

Study plan

Name of study plan: 11 68 73 00 BTZI 2012 K základ

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: No Special Fields od Study

Garantor of the study branch: prof. Ing. Michael Valášek, DrSc.

Program of study: Theoretical Fundamentals of Mechanical Engineering

Type of study: Bachelor combined

Required credits: 217

Elective courses credits: 0

Sum of credits in the plan: 217

Note on the plan: druhý pokus

Name of the block: Compulsory courses in the program

Minimal number of credits of the block: 207

The role of the block: P

Code of the group: 12B-KMENK TZI STR

Name of the group: 01 2012 souhrn skupin 12B*KiP-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:

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, Růžena Petrová, Tomáš Vyhřídál, Goran Simeunovič, Pavel Zítek, Jaromír Fišer Pavel Zítek Milan Hofreiter (Gar.)	Z,ZK	5	3+2	*	P
2182019	Chemistry Radek Šulc, Martin Dostál, Stanislav Solnař, Jan Skočilas Radek Šulc Radek Šulc (Gar.)	KZ	3	2+1	1	P
2131512	Machine Elements and Mechanisms I. Martin Dub, Vojtěch Dynybyl, Jiří Houkal, Luděk Jančík, Jan Kanaval, Pavel Syrovátka, Roman Uhlíř, František Starý, Karel Petr, Pavel Malý Vojtěch Dynybyl (Gar.)	Z,ZK	6	3+2	*	P
2131026	Machine Elements and Mechanisms II Vojtěch Dynybyl, Jiří Houkal, Jan Kanaval, František Starý, Jaroslav Křička Pavel Malý Vojtěch Dynybyl (Gar.)	ZK	3	3+0	*	P
2141504	Electric Circuits and Electronics Ivan Uhlíř, Jan Chyský, Jaroslav Novák, Lukáš Novák, Jiří Štastný Ivan Uhlíř (Gar.)	Z,ZK	4	2+2	*	P
2141505	Electrical machines and drives Jan Chyský, Jaroslav Novák, Jiří Štastný Ivan Uhlíř Jan Chyský (Gar.)	Z,ZK	4	2+2	*	P
2021041	Physics I.	Z,ZK	7	4+1	*	P
2021025	Physics II.	Z,ZK	4	1+2	3	P
2133025	Design Vojtěch Dynybyl František Starý Vojtěch Dynybyl (Gar.)	Z	4	0+4	*	P
2011021	Constructive Geometry Ivana Linkeová	Z,ZK	6	3+2	*	P
2381054	Enterprise Management and Economics Vladimír Žáček, Michal Kavan, Olga Heralová, Vladimír Brdek, Petr Žemlička, Josef Košťálek Vladimír Žáček Vladimír Žáček (Gar.)	Z,ZK	4	2+2	*	P
2011056	Mathematics I František Mráz	Z,ZK	8	4+4	*	P
2011062	Matematika II. Radka Keslerová	Z,ZK	8	4+4	*	P
2011009	Mathematics III Marta Čertíková, Jan Valášek, Hynek Řezníček, Luděk Beneš, Tomáš Bodnár, Jiří Fůrst, Jan Halama, Leopold Herrmann, Radka Keslerová, Radka Keslerová Leopold Herrmann (Gar.)	Z,ZK	5	2+2	3	P

2311101	Mechanics I. Ivo Bukovský, Václav Bauma, Petr Beneš, Martin Nečas, Zdeněk Neusser, Jan Pelikán, Pavel Steinbauer, Zbyněk Šika, Michael Valášek, Michael Valášek Zbyněk Šika (Gar.)	Z,ZK	4	2+2	*	P
2311102	Mechanics II. Ivo Bukovský, Václav Bauma, Petr Beneš, Martin Nečas, Zdeněk Neusser, Jan Pelikán, Pavel Steinbauer, Zbyněk Šika, Michael Valášek, Michael Valášek Václav Bauma (Gar.)	Z,ZK	4	2+2	*	P
2121500	Fluid Dynamics Josef Adamec Josef Adamec (Gar.)	Z,ZK	5	3+2	*	P
2322029	Materials Science I. Elena Čížmarová, Jakub Horník, Zdeňka Jeníková, Petr Zuna, Jana Sobotová, Libor Beneš, Ladislav Cvrček, Zdeněk Tolde, Jiří Janovec, Zdeněk Tolde Petr Zuna (Gar.)	KZ	3	2+1	2	P
2321039	Materials Science II. Elena Čížmarová, Jakub Horník, Zdeňka Jeníková, Petr Zuna, Jana Sobotová, Libor Beneš, Ladislav Cvrček, Zdeněk Tolde, Jiří Janovec, Zdeněk Tolde	Z,ZK	4	2+2	*	P
2011049	Numerical Mathematics Marta Čertíková, Jan Valášek, Hynek Řezníček, Luděk Beneš, Tomáš Bodnár, Jiří Fůrst, Radka Keslerová, Olga Majlingová, Vladimír Prokop, Radka Keslerová	Z,ZK	4	2+2	4	P
2012037	Computer Graphics Jiří Holman, Jan Karel, Martin Hanek, Marta Hlavová, Ivana Linkeová, Nikola Pajerová Ivana Linkeová	KZ	3	1+1	*	P
2372041	Computer Support for Study Goran Simeunović, Vladimír Hlaváč Ivo Bukovský Vladimír Hlaváč (Gar.)	KZ	3	1+1	*	P
2181026	Momentum, Mass and Heat Transfer Martin Dostál, Stanislav Solnař, Jan Skočilas, Tomáš Jirout, František Rieger, Jiří Moravec Tomáš Jirout Tomáš Jirout (Gar.)	Z,ZK	5	3+1	*	P
2132001	Engineering Design I. Pavel Malý	KZ	2	1+2	1	P
2131002	Engineering Design II Pavel Malý	Z,ZK	4	2+3	2	P
2133013	Engineering Design III. Pavel Malý Vojtěch Dynybyl (Gar.)	Z	2	0+2	Z	P
2133014	Engineering Design IV. Vojtěch Dynybyl Roman Uhlíř Vojtěch Dynybyl (Gar.)	Z	2	0+2	L	P
2372083	Measurement in Engineering Martin Novák, Vladimír Hlaváč Martin Novák Martin Novák (Gar.)	KZ	3	1+2	*	P
K331068	Technology I Bohumír Bednář Bohumír Bednář Bohumír Bednář (Gar.)	Z,ZK	5	10/6	*	P
K341014	Technology II. Lubomír Štajnochr, Libor Beránek, Petr Mikeš, Pavel Novák, Jan Podaný, Vítězslav Rázek, Jan Tomíček, Pavel Zeman, Jiří Kyncl Pavel Novák	Z,ZK	5	8/8	*	P
2121023	Thermodynamics Jiří Nožička, Jakub Devera Jiří Nožička (Gar.)	Z,ZK	5	3+2	*	P
2131005	History of Technology	ZK	3	2+0	1	P
2012035	Algorithmization and Programming Fundamentals Marta Čertíková, Olga Majlingová, Vladimír Prokop, Petr Sváček, Jiří Holman, Vladimír Hric, David Trdlička, Jan Karel, Lukáš Hájek, Radka Keslerová Petr Sváček (Gar.)	KZ	4	1+2	*	P
2153005	Fundamentals of Energy Conversions Matěj Vodička, Pavel Zácha, Václav Dostál, Ondřej Bartoš, Pavlína Zimmermannová, Tomáš Dlouhý, Michal Kolovratník, Pavel Novák, Jan Havlík, Jan Štěpánek Tomáš Dlouhý (Gar.)	Z	1	1+1	*	P
2383001	Fundamentals of Law František Klimeš František Klimeš František Klimeš (Gar.)	Z	2	1+1	*	P

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

2371047	Automatic Control 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 seminars 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.	Z,ZK	5
2182019	Chemistry 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.	KZ	3
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.	Z,ZK	6
2131026	Machine Elements and Mechanisms II Preliminary design, design calculations and application of axles and shafts, sliding and rolling bearings, shaft connections, elements of crank mechanism, pipelines and their accessories and fittings.	ZK	3

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. circuits. 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.			
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 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.			
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 electromagnetic waves. Interaction of radiation with matter. Photoelectric effect. Wave-particle nature 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.			
2133025	Design	Z	4
Design, design calculations and their applications in case of geared transmissions, axles and shafts, sliding and rolling bearings, shaft couplings and clutches.			
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	Enterprise Management and Economics	Z,ZK	4
The course is designed to give students the understanding of economic principles. The economical part of the course is consisted from: explanation of relationship between costs and revenues, expenses and income, concept of investment and calculations per product, presentation how to assemble a basic operating budget and explanation of the basic structure of the financial statements. The management introduces the basic managerial functions and their contents, the uses of network analysis in project management, with the application of multi-criteria decision, the basics of marketing and strategic management.			
2011056	Mathematics I	Z,ZK	8
Introduction to linear algebra, analytic geometry of straight lines and planes in E ³ , calculus of functions of one variable			
2011062	Matematika II.	Z,ZK	8
Open and closed set, boundary in E ⁿ . 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.			
2011009	Mathematics III	Z,ZK	5
An introductory course in ordinary differential equation and infinite series.			
2311101	Mechanics I.	Z,ZK	4
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. Transmission mechanisms with gears. Strutting and seizing in mechanisms. Cable mechanisms.			
2121500	Fluid Dynamics	Z,ZK	5
The basic course in fluid dynamics deals with fundamental laws of hydrostatics and hydrodynamics and their application on the basic problems, as 1D flow in ducts, estimation of pressure losses, simplified solution of unsteady flow. Basic information on more complicated problems (laminar and turbulent flow, boundary layer theory, flow separation) are introduced as well.			
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.			
2321039	Materials Science II.	Z,ZK	4
Fundamentals of metallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and thermo-mechanical processing, technical iron-carbon alloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials.			
2011049	Numerical Mathematics	Z,ZK	4
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 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.			
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. 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.			
2132001	Engineering Design I.	KZ	2
Basic of technical representation, dimensioning and tolerancing			
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.			
2133013	Engineering Design III.	Z	2
Design of assembly unit (draft drawing, detail drawing, assembly drawing, technical report)			
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 verification of measurement instruments.			

K331068	Technology I Foundry properties of metals. Treatment. Pouring. Casting solidification. Moulding and core making. Thermal treatment. Plastic deformation. Division of forming processes. Semi-products, heating-up. Cutting. Cold and hot forming. Welds. Weldability. Weldment testing. Thermal cutting. Brasing. Surface treatment.	Z,ZK	5
K341014	Technology II.	Z,ZK	5
2121023	Thermodynamics The course deal with a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. Basic concepts and principles are introduced, and they are applied mostly to systems behaving as ideal gases or typical vapours. Basic notions associated with ideal mixtures are studied with an emphasis on psychometrics. Heat transfer covers fundamentals of conduction, convection and radiation. Heat exchangers are treated as an engineering application. Exercises and labs are devoted to practical problems and experimental technique.	Z,ZK	5
2131005	History of Technology Development of human knowledge in the domain of science and technology in the retrospective of the development of our civilization. Emphasis is given upon new branches of technology with special attention to the contribution of mining, iron metallurgy, power engineering, transportation and of the machine industry in the narrower sense of the word.	ZK	3
2012035	Algorithmization and Programming Fundamentals Students are acquainted with programming language C and exercised at basic problems of numerical mathematics.	KZ	4
2153005	Fundamentals of Energy Conversions	Z	1
2383001	Fundamentals of Law 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	Z	2

Code of the group: 12BT**P-ALFA

Name of the group: 02 2012 ALFA povinné pro TZI

Requirement credits in the group: In this group you have to gain 38 credits

Requirement courses in the group: In this group you have to complete 14 courses

Credits in the group: 38

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
202A041	Physics I.	ZK	3	0+0	*	P
202A025	Physics II.A	ZK	2	0+0	*	P
201A021	Constructive Geometry A Ivana Linkeová	ZK	3	0+0	*	P
201A056	Mathematics I.A Radka Keslerová	ZK	4	0+0	*	P
201A062	Mathematics II.A Radka Keslerová	ZK	4	0+0	*	P
201A009	Mathematics III.A Marta Čertíková, Jan Valášek, Hynek Řezníček, Luděk Beneš, Tomáš Bodnár, Jiří Fůrst, Jan Halama, Leopold Herrmann, Radka Keslerová, Radka Keslerová Leopold Herrmann (Gar.)	ZK	2	0+0	*	P
231A101	Mechanics I.A Ivo Bukovský, Václav Bauma, Petr Beneš, Martin Nečas, Zdeněk Neusser, Jan Pelikán, Pavel Steinbauer, Zbyněk Šika, Michael Valášek, Michael Valášek Zbyněk Šika (Gar.)	ZK	2	0+0	*	P
231A102	Mechanics II.A Ivo Bukovský, Václav Bauma, Petr Beneš, Martin Nečas, Zdeněk Neusser, Jan Pelikán, Pavel Steinbauer, Zbyněk Šika, Michael Valášek, Michael Valášek Michael Valášek (Gar.)	ZK	2	0+0	*	P
231A107	Mechanics III.A Ivo Bukovský, Václav Bauma, Petr Beneš, Martin Nečas, Zdeněk Neusser, Jan Pelikán, Pavel Steinbauer, Zbyněk Šika, Michael Valášek, Tomáš Vampola Michael Valášek (Gar.)	ZK	4	0+0	*	P
212A500	Fluid Dynamics A Josef Adamec Josef Adamec (Gar.)	ZK	3	0+0	*	P
201A049	Numerical Mathematics A Marta Čertíková, Jan Valášek, Hynek Řezníček, Luděk Beneš, Tomáš Bodnár, Jiří Fůrst, Radka Keslerová, Olga Majlingová, Vladimír Prokop, Radka Keslerová	ZK	2	0+0	*	P
212A023	Thermodynamics A Jiří Nožička, Jakub Devera Jiří Nožička (Gar.)	ZK	2	0+0	*	P

Characteristics of the courses of this group of Study Plan: Code=12BT**P-ALFA Name=02 2012 ALFA povinné pro TZI

202A041	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, measurements of 11 various experiments related to the lectures.	ZK	3
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202A025	Physics II.A 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 nature 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.	ZK	2
201A021	Constructive Geometry A The subject is focused on geometric objects in the space - curves, surfaces and solids and their properties and mutual relations.	ZK	3
201A056	Mathematics I.A Introduction to linear algebra, analytic geometry of straight lines and planes in E3, calculus of functions of one variable	ZK	4
201A062	Mathematics II.A Open and closed set, boundary in E ⁿ . 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.	ZK	4
201A009	Mathematics III.A	ZK	2
231A101	Mechanics I.A	ZK	2
231A102	Mechanics II.A	ZK	2
231A107	Mechanics III.A	ZK	4
212A500	Fluid Dynamics A The basic course in fluid dynamics deals with fundamental laws of hydrostatics and hydrodynamics and their application on the basic problems, as 1D flow in ducts, estimation of pressure losses, simplified solution of unsteady flow. Basic information on more complicated problems (laminar and turbulent flow, boundary layer theory, flow separation) are introduced as well.	ZK	3
201A049	Numerical Mathematics A	ZK	2
212A023	Thermodynamics A The course deal with a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. Basic concepts and principles are introduced, and they are applied mostly to systems behaving as ideal gases or typical vapours. Basic notions associated with ideal mixtures are studied with an emphasis on psychometrics. Heat transfer covers fundamentals of conduction, convection and radiation. Heat exchangers are treated as an engineering application. Exercises and labs are devoted to practical problems and experimental technique	ZK	2

Code of the group: 12B*K*P-ZT12

Name of the group: 04 2012 kombinované ZT v pořadí 12

Requirement credits in the group: In this group you have to gain 6 credits

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

Credits in the group: 6

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
K333038	Fundamentals of Technology I. Barbora Bryksí Stunová	Z	3	4/4	*	P

Characteristics of the courses of this group of Study Plan: Code=12B*K*P-ZT12 Name=04 2012 kombinované ZT v pořadí 12

K333038	Fundamentals of Technology I. 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.	Z	3
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Code of the group: 12BT*5P-ME3

Name of the group: 09 2012 ME3 pro TZI

Requirement credits in the group: In this group you have to gain 7 credits

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

Credits in the group: 7

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
2311107	Mechanics III. Ivo Bukovský, Václav Bauma, Petr Beneš, Martin Nečas, Zdeněk Neusser, Jan Pelikán, Pavel Steinbauer, Zbyněk Šika, Michael Valášek, Tomáš Vampola Michael Valášek (Gar.)	Z,ZK	7	2+3	5	P

Characteristics of the courses of this group of Study Plan: Code=12BT*5P-ME3 Name=09 2012 ME3 pro TZI

2311107	Mechanics III.	Z,ZK	7
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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 bakalářské povinně 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 je 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
2383019	Philosophical Issues Of Individual and Science	Z	2	1+1	*	PV
2383009	Communication and Dealing with People Vladimír Brdek, Dagmar Charvátová Vladimír Brdek	Z	2	1+1	*	PV
2383008	Managerial Psychology	Z	2	1+1	*	PV

Characteristics of the courses of this group of Study Plan: Code=12B**1Q-HUM Name=03 2012 bakalářské povinně volitelné humanitární

2383019	Philosophical Issues Of Individual and Science	Z	2
2383009	Communication and Dealing with People Goal of the course is to explain to the students, that communication became a part of qualification of every modern employee and manager as well. The base of interpersonal communication is rhetoric, which develops itself from classical school in ancient Greece to modern school in Europe and in the world. Course concerns mainly in the analysis of monologue (presentation) and dialogue (how to deal in trade). Course explains nonverbal communication and methods of self improving of own rhetorical art.	Z	2
2383008	Managerial Psychology	Z	2

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

Name of the group: 08 2012 bakalářské zkoušky z jazyků 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 Eliška Vítková, Zuzana Kalinová, Eva Končelíková, Michaela Schusová, Eva Pavlincová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Nina Procházková Ayyub	Z,ZK	2	0+2	*	PV
2041063	French - Bachelor Exam /FME Eliška Vítková, Dušana Jirovská Eliška Vítková Eliška Vítková (Gar.)	Z,ZK	2	0+2	*	PV
2041062	German - Bachelor Exam / FME Eliška Vítková, Jaroslava Kommová, Petr Laurich Jaroslava Kommová	Z,ZK	2	0+2	*	PV
2041065	Russian - Bachelor Exam / FME Eliška Vítková, Hana Volejníková, Dušana Jirovská Eliška Vítková	Z,ZK	2	0+2	*	PV
2041064	Spanish - Bachelor Exam / FME Eliška Vítková, Jaime Andrés Villagómez Jaime Andrés Villagómez	Z,ZK	2	0+2	*	PV

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

2041061	English-Bachelor Exam 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 report and an essay, to read technical texts, to master grammar at advanced level.	Z,ZK	2
2041063	French - Bachelor Exam /FME 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 report and an essay, to read technical texts, to master grammar at advanced level.	Z,ZK	2
2041062	German - Bachelor Exam / FME 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 report and an essay, to read technical texts, to master grammar at advanced level.	Z,ZK	2
2041065	Russian - Bachelor Exam / FME 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 report and an essay, to read technical texts, to master grammar at advanced level.	Z,ZK	2

2041064	Spanish - Bachelor Exam / FME	Z,ZK	2
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 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 Tomáš Bodnár, Jiří Fürst, Jan Halama, Vladimír Prokop, Petr Sváček, Jiří Holman, Jan Karel, Ivana Linkeová, Jakub Šístek, Jiří Fürst	KZ	2	0+2	*	PV
2112091	Project Miloslav Vilímek, Milan Růžička, Miroslav Španiel, Matej Daniel, Lukáš Horný, Zdeněk Padovec, Ctirad Novotný, Viktor Kulišek, Jan Rezníček, Karel Doubrava Milan Růžička (Gar.)	KZ	2	0+2	*	PV
2122091	Department Project Michal Schmirler, Adam Bláha, Jakub Suchý, Pavel Šafařík	KZ	2	0+2	*	PV
2132091	Branch Project František Lopot František Lopot František Lopot (Gar.)	KZ	2	0+2	*	PV
2152091	Departmental Project Matěj Vodička, Pavel Zácha, Václav Dostál, Ondřej Bartoš, Pavlína Zimmermannová, Tomáš Dlouhý, Michal Kolovratník, Pavel Novák, Jan Havlík, Ladislav Veselý Michal Kolovratník (Gar.)	KZ	2	0+2	*	PV
2162091	Project Jiří Bašta Vladimír Zmrhal Jiří Bašta (Gar.)	KZ	2	0+2	*	PV
2182091	Project Jan Skočilas, Tomáš Jirout, Lukáš Krátký Tomáš Jirout Tomáš Jirout (Gar.)	KZ	2	0+2	*	PV
2212091	Branch Project Vít Doleček Petr Hatschbach Petr Hatschbach (Gar.)	KZ	2	0+2	*	PV
2222091	Project Pavel Hospodář, Jaroslav Kousal, Ivan Jeřábek, Jan Klesa, Jaromír Kučera, Jiří Brabec Jiří Brabec	KZ	2	0+2	*	PV
2312091	Project Ivo Bukovský, Václav Bauma, Petr Beneš, Martin Nečas, Zdeněk Neusser, Jan Pelikán, Pavel Steinbauer, Zbyněk Šíka, Michael Valášek, Michael Valášek Michael Valášek (Gar.)	KZ	2	0+2	*	PV
2322091	Project Elena Čižárová, Jakub Horník, Zdeňka Jeníková, Petr Zuna, Jana Sobotová, Libor Beneš, Ladislav Cvrček, Zdeněk Tolde, Jiří Janovec, Zdeněk Tolde Jiří Cejp (Gar.)	KZ	2	0+2	*	PV
2332091	Project Bohumír Bednář, Jaroslav Skopal, Aleš Herman, Barbora Bryksí Stunová, Milan Němec, František Václav Štourač, Irena Kubelková, František Tatiček, Jan Čermák, Barbora Bryksí Stunová Aleš Herman (Gar.)	KZ	2	0+2	*	PV
2342091	Project Jan Kanaval, Lubomír Štajnochr, Libor Beránek, Petr Mikeš, Pavel Novák, Jan Podaný, Vítězslav Rázek, Jan Tomíček, Pavel Zeman, Pavel Novák	KZ	2	0+2	*	PV
2352091	Specialization Project	KZ	2	0+2	*	PV
2362091	Project Jan Hošek Jan Hošek (Gar.)	KZ	2	0+2	*	PV
2372091	Project	KZ	2	0+2	*	PV
2382091	Specialization Project Vladimír Brdek, Petr Žemlička, Ladislav Vaniš, František Freiberg, Miroslav Žilka, Theodor Beran František Freiberg (Gar.)	KZ	2	0+2	*	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
2112091	Project	KZ	2
2122091	Department Project	KZ	2
The content of the subject is given by the topic of bachelor's work after consultation with supervisor of bachelor's work or the tutor of the department.			
2132091	Branch Project	KZ	2
2152091	Departmental Project	KZ	2
2162091	Project	KZ	2
Student will be informed about basics of environmental engineering and creation of thermal comfort.			
2182091	Project	KZ	2
Absolvent se seznámí se základy oboru Procesní technika.			
2212091	Branch Project	KZ	2
Basic practical skills of work with advanced CAD/CAE/CAM systems. Project training in solution of design task based on industry requirements.			

2222091	Project	KZ	2
2312091	Project Individual assignment	KZ	2
2322091	Project 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 studied literature with particular emphasis on experimental technologies which can be applied in their bachelor theses. They can also mention a planned experiment or evaluate hitherto obtained knowledge or results.	KZ	2
2332091	Project	KZ	2
2342091	Project Work on specialized tasks.	KZ	2
2352091	Specialization Project	KZ	2
2362091	Project	KZ	2
2372091	Project An individual project from the branch of specialisation, which student will study on his/her magister level	KZ	2
2382091	Specialization Project	KZ	2

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

Name of the group: 11 2012 BTZI 6. sem bakalářské 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
2123991	Bachelor Thesis	Z	4	0+0	*	PV
2133991	Bachelor Thesis Roman Uhlíř, Karel Petr Roman Uhlíř Roman Uhlíř (Gar.)	Z	4	0+0	*	PV
2163991	Bachelor Thesis Jiří Bašta, Vladimír Zmrhal Jiří Bašta Jiří Bašta (Gar.)	Z	4	0+0	*	PV
2343991	Bachelor thesis Pavel Novák	Z	4	0+0	*	PV
2373991	Bachelor Thesis	Z	4	0+0	*	PV
2313991	Bachelor Thesis Ivo Bukovský, Václav Bauma, Petr Beneš, Martin Nečas, Zdeněk Neusser, Jan Pelikán, Pavel Steinbauer, Zbyněk Šika, Michael Valásek, Michael Valásek Michael Valásek (Gar.)	Z	4	0+0	*	PV
2113991	Bachelor Thesis Miloslav Vilímek, Milan Růžička, Miroslav Španiel, Matej Daniel, Lukáš Horný, Ctírad Novotný, Jan Rezníček, Karel Doubrava, Vlastimil Králík, Miroslav Španiel Milan Růžička (Gar.)	Z	4	0+0	*	PV
2363991	Bachelor Thesis Jan Hošek Jan Hošek Jan Hošek (Gar.)	Z	4	0+0	*	PV
2213991	Bachelor Thesis Petr Hatschbach Petr Hatschbach (Gar.)	Z	4	0+0	*	PV
2153991	Bachelor Thesis Matěj Vodička, Pavel Zácha, Václav Dostál, Ondřej Bartoš, Pavlína Zimmermannová, Tomáš Dlouhý, Michal Kolovratník, Pavel Novák, Jan Havlík, Ladislav Veselý Michal Kolovratník (Gar.)	Z	4	0+0	*	PV
2223991	Bachelor Thesis Pavel Hospodář, Jaroslav Kousal, Ivan Jeřábek, Jan Klesa, Jaromír Kučera, Jiří Brabec Jiří Brabec	Z	4	0+0	*	PV
2323991	Bachelor thesis Elena Čízmárová, Jakub Horník, Zdeňka Jeníková, Petr Zuna, Jana Sobotová, Libor Beneš, Ladislav Cvrček, Zdeněk Tolde, Jiří Janovec, Zdeněk Tolde Petr Špatenka (Gar.)	Z	4	0+0	*	PV
2183991	Bachelor Thesis Radek Šulc, Martin Dostál, Jan Skočilas, Tomáš Jirout, Jiří Moravec, Lukáš Krátký, Jaromír Štancl, Karel Petera Tomáš Jirout Tomáš Jirout (Gar.)	Z	4	0+0	*	PV
2383991	Bachelor Thesis Vladimír Žáček, Michal Kavan, Vladimír Brdek, Petr Žemlička, Josef Košťálek, Dagmar Charvátová, Ladislav Vaníš, František Freiberg, Miroslav Žilka, František Freiberg František Freiberg (Gar.)	Z	4	0+0	*	PV
2333991	Bachelor Thesis Aleš Herman, Barbora Bryksí Stunová, František Tatiček, Martin Kubelka, Jan Suchánek, Ladislav Kolařík, Pavel Rohan, Petr Vondrouš, Karel Kovanda, Ladislav Kolařík Aleš Herman (Gar.)	Z	4	0+0	*	PV
2013991	Bachelor Thesis Tomáš Bodnár, Jiří Fürst, Jan Halama, Vladimír Prokop, Petr Sváček, Jiří Holman, Jan Karel, Ivana Linkeová, Jakub Šístek,	Z	4	0+0	*	PV
2353991	Bachelor Thesis	Z	4	0+0	*	PV

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

2123991	Bachelor Thesis	Z	4
2133991	Bachelor Thesis	Z	4
2163991	Bachelor Thesis	Z	4
Bachelor Thesis is final individual work. This work checks ability of logical independent technical thinking and treatment with technical materials. There is applied acquired knowledge from previous study periods.			
2343991	Bachelor thesis	Z	4
Work on specialized tasks related to the focus of a thesis.			
2373991	Bachelor Thesis	Z	4
Each student will solve his individual theme under guiding of his individual supervising department specialist. Result is his/her bachelor thesis.			
2313991	Bachelor Thesis	Z	4
Individual assignment			
2113991	Bachelor Thesis	Z	4
2363991	Bachelor Thesis	Z	4
2213991	Bachelor Thesis	Z	4
2153991	Bachelor Thesis	Z	4
2223991	Bachelor Thesis	Z	4
2323991	Bachelor thesis	Z	4
Development of the bachelor thesis on an assignment under the supervision.			
2183991	Bachelor Thesis	Z	4
2383991	Bachelor Thesis	Z	4
Work on specialized tasks related to the focus of a thesis.			
2333991	Bachelor Thesis	Z	4
2013991	Bachelor Thesis	Z	4
2353991	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 doporučené semináře

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

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	0+2	1	v
2016007	Mathematics I. - Seminar Jan Valášek, Hynek Řezníček, Luděk Beneš, Tomáš Bodnár, Radka Keslerová, Olga Majlingová, František Mráz, Tomáš Neustupa, Milana Kittlerová Radka Keslerová František Mráz (Gar.)	Z	2	0+2	1	v

Characteristics of the courses of this group of Study Plan: Code=12B1V-DOP SEMI Name=05 2012 doporučené semináře**

2026016	Physics - Seminar	Z	2
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 doporučené 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 Eliška Vítková, Ilona Šimice, Nina Procházková Ayyub Nina Procházková Ayyub Nina Procházková Ayyub (Gar.)	Z	2	0+2	*	v
2046156	English Conversation Eliška Vítková, Ilona Šimice, Nina Procházková Ayyub Nina Procházková Ayyub	Z	2	0+2	L	v
2046070	English - Lower Intermediate Eliška Vítková, Zuzana Kalinová, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Zuzana Kalinová (Gar.)	Z	2	0+2	Z	v
2046071	English - Lower Intermediate Eliška Vítková, Zuzana Kalinová, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Michaela Schusová	Z	2	0+2	L	v
2046074	English - Advanced Eliška Vítková, Zuzana Kalinová, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Zuzana Kalinová (Gar.)	Z	2	0+2	Z	v
2046075	English - Advanced Eliška Vítková, Zuzana Kalinová, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Michaela Schusová	Z	2	0+2	L	v
2046073	English - Upper Intermediate Eliška Vítková, Zuzana Kalinová, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Michaela Schusová	Z	2	0+2	L	v
2046072	English - Upper Intermediate Eliška Vítková, Zuzana Kalinová, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Zuzana Kalinová (Gar.)	Z	2	0+2	Z	v
2046068	English - Beginners Eliška Vítková, Zuzana Kalinová, Michaela Schusová, Ilona Šimice, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Zuzana Kalinová (Gar.)	Z	2	0+2	Z	v
2046069	English - Beginners Eliška Vítková, Zuzana Kalinová, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Michaela Schusová	Z	2	0+2	L	v
2046126	Czech Lower Intermediate Jaroslava Kommová	Z	2	0+2	L	v
2046125	Czech Lower Intermediate Ilona Šimice, Jaroslava Kommová, Petr Laurich Jaroslava Kommová Jaroslava Kommová (Gar.)	Z	2	0+2	Z	v
2046117	Czech -Advanced Ilona Šimice, Jaroslava Kommová, Petr Laurich Jaroslava Kommová Jaroslava Kommová (Gar.)	Z	2	0+2	Z	v
2046118	Czech -Advanced Eliška Vítková Jaroslava Kommová	Z	2	0+2	L	v
2046128	Czech - Upper Intermediate Eliška Vítková Jaroslava Kommová	Z	2	0+2	L	v
2046127	Czech - Upper Intermediate Ilona Šimice, Jaroslava Kommová, Petr Laurich Jaroslava Kommová Jaroslava Kommová (Gar.)	Z	2	0+2	Z	v
2046119	Czech Language for Beginners I. Ilona Šimice, Jaroslava Kommová, Petr Laurich Jaroslava Kommová Jaroslava Kommová (Gar.)	Z	2	0+2	Z	v
2046120	Czech Language for Beginners II. Eliška Vítková Jaroslava Kommová	Z	2	0+2	L	v
2046086	French - Lower Intermediate Course Eliška Vítková, Dušana Jirovská Eliška Vítková Eliška Vítková (Gar.)	Z	2	0+2	Z	v
2046087	French - Lower Intermediate Course Eliška Vítková, Dušana Jirovská Eliška Vítková	Z	2	0+2	L	v
2046090	French - Advanced Eliška Vítková, Dušana Jirovská Eliška Vítková Eliška Vítková (Gar.)	Z	2	0+2	Z	v
2046091	French - Advanced Eliška Vítková, Dušana Jirovská Eliška Vítková	Z	2	0+2	L	v
2046088	French - Upper Intermediate Eliška Vítková, Dušana Jirovská Eliška Vítková Eliška Vítková (Gar.)	Z	2	0+2	Z	v
2046089	French - Upper Intermediate Eliška Vítková, Dušana Jirovská Eliška Vítková	Z	2	0+2	L	v
2046085	French - Beginners' Course Eliška Vítková, Dušana Jirovská Eliška Vítková	Z	2	0+2	L	v
2046084	French - Beginners Eliška Vítková, Dušana Jirovská Eliška Vítková Eliška Vítková (Gar.)	Z	2	0+2	Z	v
2146060	Indonesian Language Course for Exchange	Z	2	0+2	*	v

2146061	Technical Indonesian - Course I.	Z	2	0+2	Z	v
2144062	Technical Indonesian - Course II.	Z,ZK	3	1+2	L	v
2046078	German - Lower Intermediate Course <i>Eliška Vítková, Jaroslava Kormmová, Petr Laurich Jaroslava Kormmová Eliška Vítková (Gar.)</i>	Z	2	0+2	Z	v
2046079	German - Lower Intermediate Course <i>Eliška Vítková, Jaroslava Kormmová, Petr Laurich Jaroslava Kormmová</i>	Z	2	0+2	L	v
2046083	German - Advanced Course <i>Eliška Vítková, Jaroslava Kormmová, Petr Laurich</i>	Z	2	0+2	L	v
2046082	German - Advanced Course <i>Eliška Vítková, Jaroslava Kormmová, Petr Laurich Jaroslava Kormmová Eliška Vítková (Gar.)</i>	Z	2	0+2	Z	v
2046080	German - Upper Intermediate Course <i>Eliška Vítková, Jaroslava Kormmová, Petr Laurich Jaroslava Kormmová Eliška Vítková (Gar.)</i>	Z	2	0+2	Z	v
2046081	German - Upper Intermediate Course <i>Eliška Vítková, Jaroslava Kormmová, Petr Laurich Jaroslava Kormmová</i>	Z	2	0+2	L	v
2046077	German - Beginners <i>Eliška Vítková, Jaroslava Kormmová, Petr Laurich Jaroslava Kormmová</i>	Z	2	0+2	L	v
2046076	German - Beginners <i>Eliška Vítková, Jaroslava Kormmová, Petr Laurich Jaroslava Kormmová Petr Laurich (Gar.)</i>	Z	2	0+2	Z	v
2046161	Presentations in English <i>Eliška Vítková, Zuzana Kalinová, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub Michaela Schusová Michaela Schusová (Gar.)</i>	Z	2	0+2	*	v
2046166	Presentations in Czech <i>Eliška Vítková, Jaroslava Kormmová, Petr Laurich Jaroslava Kormmová Petr Laurich (Gar.)</i>	Z	2	0+2	*	v
2046162	Presentations in German <i>Eliška Vítková, Jaroslava Kormmová, Petr Laurich Jaroslava Kormmová Eliška Vítková (Gar.)</i>	Z	2	0+2	*	v
2046164	Presentations in Russian <i>Eliška Vítková, Dušana Jirovská Eliška Vítková Dušana Jirovská (Gar.)</i>	Z	2	0+2	*	v
2046163	Presentations in French language <i>Eliška Vítková, Dušana Jirovská Eliška Vítková Dušana Jirovská (Gar.)</i>	Z	2	0+2	*	v
2046165	Presentations in Spanish <i>Eliška Vítková Eliška Vítková</i>	Z	2	0+2	*	v
2046138	Russian - Lower Intermediate Course <i>Eliška Vítková, Hana Volejníková, Dušana Jirovská</i>	Z	2	0+2	L	v
2046137	Russian - Lower Intermediate Course <i>Eliška Vítková, Hana Volejníková, Dušana Jirovská Eliška Vítková (Gar.)</i>	Z	2	0+2	Z	v
2046141	Russian - Advanced <i>Eliška Vítková, Hana Volejníková, Dušana Jirovská Dušana Jirovská (Gar.)</i>	Z	2	0+2	Z	v
2046142	Russian - Advanced <i>Eliška Vítková, Hana Volejníková, Dušana Jirovská</i>	Z	2	0+2	L	v
2046140	Russian - Upper Intermediate <i>Eliška Vítková, Hana Volejníková, Dušana Jirovská</i>	Z	2	0+2	L	v
2046139	Russian - Upper Intermediate <i>Eliška Vítková, Hana Volejníková, Dušana Jirovská Eliška Vítková (Gar.)</i>	Z	2	0+2	Z	v
2046136	Russian - Beginners <i>Eliška Vítková, Hana Volejníková, Dušana Jirovská</i>	Z	2	0+2	L	v
2046135	Russian - Beginners <i>Eliška Vítková, Hana Volejníková, Dušana Jirovská Eliška Vítková (Gar.)</i>	Z	2	0+2	Z	v
2046099	Spanish - Lower Intermediate <i>Eliška Vítková, Jaime Andrés Villagómez</i>	Z	2	0+2	L	v
2046098	Spanish - Lower Intermediate <i>Eliška Vítková, Jaime Andrés Villagómez Eliška Vítková (Gar.)</i>	Z	2	0+2	Z	v
2046096	Spanish - Beginners <i>Eliška Vítková, Jaime Andrés Villagómez Eliška Vítková (Gar.)</i>	Z	2	0+2	Z	v
2046097	Spanish - Beginners <i>Eliška Vítková, Jaime Andrés Villagómez</i>	Z	2	0+2	L	v

Characteristics of the courses of this group of Study Plan: Code=12B1V-DOP ZJK Name=06 2012 doporučené základní jazykové kurzy a prezentace**

2046155	English Conversation Improving communicative skills in speaking on general topics and general technical topics.	Z	2
2046156	English Conversation Improving communicative skills in speaking on general topics and general technical topics.	Z	2
2046070	English - 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language. A1 - A2.	Z	2
2046071	English - Lower Intermediate Mapped 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 familiar topics. reading and comprehension of simple texts. Improvement of professional language.	Z	2

2046074	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 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. B1 - B2.			
2046075	English - Advanced	Z	2
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.			
2046073	English - Upper Intermediate	Z	2
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 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.			
2046072	English - Upper Intermediate	Z	2
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.			
2046068	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			
2046069	English - Beginners	Z	2
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	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 familiar 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
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 current issues and popular scientific and technical articles.			
2046118	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.			
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 knowledge technical language.			
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.			
2046119	Czech Language for Beginners I.	Z	2
Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)			
2046120	Czech Language for Beginners II.	Z	2
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).			
2046086	French - Lower Intermediate Course	Z	2
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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046087	French - Lower Intermediate Course	Z	2
Mapped to the level of Common European Framework of Reference: A2 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046090	French - Advanced	Z	2
Comprehension of spoken language as well as lectures in French 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 current issues and popular scientific and technical articles.			
2046091	French - Advanced	Z	2
Mapped to the level of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in French 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 current issues and popular scientific and technical articles.			
2046088	French - 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.			
2046089	French - Upper Intermediate	Z	2
Mapped to the level of Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students comes across at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding general and technical texts.			
2046085	French - Beginners' Course	Z	2
Mapped to the level of Common European Framework of Reference: A1 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046084	French - Beginners	Z	2
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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2146060	Indonesian Language Course for Exchange	Z	2
Basic of Indonesian Language for Student Exchange Program to Indonesia			

2146061	Technical Indonesian - Course I. Second part of Indonesian Language for Student Exchange Program to Indonesia	Z	2
2144062	Technical Indonesian - Course II. Basic of Indonesian Language for Student Exchange Program to Indonesia	Z,ZK	3
2046078	German - Lower Intermediate Course 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046079	German - Lower Intermediate Course Mapped to the level of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a student meets either at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046083	German - Advanced Course Mapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken German as well as lectures given in German 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.	Z	2
2046082	German - Advanced Course Comprehension of spoken language as well as lectures in German 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 current issues and popular scientific and technical articles.	Z	2
2046080	German - Upper Intermediate Course 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.	Z	2
2046081	German - Upper Intermediate Course Mapped to the level of Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students comes across at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding general and technical texts.	Z	2
2046077	German - Beginners Mapped to the level Common European Framework of Reference A1 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
2046076	German - Beginners Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)	Z	2
2046161	Presentations in English Preparing students to present in English on technical topics, with a possible co-operation with specialized departments.	Z	2
2046166	Presentations in Czech Preparing students to give presentations in English on technical topics, with a possible co-operation with specialized departments.	Z	2
2046162	Presentations in German Preparation for presenting technical topics in German, possibly in cooperation with specialized departments.	Z	2
2046164	Presentations in Russian Preparation for presenting technical topics in Russian, possibly in cooperation with specialized departments.	Z	2
2046163	Presentations in French language Preparation for presenting technical topics in French, possibly in cooperation with specialized departments.	Z	2
2046165	Presentations in Spanish Preparation for presenting technical topics in Spanish, possibly in cooperation with specialized departments.	Z	2
2046138	Russian - Lower Intermediate Course Mapped to the level of Common European Framework of Reference: A2 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046137	Russian - Lower Intermediate Course 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046141	Russian - Advanced 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 understanding texts concerning current issues and popular scientific and technical articles.	Z	2
2046142	Russian - Advanced Mapped to the level 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 understanding texts concerning current issues and popular scientific and technical articles.	Z	2
2046140	Russian - Upper Intermediate Mapped to the level of Common European Framework of Reference: A2 - B1 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.	Z	2
2046139	Russian - Upper Intermediate 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.	Z	2
2046136	Russian - Beginners Mapped to the level of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)	Z	2
2046135	Russian - Beginners Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)	Z	2
2046099	Spanish - Lower Intermediate Mapped to the level of Common European Framework of Reference A2 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046098	Spanish - Lower Intermediate 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2

2046096	Spanish - Beginners	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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046097	Spanish - Beginners	Z	2
Mapped to the Common European Framework of Reference Level A1. 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
2011009	Mathematics III An introductory course in ordinary differential equation and infinite series.	Z,ZK	5
2011021	Constructive Geometry The subject is focused on geometric objects in the space - curves, surfaces and solids and their properties and mutual relations.	Z,ZK	6
2011049	Numerical Mathematics	Z,ZK	4
2011056	Mathematics I Introduction to linear algebra, analytic geometry of straight lines and planes in E3, calculus of functions of one variable	Z,ZK	8
2011062	Matematika II. 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.	Z,ZK	8
2012035	Algorithmization and Programming Fundamentals Students are acquainted with programming language C and exercised at basic problems of numerical mathematics.	KZ	4
2012037	Computer Graphics	KZ	3
2012091	Project	KZ	2
2013991	Bachelor Thesis	Z	4
2016007	Mathematics I. - Seminar	Z	2
201A009	Mathematics III.A	ZK	2
201A021	Constructive Geometry A The subject is focused on geometric objects in the space - curves, surfaces and solids and their properties and mutual relations.	ZK	3
201A049	Numerical Mathematics A	ZK	2
201A056	Mathematics I.A Introduction to linear algebra, analytic geometry of straight lines and planes in E3, calculus of functions of one variable	ZK	4
201A062	Mathematics II.A 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.	ZK	4
2021025	Physics II. 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 nature 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.	Z,ZK	4
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, measurements of 11 various experiments related to the lectures.	Z,ZK	7
2026016	Physics - Seminar The subject is mainly meant for high-school students for repetition of high-school physics.	Z	2
202A025	Physics II.A 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 nature 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.	ZK	2
202A041	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, measurements of 11 various experiments related to the lectures.	ZK	3
2041061	English-Bachelor Exam 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 report and an essay, to read technical texts, to master grammar at advanced level.	Z,ZK	2

2041062	German - Bachelor Exam / FME	Z,ZK	2
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 report and an essay, to read technical texts, to master grammar at advanced level.			
2041063	French - Bachelor Exam /FME	Z,ZK	2
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 report and an essay, to read technical texts, to master grammar at advanced level.			
2041064	Spanish - Bachelor Exam / FME	Z,ZK	2
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 report and an essay, to read technical texts, to master grammar at advanced level.			
2041065	Russian - Bachelor Exam / FME	Z,ZK	2
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 report and an essay, to read technical texts, to master grammar at advanced level.			
2046068	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			
2046069	English - Beginners	Z	2
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).			
2046070	English - 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language. A1 - A2.			
2046071	English - Lower Intermediate	Z	2
Mapped 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 familiar topics. reading and comprehension of simple texts. Improvement of professional language.			
2046072	English - Upper Intermediate	Z	2
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.			
2046073	English - Upper Intermediate	Z	2
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 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.			
2046074	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 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. B1 - B2.			
2046075	English - Advanced	Z	2
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.			
2046076	German - Beginners	Z	2
Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)			
2046077	German - Beginners	Z	2
Mapped to the level Common European Framework of Reference A1 Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language).			
2046078	German - Lower Intermediate Course	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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046079	German - Lower Intermediate Course	Z	2
Mapped to the level of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a student meets either at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. reading and comprehension of simple texts. Improvement of professional language.			
2046080	German - Upper Intermediate Course	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.			
2046081	German - Upper Intermediate Course	Z	2
Mapped to the level of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar topics, that a students comes across at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding general and technical texts.			
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 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.			
2046083	German - Advanced Course	Z	2
Mapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken German as well as lectures given in German 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.			
2046084	French - Beginners	Z	2
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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046085	French - Beginners' Course	Z	2
Mapped to the level of Common European Framework of Reference: A1 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046086	French - Lower Intermediate Course	Z	2
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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			

2046087	French - Lower Intermediate Course Mapped to the level of Common European Framework of Reference: A2 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046088	French - Upper Intermediate 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.	Z	2
2046089	French - Upper Intermediate Mapped to the level of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar topics, that a students comes across at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding general and technical texts.	Z	2
2046090	French - Advanced Comprehension of spoken language as well as lectures in French 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.	Z	2
2046091	French - Advanced Mapped to the level of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in French 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.	Z	2
2046096	Spanish - Beginners 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046097	Spanish - Beginners Mapped to the Common European Framework of Reference Level A1. 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046098	Spanish - Lower Intermediate 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046099	Spanish - Lower Intermediate Mapped to the level of Common European Framework of Reference A2 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046117	Czech -Advanced 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.	Z	2
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.	Z	2
2046119	Czech Language for Beginners I. Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)	Z	2
2046120	Czech Language for Beginners II. 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
2046125	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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046126	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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046127	Czech - Upper Intermediate 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.	Z	2
2046128	Czech - Upper Intermediate 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 knowledge technical language.	Z	2
2046135	Russian - Beginners Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)	Z	2
2046136	Russian - Beginners Mapped to the level of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)	Z	2
2046137	Russian - Lower Intermediate Course 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046138	Russian - Lower Intermediate Course Mapped to the level of Common European Framework of Reference: A2 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 familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	2
2046139	Russian - Upper Intermediate 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.	Z	2
2046140	Russian - Upper Intermediate Mapped to the level of Common European Framework of Reference: A2 - B1 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.	Z	2

2046141	Russian - Advanced 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 understanding texts concerning current issues and popular scientific and technical articles.	Z	2
2046142	Russian - Advanced Mapped to the level 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 understanding texts concerning current issues and popular scientific and technical articles.	Z	2
2046155	English Conversation Improving communicative skills in speaking on general topics and general technical topics.	Z	2
2046156	English Conversation Improving communicative skills in speaking on general topics and general technical topics.	Z	2
2046161	Presentations in English Preparing students to present in English on technical topics, with a possible co-operation with specialized departments.	Z	2
2046162	Presentations in German Preparation for presenting technical topics in German, possibly in cooperation with specialized departments.	Z	2
2046163	Presentations in French language Preparation for presenting technical topics in French, possibly in cooperation with specialized departments.	Z	2
2046164	Presentations in Russian Preparation for presenting technical topics in Russian, possibly in cooperation with specialized departments.	Z	2
2046165	Presentations in Spanish Preparation for presenting technical topics in Spanish, possibly in cooperation with specialized departments.	Z	2
2046166	Presentations in Czech Preparing students to give presentations in English on technical topics, with a possible co-operation with specialized departments.	Z	2
2112091	Project	KZ	2
2113991	Bachelor Thesis	Z	4
2121023	Thermodynamics The course deal with a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. Basic concepts and principles are introduced, and they are applied mostly to systems behaving as ideal gases or typical vapours. Basic notions associated with ideal mixtures are studied with an emphasis on psychometrics. Heat transfer covers fundamentals of conduction, convection and radiation. Heat exchangers are treated as an engineering application. Exercises and labs are devoted to practical problems and experimental technique.	Z,ZK	5
2121500	Fluid Dynamics The basic course in fluid dynamics deals with fundamental laws of hydrostatics and hydrodynamics and their application on the basic problems, as 1D flow in ducts, estimation of pressure losses, simplified solution of unsteady flow. Basic information on more complicated problems (laminar and turbulent flow, boundary layer theory, flow separation) are introduced as well.	Z,ZK	5
2122091	Department Project The content of the subject is given by the topic of bachelor's work after consultation with supervisor of bachelor's work or the tutor of the department.	KZ	2
2123991	Bachelor Thesis	Z	4
212A023	Thermodynamics A The course deal with a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. Basic concepts and principles are introduced, and they are applied mostly to systems behaving as ideal gases or typical vapours. Basic notions associated with ideal mixtures are studied with an emphasis on psychometrics. Heat transfer covers fundamentals of conduction, convection and radiation. Heat exchangers are treated as an engineering application. Exercises and labs are devoted to practical problems and experimental technique	ZK	2
212A500	Fluid Dynamics A The basic course in fluid dynamics deals with fundamental laws of hydrostatics and hydrodynamics and their application on the basic problems, as 1D flow in ducts, estimation of pressure losses, simplified solution of unsteady flow. Basic information on more complicated problems (laminar and turbulent flow, boundary layer theory, flow separation) are introduced as well.	ZK	3
2131002	Engineering Design II 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.	Z,ZK	4
2131005	History of Technology Development of human knowledge in the domain of science and technology in the retrospective of the development of our civilization. Emphasis is given upon new branches of technology with special attention to the contribution of mining, iron metallurgy, power engineering, transportation and of the machine industry in the narrower sense of the word.	ZK	3
2131026	Machine Elements and Mechanisms II Preliminary design, design calculations and application of axles and shafts, sliding and rolling bearings, shaft connections, elements of crank mechanism, pipelines and their accessories and fittings.	ZK	3
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.	Z,ZK	6
2132001	Engineering Design I. Basic of technical representation, dimensioning and tolerancing	KZ	2
2132091	Branch Project	KZ	2
2133013	Engineering Design III. Design of assembly unit (draft drawing, detail drawing, assembly drawing, technical report)	Z	2
2133014	Engineering Design IV.	Z	2
2133025	Design Design, design calculations and their applications in case of geared transmissions, axles and shafts, sliding and rolling bearings, shaft couplings and clutches.	Z	4
2133991	Bachelor Thesis	Z	4

2141504	Electric Circuits and Electronics 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.	Z,ZK	4
2141505	Electrical machines and drives AC el. circuits. 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.	Z,ZK	4
2144062	Technical Indonesian - Course II. Basic of Indonesian Language for Student Exchange Program to Indonesia	Z,ZK	3
2146060	Indonesian Language Course for Exchange Basic of Indonesian Language for Student Exchange Program to Indonesia	Z	2
2146061	Technical Indonesian - Course I. Second part of Indonesian Language for Student Exchange Program to Indonesia	Z	2
2152091	Departmental Project	KZ	2
2153005	Fundamentals of Energy Conversions	Z	1
2153991	Bachelor Thesis	Z	4
2162091	Project Student will be informed about basics of environmental engineering and creation of thermal comfort.	KZ	2
2163991	Bachelor Thesis Bachelor Thesis is final individual work. This work checks ability of logical independent technical thinking and treatment with technical materials. There is applied acquired knowledge from previous study periods.	Z	4
2181026	Momentum, Mass and Heat Transfer 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.	Z,ZK	5
2182019	Chemistry 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.	KZ	3
2182091	Project Absolvent se seznámí se základy oboru Procesní technika.	KZ	2
2183991	Bachelor Thesis	Z	4
2212091	Branch Project Basic practical skills of work with advanced CAD/CAE/CAM systems. Project training in solution of design task based on industry requirements.	KZ	2
2213991	Bachelor Thesis	Z	4
2222091	Project	KZ	2
2223991	Bachelor Thesis	Z	4
2311101	Mechanics I.	Z,ZK	4
2311102	Mechanics II. 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. Transmission mechanisms with gears. Strutting and seeing in mechanisms. Cable mechanisms.	Z,ZK	4
2311107	Mechanics III.	Z,ZK	7
2312091	Project Individual assignment	KZ	2
2313991	Bachelor Thesis Individual assignment	Z	4
231A101	Mechanics I.A	ZK	2
231A102	Mechanics II.A	ZK	2
231A107	Mechanics III.A	ZK	4
2321039	Materials Science II. Fundamentals of metallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and thermo-mechanical processing, technical iron-carbon alloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials.	Z,ZK	4
2322029	Materials Science I. 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.	KZ	3
2322091	Project 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 studied literature with particular emphasis on experimental technologies which can be applied in their bachelor theses. They can also mention a planned experiment or evaluate hitherto obtained knowledge or results.	KZ	2
2323991	Bachelor thesis Development of the bachelor thesis on an assignment under the supervision.	Z	4
2332091	Project	KZ	2
2333991	Bachelor Thesis	Z	4
2342091	Project Work on specialized tasks.	KZ	2

2343991	Bachelor thesis Work on specialized tasks related to the focus of a thesis.	Z	4
2352091	Specialization Project	KZ	2
2353991	Bachelor Thesis	Z	4
2362091	Project	KZ	2
2363991	Bachelor Thesis	Z	4
2371047	Automatic Control 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 seminars 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.	Z,ZK	5
2372041	Computer Support for Study 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.	KZ	3
2372083	Measurement in Engineering Overview of sensor principles for measurement of non-electrical variables (temperature, position, force, speed, acceleration, torque). Calibration and verification of measurement instruments.	KZ	3
2372091	Project An individual project from the branch of specialisation, which student will study on his/her magister level	KZ	2
2373991	Bachelor Thesis Each student will solve his individual theme under guiding of his individual supervising department specialist. Result is his/her bachelor thesis.	Z	4
2381054	Enterprise Management and Economics The course is designed to give students the understanding of economic principles. The economical part of the course is consisted from: explanation of relationship between costs and revenues, expenses and income, concept of investment and calculations per product, presentation how to assemble a basic operating budget and explanation of the basic structure of the financial statements. The management introduces the basic managerial functions and their contents, the uses of network analysis in project management, with the application of multi-criteria decision, the basics of marketing and strategic management.	Z,ZK	4
2382091	Specialization Project	KZ	2
2383001	Fundamentals of Law 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	Z	2
2383008	Managerial Psychology	Z	2
2383009	Communication and Dealing with People Goal of the course is to explain to the students, that communication became a part of qualification of every modern employee and manager as well. The base of interpersonal communication is rhetoric, which develops itself from classical school in ancient Greece to modern school in Europe and in the world. Course concerns mainly in the analysis of monologue (presentation) and dialogue (how to deal in trade). Course explains nonverbal communication and methods of self improving of own rhetorical art.	Z	2
2383019	Philosophical Issues Of Individual and Science	Z	2
2383991	Bachelor Thesis Work on specialized tasks related to the focus of a thesis.	Z	4
K331068	Technology I Foundry properties of metals. Treatment. Pouring. Casting solidification. Moulding and core making. Thermal treatment. Plastic deformation. Division of forming processes. Semi-products, heating-up. Cutting. Cold and hot forming. Welds. Weldability. Weldment testing. Thermal cutting. Brasing. Surface treatment.	Z,ZK	5
K333038	Fundamentals of Technology I. 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.	Z	3
K341014	Technology II.	Z,ZK	5

For updated information see <http://bilakniha.cvut.cz/en/FF.html>

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