish - Upper Intermediate)  4 (Paglish - Upper Intermediate)  5 (Paglish - Upper Intermediate)  6 (Paglish - Upper Intermediate)  7 (Paglish - Upper Intermediate)  8 (Paglish - Upper Intermediate)  9 (Paglish - Upper I |   | 7                             | 2                   |
| evel. Ability to write a summary, a report, an essay, reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties.  Tammar structures on advanced level. B1 - B2. The aim: comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced level. B1 - B2. The aim: comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced level. B1 - B2. The aim: comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced level. B2 (B2 - B2 - B2 - B2 - B2 - B2 - B2 -   |   | l l                           | Į.                  |
| Cammar structures on advanced level. B1 - B2.  2046075   |   |                               |                     |
| Regish - Advanced   Regish - Advanced   Z   2  |   | adont o noid or oldaroo mar   |                     |
| Mapped to the Common European Framework of Reference Level B1 - B2. The aim: comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay, reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level. Page 12 |   | 7                             | 2                   |
| and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay, reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  2046072   |   | =                             | 1                   |
| 2 20/146072   English - Upper Intermediate   Z 2 20/146073   English - Upper Intermediate   Z 2 2 20/146078   English - Upper Intermediate   Z 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2  |   |                               |                     |
| English - Upper Intermediate   Z   2   2   2   2   2   2   2   2   2   |   | a comprehension or popul      | ar solontino ana    |
| The aim is to extend language skills taking into consideration professional English and common professional terminology. Comprehension of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening grammar knowledge, A2 - B1.  2 QU466073   English - Upper Intermediate   Z   2 Quadrotory   |   | 7                             | 2                   |
| about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening grammar knowledge. A2 - B1.  2046073 English - Upper Intermediate Mapped to the Common European Framework of Reference Level B1. The aim is to extend language skills taking into consideration professional English and common professional erminology. Comprehension of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening grammar rowledge.  2 2  24m: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language). A1  2046068 English - Beginners  2 2  24m: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language). A1  2046069 English - Beginners  3 2 2  2046126 Czech Lower Intermediate  2 2 2  2046126 Czech Lower Intermediate  3 2 2  24m: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  2046125 Czech Lower Intermediate  2 2 2  24m: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  2046125 Czech Lower Intermediate  2 2 2  24m: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  2046125 Czech Lower Intermediate  2046126 Czech -Advanced  2046117 Czech -Advanced  2046117  |   |                               | 1                   |
| English - Upper Intermediate  Mapped to the Common European Framework of Reference Level B1. The aim is to extend language skills taking into consideration professional English and common professional erminology. Comprehension of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening gramman convoledge.  2046068  |   | ii standard English speech    | and conversation    |
| Napped to the Common European Framework of Reference Level B1. The aim is to extend language skills taking into consideration professional English and common professional erminology. Comprehension of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening gramman knowledge.  2046068   |   | 7                             |                     |
| erminology. Comprehension of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening gramman knowledge.  2046068  |   | <u> </u>                      | -                   |
| 2046068   English - Beginners   Z   2   2046069   English - Beginners   Z   2   2046126   Czech Lower Intermediate   Z   2   2046125   Czech Lower Intermediate   Z   2   2046125   Czech Lower Intermediate   Z   2   2046125   Czech Lower Intermediate   Z   2   2046118   Czech - Advanced   Z   2   2046117   Czech - Advanced   Z   2   2046118   Czech - Advanced   Z   2   2046117   Czech - Reading and coral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  2046117   Czech - Advanced   Z   2   2046117   Czech - Advanced   Z   2   2046117   Czech - Advanced   Z   2   2046128   Czech - Upper Intermediate   Z   2   2046129   Czech - Upper Intermediate   Z   2   2046129   Czech - Cze |   |                               | -                   |
| English - Beginners  Z 2  Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language). A1  Z 2  Z046069 English - Beginners  Mapped to the Common European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language).  Z 2  Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  Z 2  Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  Czech Lower Intermediate  Z 2  Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  Czech Lower Intermediate  Z 2  Amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  Czech -Advanced  Z 2  Mapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  Czech - Advanced  Czech - Advanced  Czech - Advanced  Czech - Advanced  Czec |   | , on intermediate level. Broa | adening grammar     |
| Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language). A1  2046069   |   |                               |                     |
| English - Beginners    Rapped to the Common European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language).    2046126   |   | _                             | 1                   |
| Mapped to the Common European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language).  2046126  |   |                               | 1                   |
| 2046126 Czech Lower Intermediate 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2   |   | -                             | I .                 |
| Czech Lower Intermediate Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about armiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  Czech Lower Intermediate Czech Lower Interm |   | Jnderstanding and use of b    | asic expressions    |
| Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  2046125   Czech Lower Intermediate   Z   2    Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  2046118   Czech -Advanced   Z   2    Auapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  2046117   Czech -Advanced   Z   2    Comprehension of spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  2046127   Czech - Upper Intermediate   Z   2    20defitanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  2046128   Czech - Upper Intermediate   Z   2    Wapped to the Common European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professional Czech and common professi |   | 1                             |                     |
| amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  2046125   Czech Lower Intermediate   Z   2  2   2  2   2   2  2   2   2   2  2   2   | 2046126 Czech Lower Intermediate  | Z                             | 2                   |
| Czech Lower Intermediate  Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  2046118  Czech -Advanced  Mapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  2046117  Czech -Advanced  Z 2  Czomprehension of spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  2046127  Czech - Upper Intermediate  Z 2  Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  2046128  Czech - Upper Intermediate  Z 2  Mapped to the Common European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professional Czech and common professional terminology. Comprehension of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening the  |   | about them. Writing in a si   | mple way about      |
| Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about amiliar topics. Reading and comprehension of simple texts. Improvement of professional language.  2046118   Czech -Advanced   Z   2  Wapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  2046117   Czech -Advanced   Z   2  20mprehension of spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  2046127   Czech - Upper Intermediate   Z   2  Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  2046128   Czech - Upper Intermediate   Z   2  Wapped to the Common European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professional Czech and common professional terminology. Comprehension of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening the  | familiar topics. Reading and comprehension of simple texts. Improvement of professional language.   |                               |                     |
| Additional comprehension of simple texts. Improvement of professional language.  2046118   Czech -Advanced   Z   2  Adapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  2046117   Czech -Advanced   Z   2  Comprehension of spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  2046127   Czech - Upper Intermediate   Z   2  2 Judderstanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  2046128   Czech - Upper Intermediate   Z   2  Adapped to the Common European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professional Czech and common professional erminology. Comprehension of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening the  | 2046125 Czech Lower Intermediate  | Z                             | 2                   |
| Adapted to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  2046117   | Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking        | about them. Writing in a si   | mple way about      |
| Mapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  2046117  | familiar topics. Reading and comprehension of simple texts. Improvement of professional language.   |                               |                     |
| active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  2046117   | 2046118 Czech -Advanced   | Z                             | 2                   |
| Scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  2046117   Czech -Advanced   Z   2  Comprehension of spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  2046127   Czech - Upper Intermediate   Z   2  Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  2046128   Czech - Upper Intermediate   Z   2  Mapped to the Common European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professional Czech and common professional terminology. Comprehension of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening the  | Mapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures                | given in Czech without gre    | at difficulties and |
| Comprehension of spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  2046127  | active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and or | omprehension of popular-s     | cientific and       |
| Comprehension of spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  2046127  | scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.                        |                               |                     |
| Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  2046127   | 2046117 Czech -Advanced   | Z                             | 2                   |
| Czech - Upper Intermediate   Z   2   | Comprehension of spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, parti-     | cipation in discussions. Exp  | ressing opinions.   |
| Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  2046128  | Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and to  | echnical articles.            |                     |
| Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  2046128  | 2046127 Czech - Upper Intermediate  | Z                             | 2                   |
| events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  2046128  |   | pics. Ability to describe exp | periences and       |
| Czech - Upper Intermediate  Z  2  Mapped to the Common European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professional Czech and common professional erminology. Comprehension of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening the  | events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  |                               |                     |
| Mapped to the Common European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professional Czech and common professional erminology. Comprehension of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening the  |   | 7                             | 2                   |
| erminology. Comprehension of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening the  |   |                               | I .                 |
|  |   |                               | •                   |
| anowieuge teorinical language.   | knowledge technical language.   |                               | -                   |

| 2046119<br>Basic vocabulary of eve   | Czech Language for Beginners I. ryday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (profes  | Z   | 2  |
|--|--|---|--|
| 2046120  | Czech Language for Beginners II.   | Z   | 2  |
| • • •  | European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understan  | ding and use of ba  | asic expressions   |
|  | ninology (professional language).  |   |  |
| 2046086  | French - Lower Intermediate Course   | Z   | 2  |
|  | hat is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wr<br>nprehension of simple texts. Improvement of professional language.  | iting in a simple w   | ay about familiar  |
| 2046087  | French - Lower Intermediate Course   | Z   | 2  |
|  | Common European Framework of Reference: A2 Aim: Understanding clearly what is spoken about everyday situations which   | -   |  |
|  | eaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement   |   |  |
| 2046091  | French - Advanced  | Z   | 2  |
|  | Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in French on to   | •   |  |
|  | tive speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading an  | nd understanding  | exts concerning  |
|  | llar scientific and technical articles.  | - 1   |  |
| 2046090  | French - Advanced en language as well as lectures in French on topics familiar to the student. Communication with native speakers, participation   | Z Z   | 2  |
|  | en language as well as lectures in French on topics lamiliar to the student. Communication with hative speakers, participatio<br>Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and te  |   | expressing   |
| 2046089  | French - Upper Intermediate  | Z   | 2  |
|  | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students c  |   |  |
|  | king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understa  |   |  |
| 2046088  | French - Upper Intermediate  | Z   | 2  |
| Understanding standar  | I speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Abili   | ty to describe exp  | eriences and   |
| events, briefly explain o  | ne's opinions and plans. Reading and understanding general and technical texts.  |   |  |
| 2046084  | French - Beginners   | Z   | 2  |
|  | hat is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wr  | iting in a simple w   | ay about familiar  |
|  | nprehension of simple texts. Improvement of professional language.   |   |  |
| 2046085  | French - Beginners' Course   | Z   | 2  |
|  | Common European Framework of Reference: A1 Aim: Understanding clearly what is spoken about everyday situations which<br>eaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement   |   |  |
| 2146060  | Indonesian Language Course for Exchange  | Z   | 2 2  |
|  | iguage for Student Exchange Program to Indonesia   |   | 2  |
| 2146061  | Technical Indonesian - Course I.   | Z   | 2  |
|  | an Language for Student Exchange Program to Indonesia  | _   | _  |
| 2144062  | Technical Indonesian - Course II.  | Z,ZK  | 3  |
| Basic of Indonesian La   | nguage for Student Exchange Program to Indonesia   | , ,   |  |
| 2046078  | German - Lower Intermediate Course   | Z   | 2  |
|  | arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the   | em. Writing in a sin  | nple way about   |
|  | and comprehension of simple texts. Improvement of professional language.   |   |  |
| 2046079  | German - Lower Intermediate Course   | Z   | 2  |
|  | Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic<br>and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improveme   |   |  |
| 2046083  | German - Advanced Course   | 7   | 2  |
|  | Common European Framework of Reference: B1- B2 The aim: comprehension of spoken German as well as lectures given in  | _   | <del>-</del>   |
|  | in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and compre   |   | 0  |
|  | s from student's field of studies without difficulties. Grammar structures on advanced level.  |   |  |
| 2046082  | German - Advanced Course   | Z   | 2  |
| Comprehension of spol  | en language as well as lectures in German on topics familiar to the student. Communication with native speakers, participat  | on in discussions.  | Expressing   |
| opinions. Written skills.  | Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and te   | chnical articles  |  |
| 2040004  |  | crimical articles.  |  |
| 2046081  | German - Upper Intermediate Course   | Z   | 2  |
| Mapped to the level of 0   | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students c  | Z<br>omes across at w   | ork, at school,  |
| Mapped to the level of during free time, and ta  | common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students c king about these topics. Ability to describe experiences and events, explain one s opinions and plans. Reading and understand  | Z<br>omes across at wo  | ork, at school,<br>I technical texts.  |
| Mapped to the level of 0 during free time, and ta 2046080  | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students c<br>king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understa<br>German - Upper Intermediate Course   | Z<br>omes across at we<br>anding general and<br>Z   | ork, at school,<br>I technical texts.  |
| Mapped to the level of of during free time, and ta 2046080 Understanding standard  | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students c king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understate German - Upper Intermediate Course a speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability  | Z<br>omes across at we<br>anding general and<br>Z   | ork, at school,<br>I technical texts.  |
| Mapped to the level of of during free time, and ta 2046080 Understanding standard events, briefly explain of   | common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students c<br>king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understand<br>German - Upper Intermediate Course<br>I speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Abiline's opinions and plans. Reading and understanding general and technical texts.  | Z omes across at wo   | ork, at school,<br>I technical texts.<br>2<br>eriences and                             |
| Mapped to the level of of during free time, and ta 2046080 Understanding standard events, briefly explain of 2046076   | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students of king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understand German - Upper Intermediate Course Is speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Abiline's opinions and plans. Reading and understanding general and technical texts.  German - Beginners   | Z omes across at wounding general and Z ty to describe exp  | ork, at school,<br>I technical texts.  |
| Mapped to the level of of during free time, and ta 2046080 Understanding standard events, briefly explain of 2046076 Basic vocabulary of events.   | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students of king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understand German - Upper Intermediate Course If speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Abilities's opinions and plans. Reading and understanding general and technical texts.  German - Beginners  Tryday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (profes   | Z omes across at wounding general and Z ty to describe exp  Z sional language)                            | ork, at school,<br>I technical texts.<br>2<br>eriences and<br>2                        |
| Mapped to the level of oduring free time, and ta 2046080 Understanding standard events, briefly explain of 2046076 Basic vocabulary of even 2046077  | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students of king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understand German - Upper Intermediate Course Is speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Abiline's opinions and plans. Reading and understanding general and technical texts.  German - Beginners   | Z omes across at wounding general and Z ty to describe exp  Z sional language)                            | ork, at school, at technical texts 2 eriences and 2                                    |
| Mapped to the level of oduring free time, and ta 2046080 Understanding standard events, briefly explain of 2046076 Basic vocabulary of ever 2046077 Mapped to the level Co   | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students of king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding and understanding and understanding and understanding about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability is opinions and plans. Reading and understanding general and technical texts.  German - Beginners  ryday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (profestigerman - Beginners   | Z omes across at wounding general and Z ty to describe exp  Z sional language)                            | ork, at school, at technical texts 2 eriences and 2                                    |
| Mapped to the level of oduring free time, and ta 2046080 Understanding standard events, briefly explain of 2046076 Basic vocabulary of ever 2046077 Mapped to the level Co   | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students of king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding and understanding about these topics. Ability is speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability is speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability is speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability is speech about familiar topics, that a students of speech about familiar topics, that a students one's opinions and plans. Reading and understanding speech about familiar topics, that a students of speech about familiar topics, and understanding and understanding speech about familiar topics of speech about familiar topics and understanding and understanding speech about familiar topics of speech about familia | Z omes across at wounding general and Z ty to describe exp  Z sional language)                            | ork, at school, I technical texts. 2 eriences and 2                                    |
| Mapped to the level of of during free time, and ta 2046080 Understanding standard events, briefly explain of 2046076 Basic vocabulary of events and the level Congeneral scientific terminal 2046161   | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students of king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding and understanding and understanding and understanding and understanding general and technical texts.  German - Beginners  ryday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professionan) and plans and plans. Reading and understanding and use of basic expressions of general scientific terminology (professionan) are spoken and written form. Understanding and use of basic expressions of general scientific terminology (professionan) are spoken form. Understanding ology (professional language).   | Z omes across at we unding general and Z ty to describe exp  Z sional language) Z and use of basic exp    | ork, at school, I technical texts.  2 eriences and  2 expressions of                   |
| Mapped to the level of oduring free time, and ta 2046080 Understanding standard events, briefly explain of 2046076 Basic vocabulary of events and the level Congeneral scientific terminal 2046161   | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students of king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding a speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Abilitie's opinions and plans. Reading and understanding general and technical texts.  German - Beginners ryday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professionan - Beginners ramework of Reference A1 Basic vocabulary of everyday life in a written and spoken form. Understanding ology (professional language).  Presentations in English   | Z omes across at we unding general and Z ty to describe exp  Z sional language) Z and use of basic exp    | ork, at school, I technical texts 2 eriences and 2 expressions of                      |
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| Mapped to the level of oduring free time, and ta 2046080 Understanding standare events, briefly explain of 2046076 Basic vocabulary of events are events as a construction of the level Congeneral scientific terminal 2046161 Preparing students to preparing students to graph 2046162 Preparation for present 2046164   | Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students of king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding general and technical texts.  German - Beginners  ryday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professory professory professor | Z omes across at we anding general and Z ty to describe exp  Z sional language) Z and use of basic of Z   | ork, at school, at technical texts.  2 periences and  2 perpensions of  2 2            |
| Mapped to the level of oduring free time, and ta 2046080 Understanding standare events, briefly explain of 2046076 Basic vocabulary of events are events as a construction of the level Congeneral scientific terminal 2046161 Preparing students to preparing students to great 2046162 Preparation for present 2046164   | common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students of king about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding general and technical texts.  German - Beginners  ryday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professong forman - Beginners  mon European Framework of Reference A1 Basic vocabulary of everyday life in a written and spoken form. Understanding ology (professional language).  Presentations in English  resent in English on technical topics, with a possible co-operation with specialized departments.  Presentations in Czech  ve presentations in German  ng technical topics in German, possibly in cooperation with specialized departments.   | Z omes across at we anding general and Z ty to describe exp  Z sional language) Z and use of basic of Z Z | ork, at school, at technical texts.  2 periences and  2 pexpressions of  2 2  2 2  2 2 |

|  | Presentations in Spanish   | Z   | 2   |
|--|--|---|---|
| Preparation for pres   | senting technical topics in Spanish, possibly in cooperation with specialized departments.   |   |   |
| 2046137  | Russian - Lower Intermediate Course  | Z   | 2   |
| Understanding clea   | rly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. V  | Vriting in a simple w   | ay about familia  |
| topics. Reading and  | comprehension of simple texts. Improvement of professional language.   |   |   |
| 2046138  | Russian - Lower Intermediate Course  | Z   | 2   |
| Mapped to the level  | of Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a   | student meets at scl  | nool or in his/he   |
| free time and speak  | king about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of pro  | fessional language.   |   |
| 2046141  | Russian - Advanced   | Z   | 2   |
| Comprehension of   | spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, particip   | ation in discussions.   | Expressing  |
| opinions. Written sk   | ills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and  | technical articles.   | _   |
| 2046142  | Russian - Advanced   | Z   | 2   |
| Mapped to the leve   | l of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian or  | n topics familiar to th   | ne student.   |
| Communication with   | n native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading   | and understanding   | texts concerning  |
| currant issues and   | popular scientific and technical articles.   |   |   |
| 2046140  | Russian - Upper Intermediate   | Z   | 2   |
| Mapped to the leve   | of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a studen  | t meets at work, at s   | school, during  |
| free time, and talking   | g about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and unders   | standing general and  | technical texts   |
| 2046139  | Russian - Upper Intermediate   | Z   | 2   |
| Understanding star   | dard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. At   | oility to describe exp  | eriences and  |
| events, briefly expla  | in one's opinions and plans. Reading and understanding general and technical texts.  |   |   |
| 2040420  |  |   |   |
| 2046136  | Russian - Beginners  | Z   | 2   |
|  | Russian - Beginners of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understar  |   | _   |
| Mapped to the level  |  |   | _   |
| Mapped to the level of general scientific  | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understar  |   | _   |
| Mapped to the level of general scientific 2046135  | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)   | nding and use of bas  | sic expressions   |
| Mapped to the level of general scientific 2046135  | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)  Russian - Beginners  everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)  | nding and use of bas  | sic expressions   |
| Mapped to the level of general scientific 2046135 Basic vocabulary of 2046099  | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understar terminology (professional language)  Russian - Beginners   | ding and use of bas  Z essional language)   | sic expressions 2   |
| Mapped to the level of general scientific 2046135 Basic vocabulary of 2046099 Mapped to the level  | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)  Russian - Beginners  everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)  Spanish - Lower Intermediate  | anding and use of base    Z essional language) Z student meets at sch   | sic expressions 2   |
| Mapped to the level of general scientific 2046135 Basic vocabulary of 2046099 Mapped to the level free time and speak  | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)  Russian - Beginners  everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professions)  Spanish - Lower Intermediate  of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a string about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professions are considered as a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professions are considered as a simple way about familiar topics.   | anding and use of base    Z essional language) Z student meets at sch   | sic expressions 2   |
| Mapped to the level of general scientific 2046135 Basic vocabulary of 2046099 Mapped to the level free time and speak 2046098  | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)  Russian - Beginners  everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professions)  Spanish - Lower Intermediate  of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a second common secon | z essional language) Z student meets at sch fessional language. Z   | 2 2 ool or in his/he  |
| Mapped to the level of general scientific 2046135 Basic vocabulary of 2046099 Mapped to the level free time and speak 2046098 Understanding clea   | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)  Russian - Beginners  everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)  Spanish - Lower Intermediate  of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a string about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional simple way about familiar topics. Reading and comprehension of simple texts.   | z essional language) Z student meets at sch fessional language. Z   | 2 2 ool or in his/he  |
| Mapped to the level of general scientific 2046135 Basic vocabulary of 2046099 Mapped to the level free time and speak 2046098 Understanding cleat topics. Reading and  | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)  Russian - Beginners everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional Lower Intermediate of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a sking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.  | z essional language) Z student meets at sch fessional language. Z   | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2   |
| Mapped to the level of general scientific 2046135 Basic vocabulary of 2046099 Mapped to the level free time and speak 2046098 Understanding clea topics. Reading and 2046096   | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)  Russian - Beginners  everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professions)  Spanish - Lower Intermediate  of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a string about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professions of spanish - Lower Intermediate  rly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them.  | essional language)  Z essional language)  Z student meets at sch fessional language.  Z Writing in a simple w   | 2 2 2 2 2 3 3 3 3 4 4 4 4 5 4 5 5 6 6 7 7 8 7 8 8 8 8 9 8 9 8 9 8 9 8 9 8 9 8 |
| Mapped to the level of general scientific 2046135 Basic vocabulary of 2046099 Mapped to the level free time and speal 2046098 Understanding clea topics. Reading and 2046096 Aim:Understanding                               | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)  Russian - Beginners  everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)  Spanish - Lower Intermediate  of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a sking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.  Spanish - Beginners  | essional language)  Z essional language)  Z student meets at sch fessional language.  Z Writing in a simple w   | 2 2 2 2 2 3 3 3 3 4 4 4 4 5 4 5 5 6 6 7 7 8 7 8 8 8 8 9 8 9 8 9 8 9 8 9 8 9 8 |
| Mapped to the level of general scientific 2046135 Basic vocabulary of 2046099 Mapped to the level free time and speak 2046098 Understanding clea topics. Reading and 2046096 Aim:Understanding                               | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)  Russian - Beginners  everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)  Spanish - Lower Intermediate  of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a sking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.  Spanish - Lower Intermediate  rly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. We comprehension of simple texts. Improvement of professional language.  Spanish - Beginners  clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the ding and comprehension of simple texts. Improvement of professional language.  | essional language)  Z essional language)  Z student meets at sch fessional language.  Z Writing in a simple w   | 2 2 2 2 2 3 3 3 3 4 4 4 5 5 6 7 7 8 7 8 8 8 8 9 8 9 8 9 8 9 8 9 8 9 8         |
| Mapped to the level of general scientific 2046135 Basic vocabulary of 2046099 Mapped to the level free time and speak 2046098 Understanding clea topics. Reading and 2046096 Aim:Understanding familiar topics. Read 2046097 | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understarterminology (professional language)  Russian - Beginners  everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)  Spanish - Lower Intermediate  of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a string about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.  Spanish - Lower Intermediate  rly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Vereign and speakin | z essional language) Z student meets at sch fessional language. Z Vriting in a simple w Z nem. Writing in a sim | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2   |

### List of courses of this pass:

| Code                                 | Name of the course  | Completion           | Credits        |
|--------------------------------------|---|----------------------|----------------|
| 2011009                              | Mathematics III   | Z,ZK                 | 5              |
|                                      | An introductory course in ordinary differential equation and infinite series.   |                      |                |
| 2011021                              | Constructive Geometry   | Z,ZK                 | 6              |
|                                      | The subject is focused on geometric objects in the space - curves, surfaces and solids and their properties and mutual relation   | ons.                 | •              |
| 2011049                              | Numerical Mathematics   | Z,ZK                 | 4              |
| Numerical solution                   | n of systems of linear equations, iterative methods. Numerical solution of nonlinear algebraic equations. Least squares method. Numerical   | solution of ordinar  | y differential |
|                                      | equations, initial and boundary value problems. Numerical solution of basic linear partial differential equations by finite difference  | method.              |                |
| 2011056                              | Mathematics I   | Z,ZK                 | 8              |
| In the course, great                 | ater emphasis is placed on the theoretical basis of the concepts discussed and on the derivation of basic relationships and connection  | s between concep     | ts. Students   |
| will also get to know                | w the procedures for solving problems with parametric input. In addition, students will gain extended knowledge in some thematic areas: e<br>of a matrix, Taylor polynomial, integral as a limit function, integration of some special functions. | igennumbers and e    | eigenvectors   |
| 2011062                              | Matematika II.  | Z,ZK                 | 8              |
| Open and closed                      | d set, boundary in E^k. Real function of k-variables. Partial derivatives and differentiability. Gradient and directional derivative. Differenti  | ial operators div (d | ivergence)     |
| and curl (rotation).                 | Function given implicitly. Local and global (= absolute) extremes of a function of more variables. Double integral, volume (=triple) integral,  | Fubini theorem. Tra  | nsformation    |
|                                      | ar, cylindrical and spherical coordinates. A simple smooth curve and line integral of a scalar and vector function. Circulation and Greer   | •                    |                |
| field, independer                    | nce of a line integral on the path. Simple smooth surface and surface integral of a scalar function and a vector function. Flow of a vector   | r field through a si | urface. The    |
|                                      | Gauss-Ostrogradskij theorem.  |                      |                |
| 2012035                              | Algorithmization and Programming Fundamentals   | KZ                   | 4              |
|                                      | MATLAB and its programming language. MATLAB command line. Elementary commands, variable, assignment and expression. Matri   |                      | •              |
|                                      | Input and output. Condition and cycle. Algorithmization of simple problems in MATLAB. Graphical commands. Matrix operations. Syste  | •                    |                |
| and functions. S                     | Structure of program. Variables, expressions, assignment, and input / output commands. switch. For cycle. Arrays and files. Pointers. St  | •                    |                |
| -11                                  | ns: minimum, mean, norm, numerical integration, bisection method, Newton method, matrix operations. Direct methods for solution of s  | systems of linear e  | duations.      |
|                                      |   |                      |                |
| simple program<br>2012037<br>2012091 | Computer Graphics Project   | KZ<br>KZ             | 3              |

| 2013991  | Bachelor Thesis  | Z  | 4  |
|--|--|--|--|
| 2016007  | Mathematics I Seminar  | Z  | 2  |
|  |  | ZK   |  |
| 201A009  | Mathematics III.A  |  | 2  |
| 201A021  | Constructive Geometry A  The subject is focused on geometric objects in the space - curves, surfaces and solids and their properties and mutual relation   | ZK<br>ons.   | 3  |
| 201A049  | Numerical Mathematics A  | ZK   | 2  |
| 201A056  | Mathematics I.A  | ZK   | 4  |
|  | Introduction to linear algebra, analytic geometry of straight lines and planes in E3, calculus of functions of one variable  |  | 1  |
| 201A062  | Mathematics II.A   | ZK   | 4  |
| f integrals to polar, ield, independence 2021025 araday's law of elector f radiation with mapeetra, x-rays, ;lase 2021041 inematics and dynawaves. Fluid mediculators. Magnetic 2026016 202A025 araday's law of elector f radiation with mapeetra, x-rays, ;lase | nction given implicitly. Local and global (= absolute) extremes of a function of more variables. Double integral, volume (=triple) integral, cylindrical and spherical coordinates. A simple smooth curve and line integral of a scalar and vector function. Circulation and Greer of a line integral on the path. Simple smooth surface and surface integral of a scalar function and a vector function. Flow of a vector Gauss-Ostrogradskij theorem.  Physics II.  Iromagnetic induction. Maxwell's equations, electromagnetic waves. Light, wave optics, geometrical optics. Quantum properties of electric. Photoelectric effect. Wave-particle mature of matter. Quantum-mechanical description of particle's motion. Hydrogen atom and are Band theory of solids, semiconductors. Nucleus, radioactivity, sources of nuclear energy. Laboratories - measurements of 6 experiments of a particle motion. Principle of conservation of energy. System of particles, centre of mass. Rigid body. Continuum, elastic prohanics. Temperature and heat transfer. Kinetic theory of gases. Thermodynamics. Electric field, current, conductivity, resistance. Confield. Magnetic materials. Laboratories - accuracy of measurements, systematic and random errors, uncertainty of direct and indire measurements of 11 various experiments related to the lectures.  Physics - Seminar  The subject is mainly meant for high-school students for repetition of high-school physics.  Physics II.A  Tomagnetic induction. Maxwell's equations, electromagnetic waves. Light, wave optics, geometrical optics. Quantum properties of electric. Photoelectric effect. Wave-particle mature of matter. Quantum-mechanical description of particle's motion. Hydrogen atom and for Band theory of solids, semiconductors. Nucleus, radioactivity, sources of nuclear energy. Laboratories - measurements of 6 experiments.  | a's theorem. A pot or field through a so field to a so field through a | dential vectors are according to the lecture of elements are according to the lecture of th |
| 202A041  | Physics I.   | ZK   | 3  |
|  | mics of a particle motion. Principle of conservation of energy. System of particles, centre of mass. Rigid body. Continuum, elastic pro  |  | _  |
| 2041061<br>apped to the Comn   | measurements of 11 various experiments related to the lectures.  English-Bachelor Exam  on European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficult  | Z,ZK<br>ties, to take part in  | 2<br>discussion  |
|  | to write a summary, a report and an essay, to read technical texts, to master grammar at advanced level.   |  |  |
| 2041062  | German - Bachelor Exam / FME   | Z,ZK   | 2  |
| apped to the Comn  | on European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficult<br>to write a summary, a report and an essay, to read technical texts, to master grammar at advanced level.  | ties, to take part in  | discussio  |
| 2041063  | French - Bachelor Exam /FME  | Z,ZK   | 2  |
|  | non European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficult<br>to write a summary, a report and an essay, to read technical texts, to master grammar at advanced level.   |  | 1  |
| 2041064  | Spanish - Bachelor Exam / FME  | Z,ZK   | 2  |
| l l  | on European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficult  | l i  | 1  |
| apped to the Conin   |  | lies, to take part in  | uiscussio  |
| 0044005  | to write a summary, a report and an essay, to read technical texts, to master grammar at advanced level.   | 7.714  |  |
| 2041065  | Russian - Bachelor Exam / FME  | Z,ZK   | 2  |
| apped to the Comn  | non European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficult   | ties, to take part in  | discussio  |
|  | to write a summary, a report and an essay, to read technical texts, to master grammar at advanced level.   |  |  |
|  |  | _  |  |
| 2046068  | English - Beginners  | Z  | 2  |
|  | English - Beginners oulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (p  | _  | I  |
| Aim: Basic vocal 2046069 apped to the Comr   | bulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (page 12 to Figure 13 to Figure 14 to Figure 14 to Figure 15 to Figure 15 to Figure 15 to Figure 16 to Figur | professional langu Z g and use of basic  | age). A1   |
| Aim: Basic vocal 2046069 apped to the Comr 2046070   | oulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (page 12) English - Beginners  non European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding  | z<br>Z<br>g and use of basic   | 2 expression 2   |
| Aim: Basic vocal 2046069 apped to the Comr 2046070 im: Understanding   | English - Beginners non European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding of general scientific terminology (professional language).  English - Lower Intermediate clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. familiar topics. Reading and comprehension of simple texts. Improvement of professional language. A1 - A2.  | z<br>Z<br>g and use of basic   | 2 expression 2   |
| Aim: Basic vocal 2046069 apped to the Comr 2046070 im: Understanding 2046071 lapped to the Com   | English - Beginners non European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding of general scientific terminology (professional language).  English - Lower Intermediate clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them.   | professional langu Z g and use of basic Z Writing in a simpl Z student meets eith  | 2 e way about 2 ner at scholars.   |
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| Aim: Basic vocal 2046069 apped to the Comr 2046070 aim: Understanding 2046071 dapped to the Com or at his/her free ti 2046072 ne aim is to extend 2046073 Mapped to the Com  | English - Beginners  non European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding of general scientific terminology (professional language).  English - Lower Intermediate  clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. familiar topics. Reading and comprehension of simple texts. Improvement of professional language. A1 - A2.  English - Lower Intermediate  mon European Framework of Reference Level A2 Aim: Understanding clearly spoken language about everyday situations which a seme and speaking about them. Writing in a simple way about familiar topics. reading and comprehension of simple texts. Improvement of professional simple simple simple simple texts. Improvement of professional simple si | Torofessional language of the state of the s | age). A1  2 2 2 expression  2 e way about 2 her at scholanguage 2 conversat  2 profession  |
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| 2046075  | English - Advanced   | Z  | 2  |
|--|--|--|--|
|  | ommon European Framework of Reference Level B1 - B2. The aim: comprehension of spoken English as well as lectures given in Eng   | -  |  |
| and active particip  | pation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay, reading and comprehen   | ision of popular-sc  | ientific and   |
| 2046076  | scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.   | 7  |  |
| 2046076  | German - Beginners abulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (pr   | Z  <br>rofessional langua  | 2  |
| 2046077  | German - Beginners   | 7  | 2  |
|  | el Common European Framework of Reference A1 Basic vocabulary of everyday life in a written and spoken form. Understanding and   | _  |  |
| mapped to the let  | general scientific terminology (professional language).  | a doo or baoic oxp.  |  |
| 2046078  | German - Lower Intermediate Course   | Z  | 2  |
|  | og clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them.   | ا<br>Writing in a simple   | way about  |
|  | familiar topics. Reading and comprehension of simple texts. Improvement of professional language.  |  |  |
| 2046079  | German - Lower Intermediate Course   | Z  | 2  |
| * *  | of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a s  |  |  |
|  | e time and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvemen  |  |  |
| 2046080  | German - Upper Intermediate Course   | Z  | 2  |
| Oriderstanding st  | andard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability t<br>events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  | to describe experie  | ences and  |
| 2046081  | German - Upper Intermediate Course   | Z  | 2  |
|  | rel of Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students com-  | ı  |  |
|  | nd talking about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding   |  |  |
| 2046082  | German - Advanced Course   | Z  | 2  |
| Comprehension  | of spoken language as well as lectures in German on topics familiar to the student. Communication with native speakers, participation  | n in discussions. E  | xpressing  |
| opinions.\   | Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific a  | nd technical article   | es.  |
| 2046083  | German - Advanced Course   | Z  | 2  |
|  | el of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken German as well as lectures given in Ge   | •  |  |
| and active participa   | ation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and compreher  | nsion of popular-so  | cientific and  |
| 2046004  | scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.   | 7  | 2  |
| 2046084  | French - Beginners  arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing   | - 1  |  |
| Oridorstariding cice   | topics. Reading and comprehension of simple texts. Improvement of professional language.   | iii a siiripie way at  | Jour lamillar  |
| 2046085  | French - Beginners' Course   | Z  | 2  |
|  | rel of Common European Framework of Reference: A1 Aim: Understanding clearly what is spoken about everyday situations which a s  | student meets at s   | chool or in  |
| his/her free tim   | ne and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement  |  |  |
|  | and oppositing about them. Thing in a employmay about laminal topics. Reading and completelesion of simple texts. Improvement  | of professional lan  | guage.   |
| 2046086  | French - Lower Intermediate Course   | of professional lan  | guage.   |
|  | French - Lower Intermediate Course arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing  | Z  | 2  |
| Understanding clea   | French - Lower Intermediate Course arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing topics. Reading and comprehension of simple texts. Improvement of professional language.   | Z<br>in a simple way ab  | 2<br>pout familiar   |
| Understanding clear 2046087  | French - Lower Intermediate Course arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing topics. Reading and comprehension of simple texts. Improvement of professional language.  French - Lower Intermediate Course   | Z in a simple way ab   | 2<br>pout familiar   |
| Understanding clear 2046087 Mapped to the lev  | French - Lower Intermediate Course arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing topics. Reading and comprehension of simple texts. Improvement of professional language.  French - Lower Intermediate Course rel of Common European Framework of Reference: A2 Aim: Understanding clearly what is spoken about everyday situations which a second course.  | Z in a simple way ab  Z student meets at s   | 2<br>pout familiar<br>2<br>chool or in   |
| Understanding clear 2046087  Mapped to the leven his/her free times  | French - Lower Intermediate Course arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing topics. Reading and comprehension of simple texts. Improvement of professional language.  French - Lower Intermediate Course rel of Common European Framework of Reference: A2 Aim: Understanding clearly what is spoken about everyday situations which a see and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement  | Z in a simple way ab Z student meets at s of professional lan  | 2 chool or in guage.   |
| 2046087 Mapped to the lev his/her free tim   | French - Lower Intermediate Course arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing topics. Reading and comprehension of simple texts. Improvement of professional language.  French - Lower Intermediate Course rel of Common European Framework of Reference: A2 Aim: Understanding clearly what is spoken about everyday situations which a see and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of the speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of the speaking about them.  | Z in a simple way at  Z student meets at s of professional lan  Z  | 2 chool or in iguage.  |
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| 2046118  | Czech -Advanced  | Z  | 2   |
|--|--|--|---|
| lapped to the level  | of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Cze  | ch without great   | difficulties and  |
| active participation   | n in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension accientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.  | sion of popular-s  | cientific and   |
| 2046119  | Czech Language for Beginners I.  | Z  | 2   |
| Basic vocab  | oulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (   | professional lang  | uage)   |
| 2046120  | Czech Language for Beginners II.   | Z  | 2   |
| lapped to the Comr   | mon European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understandin   | ng and use of bas  | sic expression  |
| 2046125  | of general scientific terminology (professional language).  Czech Lower Intermediate   | 7  | 2   |
|  | clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them   | . –  |   |
| g  | familiar topics. Reading and comprehension of simple texts. Improvement of professional language.  |  | ,   |
| 2046126  | Czech Lower Intermediate   | Z  | 2   |
| im: Understanding  | clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them   | . Writing in a sim   | ple way abou  |
|  | familiar topics. Reading and comprehension of simple texts. Improvement of professional language.  |  |   |
| 2046127  | Czech - Upper Intermediate   | Z  | 2   |
| Understanding star   | ndard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  | / to describe exp  | enences and   |
| 2046128  | Czech - Upper Intermediate   | Z  | 2   |
|  | mon European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professional C   | _  |   |
| terminology. Comp  | orehension of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on interr   | nediate level. Bro   | padening the  |
|  | knowledge technical language.  |  |   |
| 2046135  | Russian - Beginners  | Z  | 2   |
|  | oulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (   | professional lang  |   |
| 2046136  | Russian - Beginners  | <u>Z</u>   | 2   |
| napped to the level  | of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understanding of general scientific terminology (professional language)  | g and use of basi  | c expression:   |
| 2046137  | Russian - Lower Intermediate Course  | 7  | 2   |
| l l  | ly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writin  | _  | l l   |
| 3  | topics. Reading and comprehension of simple texts. Improvement of professional language.   |  |   |
| 2046138  | Russian - Lower Intermediate Course  | Z  | 2   |
| annad to the lavel   | of Common European Framework of Reference: A2 Understanding electly what is analysis about averyday situations which a stude   |  | ol or in hie/h  |
| * *  | of Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a stude   |  |   |
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| free time and 2046139 Understanding star 2046140 Mapped to the leve eet time, and talking 2046141 Comprehension of opinions. W 2046142 Mapped to the leve ommunication with 2046155 2046156 2046161 2046162 2046163 2046164  | d speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of Russian - Upper Intermediate deard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  Russian - Upper Intermediate  If of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a student meets at about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understand Russian - Advanced  If spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participation fritten skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific relative speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  English Conversation  Improving communicative skills in speaking on general topics and general technical topics.  English Conversation  Improving communicative skills in speaking on general topics and general technical topics.  Presentations in English  Preparation for presenting technical topics in German  Preparation for presenting technical topics in German  Preparation for presenting technical topics in French language  Preparation for presenting technical topics in French, possibly in cooperation with specialized departments.  Presentations in French language  Preparation for presenting technical topics in Russian, possibly in cooperation with specialized departments.  Presentations in Russian  Preparation for presenting technical topics in Russian, possibly in cooperation with specialized departments.                   | professional lang Z y to describe exp  Zeets at work, at sing general and to a zero in discussions and technical ar z opics familiar to understanding te   | guage.  2 eriences and 2 chool, during technical text 2 . Expressing ticles. 2 the student. xts concernin 2 2 2 2 2 2                       |
| free time and 2046139   Understanding star   | d speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of Russian - Upper Intermediate ndard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  Russian - Upper Intermediate I of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a student may about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understand Russian - Advanced I spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participatic fritten skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific Russian - Advanced I spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  Russian - Advanced I spoken language as well as lectures in Russian on topics and general technical topics.  Russian - Advanced I spoken language as well as lectures in Russian on topics and peneral technical topics.  Russian - Advanced I spoken language as well as lectures in Russian on topics and general technical topics.  Russian - Advanced I spoken language as well as lectures in Russian on topics and general technical topics.  Russian - Bresentations in Russian  Preparation for presenting technical topics in German, possibly in cooperation with specialized departments.  Presentations in Russian  Preparation for presenting technical topics in French, possibly in cooperation with specialized departments.  Presenta | professional lang Z y to describe exp  Zeets at work, at sing general and to a control of the co | guage.  2 eriences and  2 cchool, during ecchnical text  2 . Expressing ticles.  2 the student. xts concerning  2 2 2 2 2 2 2 2             |
| free time and 2046139   Understanding star 2046140   Mapped to the leve see time, and talking 2046141   Comprehension of opinions. W 2046142   Mapped to the leve ommunication with 2046155   2046166   2046164   2046165   2046166   2046166   2131002                                | d speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of Russian - Upper Intermediate  Indard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability events, briefly explain one 's opinions and plans. Reading and understanding general and technical texts.  Russian - Upper Intermediate  If of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a student may about these topics. Ability to describe experiences and events, briefly explain one 's opinions and plans. Reading and understand Russian - Advanced  If spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participation in the student of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian on to read a speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  Russian - Advanced  Russian - Advanced  Full of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian on to currant issues and popular scientific and technical articles.  Fullish Conversation  Improving communicative skills in speaking on general topics and general technical topics.  Fullish Conversation  Improving communicative skills in speaking on general topics and general technical topics.  Presentations in English  Preparation for presenting technical topics, with a possible co-operation with specialized departments.  Presentations in German, possibly in cooperation with specialized departments.  Presentations in French language  Preparation for presenting technical topics in French, possibly in cooperation with specialized departments.  Presentations in Russian  P | professional lang Z y to describe exp  Zeets at work, at sing general and to a compare the compare to the compare  | guage.  2 eriences and  2 cchool, during echnical text  2 . Expressing ticles.  2 the student. axts concerning  2 2  2 2  2 2  4            |
| free time and 2046139   Juderstanding star 2046140   Mapped to the leve set time, and talking 2046141   Comprehension of opinions. W 2046142   Mapped to the lever mmunication with 2046155   2046166   2046161   2046162   2046164   2046165   2046166   2131002   inciples of ISO GP | d speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of Russian - Upper Intermediate nature state at work, at school, during free time, and talking about these topics. Ability events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  Russian - Upper Intermediate  If of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a student me grabout these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding associated as a subject of common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills, Ability to write an essay or a report. Reading and currant issues and popular scientific and technical articles.  English Conversation  Improving communicative skills in speaking on general topics and general technical topics.  English Conversation  Improving communicative skills in speaking on general topics and general technical topics.  Presentations in English  Preparing students to present in English on technical topics, with a possible co-operation with specialized departments.  Presentations in German  Preparation for presenting technical topics in German, possibly in cooperation with specialized departments.  Presentations in French language  Preparation for presenting technical topics in French language  Preparation for presenting technical topics in French language  Preparation for presenting technical topics in Russian, possibly in coopera | professional lang Z y to describe exp  Zeets at work, at sing general and to general and general an | guage.  2 eriences and 2 chool, during echnical text 2. Expressing ticles. 2 the student. atts concerning 2 2 2 2 2 2 4 2                   |
| free time and 2046139   Understanding star 2046140   Wapped to the leve set time, and talking 2046141   Comprehension of opinions. W 2046142   Mapped to the lever ommunication with 2046155   2046156   2046161   2046162   2046163   2046166   2131002   Inciples of ISO GP          | d speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of Russian - Upper Intermediate national student meets at work, at school, during free time, and talking about these topics. Ability events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.  Russian - Upper Intermediate I of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a student may about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding texts concerning currant issues and popular scientific ritten skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific Russian - Advanced  [so of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian on to native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.  English Conversation  Improving communicative skills in speaking on general topics and general technical topics.  English Conversation  Improving communicative skills in speaking on general topics and general technical topics.  Presentations in English  Preparation for presenting technical topics in German  Preparation for presenting technical topics in German, possibly in cooperation with specialized departments.  Presentations in French language  Preparation for presenting technical topics in Russian, possibly in cooperation with specialized departments.  Pres | professional lang Z y to describe exp  Zeets at work, at sing general and to general and general an | guage.  2 eriences and 2 chool, during echnical text 2. Expressing ticles. 2 the student. atts concernin 2 2 2 2 2 2 2 4 2 4 rical tolerand |

| 2131512               | Machine Elements and Mechanisms I.  | Z,ZK                  | 6              |
|-----------------------|---|-----------------------|----------------|
| , ,                   | elements (screwed, clamped, splined, welded, riveted, soldered and adhesive joints; joints with use of feathers, pins, tenons, cotters, k   | eys). Mechanical tra  |                |
|                       | on, gear drives). Seminars are devoted to practical individual solution of simple design projects - tasks with motion screws, preloade  | _                     |                |
| pressed, splined ar   | nd key joints between shafts and hubs and tasks with welded and riveted joints. Sketching of machine elements and their simple asser  | nbly units is also in | dispensable    |
|                       | seminar work.   |                       |                |
| 2133013               | Engineering Design III.   | Z                     | 2              |
|                       | Design of assembly unit (draft drawing, detail drawing, assembly drawing, technical report)   |                       | 1              |
| 2133014               | Engineering Design IV.  | Z                     | 2              |
| 2133025               | Design  | Z                     | 4              |
| Design                | n, design calculations and their aplications in case of geared transmissions, axles and shafts, sliding and rolling bearings, shaft coup  | ings and clutches.    | ,              |
| 2141504               | Electric Circuits and Electronics   | Z,ZK                  | 4              |
|                       | heory of electrical circuits, analysis special types of electrical circuits as DC and AC. Transient states in circuits with accumulators of   | 0,                    | ٠, ١           |
| Introduction into     | electronics. Principle and typical parameters of basic semiconductor components. Application in electronic circuits (rectifier, stabilized  |                       | perational     |
|                       | amplifier). Analogue and digital circuits. Principle of analogue and digital signal processing. Logical circuits, converters, micropro  |                       |                |
| 2141505               | Electrical machines and drives  | Z,ZK                  | 4              |
|                       | ectrical power and energy. Calculation, measurement, power factor. Magnetic circuit, materials, hysteresis loop. Electromagnet. Trans   |                       |                |
|                       | mer, operating conditions, rated (scheduled) values. Induction machine, principle, construction, operating conditions. Starting, speed us machines. DC-machines, principle, parameters, operating conditions, construction, starting, speed control, speed-torque characte  | •                     |                |
| Control. Synchrono    | us machines. DC-machines, principle, parameters, operating conditions, construction, starting, speed control, speed-torque characte<br>Low-voltage distribution system.   | ristic. Low-voitage i | instruments.   |
| 2144062               | Technical Indonesian - Course II.   | Z,ZK                  | 3              |
| 2144002               | Basic of Indonesian Language for Student Exchange Program to Indonesia  | Z,ZN                  | 3              |
| 2146060               | Indonesian Language Course for Exchange   | Z                     | 2              |
| 2140000               | Basic of Indonesian Language for Student Exchange Program to Indonesia  |                       |                |
| 2146061               | Technical Indonesian - Course I.  | Z                     | 2              |
| 2140001               | Second part of Indonesian Language for Student Exchange Program to Indonesia  |                       | 2              |
| 2152091               | Departmental Project  | KZ                    | 2              |
|                       |   |                       |                |
| 2153005               | Fundamentals of Energy Conversions  | Z                     | 1              |
| 2153991               | Bachelor Thesis   | Z                     | 4              |
| 2181026               | Momentum, Mass and Heat Transfer  | Z,ZK                  | 5              |
|                       | transport phenomena balances in homogeneous fluids. Navier-Stokes equations. Momentum transport in turbulent flows. Mechanica   |                       |                |
| time distributions in | n continuous systems. Conduction heat transfer. Forced and natural convection heat transfer. Heat transfer with phase changes and the   | rmai radiation. Mult  | ticomponent    |
| 2402040               | systems. Mass transfer by molecular diffusion, convection, with chemical reactions and interphase mass transfer.  | 1/7                   |                |
| 2182019               | Chemistry   | KZ                    | 3              |
|                       | ry from the point of view of mechanical and process engineering. Physical chemistry forms 2/3 of the course (structure and propertie<br>n, chemical reactions, reaction engineering), the remaining 1/3 is devoted to organic chemistry (hydrocarbons, polymers) and bioche |                       |                |
| priase equilibrium    | oriented upon the material properties measurement.  | illistry. Laboratory  | practice is    |
| 2182091               | Project   | KZ                    | 2              |
| 2102091               | Absolvent se seznámí se základy oboru Procesní technika.  | IXZ                   | 1 2            |
| 2183991               | Bachelor Thesis   | Z                     | 4              |
| 2213991               | Bachelor Thesis   | Z                     | 4              |
| 2311101               |   | Z,ZK                  | 4              |
|                       | Mechanics I. with the basic concepts of statics. There are described the methods of solution of equilibrium of particles and rigid bodies and their sy  | 1 '                   |                |
| Wednames ruears       | There are introduced the methods of description of position and motion of particles and rigid bodies.   | sterns with and with  | nout motion.   |
| 2311102               | Mechanics II.   | Z,ZK                  | 4              |
|                       | rivections in:<br>and of rigid bodies. Transformation matrix. Kinematics of concurrent movements. Motion: translation, rotation, general planar motion, s   |                       |                |
|                       | ion. Composition of mechanisms. Basic planar mechanisms. Analytical methods in kinematics of mechanisms - Trigonometric and vec   | ="                    |                |
|                       | in kinematics. Basic theory of gearing. Transmition mechanisms with geers. Strutting and seezing in mechanisms. Cable mechanisms  | -                     |                |
| 2311107               | Mechanics III.  | Z,ZK                  | 7              |
|                       | s with the basic concepts of dynamics. Methods of solving the dynamics of mass particle and body motion and their systems are des   | 1 '                   |                |
|                       | and solving vibrations of systems.  |                       | -              |
| 2321039               | Materials Science II.   | Z,ZK                  | 4              |
| Fundamentals of m     | netallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and t   |                       | processing,    |
|                       | technical iron-carbon alloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of mater  | ials.                 |                |
| 2322029               | Materials Science I.  | KZ                    | 3              |
| History and prese     | ent state of materials engineering, overview of technical materials, internal structure of metals, crystal lattices and their defects, defo   | rmation, recrystalliz | zation and     |
| fracture of mate      | erials, structure and properties of materials and their testing, fundamentals of thermodynamics, phases and phase transformations, i  | ron-carbon phase of   | diagram.       |
| 2322091               | Project   | KZ                    | 2              |
| On the basis of the   | preliminary submission of a bachelor thesis the students, under supervision of their supervisors, prepare a review summarizing and  | evaluating the studi  | ied literature |
| with particular e     | mphasis on experimental technologies which can be applied in their bachelor theses. They can also mention a planned experiment of   | or evaluate hitherto  | obtained       |
|                       | knowledge or results.   |                       |                |
| 2323991               | Bachelor thesis   | Z                     | 4              |
|                       | Development of the bachelor thesis on an assignment under the supervision.  |                       |                |
| 2331068               | Technology I.   | Z,ZK                  | 5              |
| Foundry properties    | of metals. Treatment. Pouring. Casting solidification. Moulding and core making. Thermal treatment. Plastic deformation. Division of form   |                       | mi-products,   |
| 000000                | heating-up. Cutting. Cold and hot forming. Welds. Weldability. Weldment testing. Thermal cutting. Brazing. Surface treatmen   |                       |                |
| 2332091               | Project   | KZ                    | 2              |
| 2333038               | Fundamentals of Technology I.   | Z                     | 3              |
|                       | ses in engineering production. Technology of engineering production. Materials in engineering. Concepts of steel and cast iron, tech  |                       |                |
| iron and steel. Ca    | sting: modeling devices, molding materials, molding and castings. Foundry alloys. Overview of basic casting technology. Forming tec   | nnology. Hot and co   | old forging.   |

|  | welding and arc welding with coated electrodes. Thermal cutting.   |   | _  |
|--|--|---|--|
| 2333991  | Bachelor Thesis  | Z   | 4  |
| 2341014  | Technology II.   | Z,ZK  | 5  |
| mechanics of chip  | ormation, cutting processes, finishing operations, non-traditional machining processes. Production rates calculation, machining econom   | ,   | f processes,   |
| ,  | programming of manufacture. Engineering metrology. Assembly techniques. Introduction to process planing.   |   |  |
| 2342091  | Project  | KZ  | 2  |
|  | Work on specialized tasks.   |   | !  |
| 2352091  | Specialization Project   | KZ  | 2  |
| 2362091  | Project  | KZ  | 2  |
| 2363991  | Bachelor Thesis  | Z   | 4  |
| 2371047  | Automatic Control  | Z,ZK  | 5  |
| Automatic control  | lers are important part of many industrial processes. The goal of this course is to introduce students into basic knowledge of automatit   | c control theory a  | nd practice  |
| like transfer function   | ns, open versus closed loop control, design of controllers and frequency based analysis of control systems. The course also concentrat   | es on logic contro  | and control  |
|  | e logic controllers. Some seminaries are arranged in laboratories where practical skills and control engineering methods are trained.  | ŭ   |  |
| via programmas   | MATLAB software as a common platform of control engineers.   | Staderita begiir to   | WOIR WILL  |
| 2372041  | Computer Support for Study   | KZ  | 3  |
|  | ces students into creating technical and professional documents on computers or Web and into realizing technical computations with the   |   | _  |
|  | al skills by creating an essay in a text editor, by realizing technical computations with a spreadsheet calculator, and by creating technical  | •   |  |
| 2372083  | Measurement in Engineering   | KZ  | 3  |
| Overview of sen  | sor principles for measurement of non-electrical variables (temperature, position, force, speed, acceleration, torque). Calibration and  | erification of mea  | surement   |
|  | instruments.   |   |  |
| 2372091  | Project  | KZ  | 2  |
|  | An individual project from the branch of specialisation, which student will study on his/her magister level  |   |  |
| 2373991  | Bachelor Thesis  | Z   | 4  |
|  | Each student will solve his individual theme under guiding of his individual supervising department specialist. Result is his/her bache  | lor thesis.   | 1  |
| 2381054  | Management and Economics of the Enterprise   | Z,ZK  | 4  |
| The subject is inter   | ded to teach the students of the Faculty of Mechanical Engineering the basic economic starting points necessary for technical reasoning  | and to help them  | understand   |
| the basic relations  | hips between economic quantities costs - revenues, expenses - incomes and other basic economic terms. The goal is for the audienc  | e to be able to co  | mmunicate  |
| with economists i  | n organizations, every product or service is valued at a selling price and therefore it is necessary to understand the simple costing of p   | roducts and serv  | ices. Every  |
| tochnician will and  | ounter reports and should understand the basic structure of financial statements. As a future manager, he will compile and approve the   | operating budge   | t. In the field  |
| technician will enco   | hey will learn basic managerial functions and their content. Furthermore, they will learn how to use network analysis in project managerial functions.   |   |  |
|  | ney will learn basic managenal functions and their content. Furthermore, they will learn now to use network analysis in project manag  | ement. For decisi   | on-making  |
| of management,   | purposes, they will learn the applications of multi-criteria decision-making. The basics of marketing and strategic management will be   |   | on-making  |
| of management,   |  |   | on-making  |
| of management,   | purposes, they will learn the applications of multi-criteria decision-making. The basics of marketing and strategic management will be   | introduced.   | 2  |
| of management,  2383001  Basic orientation i   | purposes, they will learn the applications of multi-criteria decision-making. The basics of marketing and strategic management will be Fundamentals of Law   | introduced.  Z e a view into the C  | 2<br>Czech Legal   |
| of management,  2383001  Basic orientation i  Order, particular s  | ourposes, they will learn the applications of multi-criteria decision-making. The basics of marketing and strategic management will be  Fundamentals of Law  n legal system is a necessary part of professional equipment of each expert with university degree. The aim of this course is to provide  | introduced.  Z e a view into the Cecessary for stude                                    | 2<br>Exech Legal<br>ents to know                             |
| 2383001 Basic orientation i Order, particular s our legal institution  | purposes, they will learn the applications of multi-criteria decision-making. The basics of marketing and strategic management will be  Fundamentals of Law  n legal system is a necessary part of professional equipment of each expert with university degree. The aim of this course is to provide purces of law and system of law (branch of law), using tutorials, lectures, specialised literature and significant legal regulations. It is necessary  | introduced.  Z e a view into the Cecessary for stude At the same time                   | 2<br>Czech Legal<br>ents to know<br>the course               |
| 2383001 Basic orientation i Order, particular s our legal institution  | Fundamentals of Law  legal system is a necessary part of professional equipment of each expert with university degree. The aim of this course is to provide ources of law and system of law (branch of law), using tutorials, lectures, specialised literature and significant legal regulations. It is nearly, that will be regularly in touch with, especially during their professional career and to learn how to work with the collection of laws.  | introduced.  Z e a view into the Cecessary for stude At the same time                   | 2<br>Czech Legal<br>ents to know<br>the course               |
| 2383001 Basic orientation i Order, particular s our legal institution  | Fundamentals of Law  legal system is a necessary part of professional equipment of each expert with university degree. The aim of this course is to provide ources of law and system of law (branch of law), using tutorials, lectures, specialised literature and significant legal regulations. It is near, that will be regularly in touch with, especially during their professional career and to learn how to work with the collection of laws. In now some practical habits and processes while putting the law on, especially in domain of contracts and other important legal relations.  | introduced.  Z e a view into the Cecessary for stude At the same time                   | 2<br>Czech Legal<br>ents to know<br>the course               |
| of management,  2383001  Basic orientation i Order, particular s our legal institutio leads students to k  2383009 | Fundamentals of Law  legal system is a necessary part of professional equipment of each expert with university degree. The aim of this course is to provide ources of law and system of law (branch of law), using tutorials, lectures, specialised literature and significant legal regulations. It is not not, that will be regularly in touch with, especially during their professional career and to learn how to work with the collection of laws. In now some practical habits and processes while putting the law on, especially in domain of contracts and other important legal relations to prepare professional presentations and to understand basic structures between law and engineering | introduced.  Z e a view into the Cecessary for stude At the same time ships and to make | 2<br>Ezech Legal<br>ents to know<br>the course<br>them ready |

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