Study plan

Name of study plan: 07 40 45 50 DSTR IAT 2012 K základ

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Bachelor of Mechanical Engineering

Type of study: Bachelor combined

Required credits: 101

Elective courses credits: 137 Sum of credits in the plan: 238

Note on the plan: SP12DSTR-K MUSTR # SP12DSTR-TZP-K # SP12BSTR-TZP-K # první pokus

Name of the block: Compulsory courses in the program

Minimal number of credits of the block: 54

The role of the block: P

Code of the group: 12BS*7P-IAT

Name of the group: 12 2012 BSTR 7.sem povinné IAT

Requirement credits in the group: In this group you have to gain 29 credits

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

Credits in the group: 29 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
2361097	Design of Instruments Jan Hošek Jan Hošek Jan Hošek (Gar.)	Z,ZK	5	3P+1C	*	Р
2371710	Computer Simulation Models	Z,ZK	4	2P+2C	*	Р
2373712	Project Vladimír Hlavá Vladimír Hlavá (Gar.)	Z	3	0P+2C	*	Р
2371524	Means of Automatic Control Jan Chyský, Marie Martinásková Marie Martinásková Jan Chyský (Gar.)	Z,ZK	5	3P+0C+2L	*	Р
2371126	Programmable Controller Applications Jakub Jura Jakub Jura Jakub Jura (Gar.)	Z,ZK	4	2P+0C+2L	*	Р
2362502	Technical optics Jií áp, Šárka N mcová Jií áp Jií áp (Gar.)	KZ	3	2P+15C+05L	*	Р

Characteristics of the courses of this group of Study Plan: Code=12BS*7P-IAT Name=12 2012 BSTR 7.sem povinné IAT

2361097	Design of Instruments	Z,ZK	5
Basics of instruments	design.		
2371710	Computer Simulation Models	Z,ZK	4
The course provides a	basic knowledge on formulation and computer implementation of dynamical system models. It starts from theoretical issues	of Laplace and Z t	ransform in their
application to describing	ng the continuous and discrete linear systems respectively. A particular emphasis is given on the skills in describing the dynar	nic processes in the	he state space
approach in both linea	r and non-linear systems.		
2373712	Project	Z	3
Breaf introduction to th	SmartPlant projection software. The project from the informatics in the second half of this subject		.

Breaf introduction to the SmartPlant projection software. The project from the informatics in the second half of this subject.

2371524 | Means of Automatic Control | Z,ZK | 5

Various categories of means for automatic control according to the different criterions. Main features in each category. Air and hydraulic fluid as a medium for information transfer.

Symbols and descriptions in pneumatic and hydraulic diagrams. Pneumatic control systems design. Pneumatic actuators, valves, special pneumatic, electropneumatic devices. Control valves, categories, dimensioning, design, applications. Inteligent pneumatics as an integration of pneumatic, electronic and control components and systems. Valve islands and terminals, standard, with industrial buses communication, programmable. Pneumatic positioning systems.

2371126 Programmable Controller Applications Z,ZK 4

Logic control, Theory of finite automaton - introduction, Petri nets -application for industrial processes control. Programmable Logic Controller (PLC), PLCs in distributed control systems, type sof PLC and application areas. Function principles of PLC, configuration, HW structure of PLC, PLC software. Standard IEC 1131-3: software, program mand communication model, common elements of programming languages, standard and derived functions and function blocks, structuring resource - sequential function diagram (SFC), programming languages LD, IL, ST and FBD. Control applications design -methodology. Software tools for PLC programming. Industrial processes visualization. Systems of PLCs, networking of PLCs, communication possibilities of PLCs. Industrial communication standards (Profibus, ASi). Laboratory exercises on technological models via PLCs: Teco, Festo, Schneider Electric, Siemens.

2362502 | Technical optics | KZ | 3

The course gives a thorough interpretation of the principle of image forming by planar and spherical surfaces under the laws of geometric optics. It also deals with monochromatic and colour aberrations and basic visual instruments.

Code of the group: 12BS*8P-IAT

Name of the group: 13 2012 BSTR 8.sem povinné IAT

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

Requirement courses in the group: In this group you have to complete 6 courses

Credits in the group: 25 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
2362503	Applied Optics Jií áp, Šárka N mcová Jií áp Jií áp (Gar.)	KZ	4	2P+15C+05L	*	Р
2141519	Electrical Measurement and Diagnostics	Z,ZK	4	2P+0C+1L	*	Р
2372507	Informatic systems Filip Zámek Filip Zámek (Gar.)	KZ	4	2P+2C	*	Р
2141006	Embedded systems Jan Chyský	Z,ZK	4	2P+0C+2L	*	Р
2361005	Instrumental Technology	Z,ZK	4	2P+0C+2L	*	Р

Characteristics of the courses of this group of Study Plan: Code=12BS*8P-IAT Name=13 2012 BSTR 8.sem poyinné IAT

Characteristics of	The courses of this group of Study Flan. Code=1283 oF-IAT Name=13 2012 B3TK 6.Sem p	OVIIIIE IAI					
2362503	Applied Optics	KZ	4				
The course introduces	students to the functions of basic optical instruments and shows their applications.		•				
2141519	Electrical Measurement and Diagnostics	Z,ZK	4				
The transmission of signals in measure systems. Electromagnetic compatibility. Electronics measurements circuits and a conversion of signal for the transmission.							
2372507	Informatic systems	KZ	4				
Meanings of Information	n. Information theory. Channel capacity. Coding theory. Data coding, markup languages, XML. Cryptography. OSI Reference	Model. Transmissi	on media				
(metallic, optical, wirel	ess). Data link layer. Network layer, communication protocols, TCP/IP suite. Digitization of analog signals. Quantum informatio	n. Genetic informa	ation.				
2141006	Embedded systems	Z,ZK	4				
Computers and microo	omputers history. Block diagram of computer. Busses, processors, memories, input and output circuits. Single chip microcomp	uters, microcontro	ollers. Instruction				
set, machine code, as	sembler, ANSY-C language. Software and hardware tools for application developing. Simulator, emulator, logical analyzer. Cor	nputer interfaces.	Converters,				
digital input and outpu	. Analogous signal discretization, methods and errors of D/A and A/D conversion. Standard analogous signal. Interrupt syster	n. Practical labs a	re focused on				
8051/52 microcompute	er family.						
2361005	Instrumental Technology	Z,ZK	4				
This subject gives stud	his subject gives students a detail review of technology used for instrumentation production.						

Code of the group: 12DSK1P-KMEN

Name of the group: 00 2012 D kmenové 1. semestr STR kombinované

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

Credits in the group: 0

Note on the group: 12B**1P-KMEN#

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2182019	Chemistry Radek Šulc, Martin Dostál, Vojt ch B lohlav, Stanislav Solna , Jan Sko ilas Radek Šulc Radek Šulc (Gar.)	KZ	3	2P+1C	1	Р
2011021	Constructive Geometry Ivana Linkeová	Z,ZK	6	3P+2C	*	Р
2383008	Managerial Psychology	Z	2	1P+1C	*	Р
2011056	Mathematics I Radka Keslerová, Marta Hlavová, Ji í Holman, Gejza Dohnal, Marta ertíková, Vladimír Hric, Nikola Pajerová, Petr Louda, Lukáš Hájek, Radka Keslerová Gejza Dohnal (Gar.)	Z,ZK	8	4P+4C	*	Р
2372041	Computer Support for Study Vladimír Hlavá	KZ	3	1P+1C	*	Р
2132001	Engineering Design I. Karel Petr	KZ	2	1P+2C	1	Р
2131005	History of Technology	ZK	3	2P+0C	1	Р
K333038	Fundamentals of Technology I.	Z	3	8B	*	Р

Characteristics of the courses of this group of Study Plan: Code=12DSK1P-KMEN Name=00 2012 D kmenové 1. semestr STR kombinované

2182019	Chemistry	KZ	3
General chemistry	from the point of view of mechanical and process engineering. Physical chemistry forms 2/3 of the course (structure and prope	rties of matter, therm	nodynamics,
phase equilibrium,	chemical reactions, reaction engineering), the remaining 1/3 is devoted to organic chemistry (hydrocarbons, polymers) and bio	chemistry. Laborator	y practice is
oriented upon the n	naterial properties measurement.		
2011021	Constructive Geometry	Z,ZK	6
The subject is focus	sed on geometric objects in the space - curves, surfaces and solids and their properties and mutual relations.	,	
2383008	Managerial Psychology	Z	2
2011056	Mathematics I	Z,ZK	8
In the course, great	ter emphasis is placed on the theoretical basis of the concepts discussed and on the derivation of basic relationships and conn	ections between cor	cepts. Students
will also get to know	the procedures for solving problems with parametric input. In addition, students will gain extended knowledge in some thematic ar	eas: eigennumbers a	and eigenvectors
of a matrix, Taylor p	olynomial, integral as a limit function, integration of some special functions.		
2372041	Computer Support for Study	KZ	3
The course introduc	ces students into creating technical and professional documents on computers or Web and into realizing technical computations	with the use of comp	outers. Students
gain practical skills	by creating an essay in a text editor, by realizing technical computations with a spreadsheet calculator, and by creating technic	al-based WWW pag	e.
2132001	Engineering Design I.	KZ	2
Basic of technical r	epresentation, dimensioning and tolerancing	1 1	
2131005	History of Technology	ZK	3
Developement of h	uman knowledge in the domain of science and technology in the retrospective of the developement of our civilization. Emphasis	s is given upon new	branches of
technology with spe	ecial attention to the contribution of mining, iron metallurgy, power engineering, transportation and of the machine industry in th	e narrower sense of	the word.
K333038	Fundamentals of Technology I.	Z	3
Production process	es in engineering production. Technology of engineering production. Materials in engineering. Concepts of steel and cast iron,	technical metals. Pro	duction of pig
iron and steel. Cast	ing: modeling devices, molding materials, molding and castings. Foundry alloys. Overview of basic casting technology. Forming	technology. Hot and	d cold forging.
Free and drop forgi	ng. Rolling. Production of pipes. Bulk and sheet metal forming. Welding technology. The characteristics of the various types of v	velding. Fusion weld	ing: Flame
welding and arc we	Iding with coated electrodes. Thermal cutting.		

Code of the group: 12DSK2P-KMEN

Name of the group: 00 2012 D kmenové 2. semestr STR kombinované

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

Credits in the group: 0

Note on the group:

12B**2P-KMEN#

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2021041	Physics I.	Z,ZK	7	4P+1L	*	Р
2011062	Matematika II. Radka Keslerová	Z,ZK	8	4P+4C	*	Р
2322029	Materials Science I. Jakub Horník, Jana Sobotová, Ji í Cejp, Elena ižmárová, Pavlína Hájková, Stanislav Krum, Jan Kr il, Vladimír Mára, Lucie Pilsová, Jana Sobotová Jana Sobotová (Gar.)	KZ	3	2P+1L	2	Р
2012037	Computer Graphics Marta Hlavová, Ji í Holman, Nikola Pajerová, Martin Hanek, Jan Karel, Ivana Linkeová, Jaroslav Cibulka Ivana Linkeová	KZ	3	1P+1C	*	Р
2131002	Engineering Design II Martin Dub, Jan Flek, Martin Havlí ek, Jan Kanaval, Karel Petr, Marek Štádler, Jan Holdekr Karel Petr Karel Petr (Gar.)	Z,ZK	4	2P+3C	2	Р

Characteristics of the courses of this group of Study Plan: Code=12DSK2P-KMEN Name=00 2012 D kmenové 2. semestr STR kombinované

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.

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.

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.

,	9,						
2012037	Computer Graphics	KZ	3				
2131002	Engineering Design II	Z,ZK	4				
Principles of ISO GPS (Geometrical Products Specification). Students will get critical knowledge about ISO system of limits and fits, tolerancing, surface texture, geometrical tolerance.							

Principles of ISO GPS (Geometrical Products Specification). Students will get critical knowledge about ISO system of limits and fits, tolerancing, surface texture, geometrical tolerancing of immensional 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.

Code of the group: 12DSK3P-KMEN

Name of the group: 00 2012 D kmenové 3. semestr STR kombinované

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

Credits in the group: 0

Note on the group:

12B**3P-KMEN#

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2021025	Physics II.	Z,ZK	4	1P+2L	3	Р
2011009	Mathematics III Radka Keslerová, Ji í Holman, Gejza Dohnal, Marta ertíková, Vladimír Hric, Jan Valášek, Lud k Beneš, Tomáš Bodnár, Tomáš Neustupa, Stanislav Kra mar Stanislav Kra mar (Gar.)	Z,ZK	5	2P+2C	*	Р
2311101	Mechanics I. Pavel Bastl, Václav Bauma, Petr Beneš, Ivo Bukovský, Martin Ne as, Zden k Neusser, Jan Pelikán, Pavel Steinbauer, Zbyn k Šika, Michael Valášek Michael Valášek (Gar.)	Z,ZK	4	2P+2C	*	Р
2321039	Materials Science II. Jakub Horník, Jana Sobotová, Ji í Cejp, Elena ižmárová, Jan Walter, Pavlína Hájková, Stanislav Krum, Jan Kr il, Vladimír Mára, Stanislav Krum Jana Sobotová (Gar.)	Z,ZK	4	2P+2L	*	Р
2133013	Engineering Design III. Jan Kanaval, Jan Hoidekr, František Lopot, David Skalický, Roman Uhlí Jan Hoidekr Jan Hoidekr (Gar.)	Z	2	0P+2C	Z	Р
2121023	Thermodynamics	Z,ZK	5	3P+2C	*	Р
2012035	Algorithmization and Programming Fundamentals Ji i Holman, Marta ertíková, Vladimír Hric, Lukáš Hájek, Jan Halama, Vladimír Prokop, Martin Hanek, Jan Karel, Josef Musil, Petr Svá ek Petr Svá ek (Gar.)		4	1P+2C	*	Р

2021025	Physics II.	Z,ZK	4
Faraday's law of elec	ctromagnetic induction. Maxwell's equations, electromagnetic waves. Light, wave optics, geometrical optics. Quantum properties of	electromagnetic wa	aves. Interaction
of radiation with ma	tter. Photoelectric effect. Wave-particle mature of matter. Quantum-mechanical description of particle's motion. Hydrogen atom a	and periodic system	of elements.
Spectra, x-rays, ;las	er. Band theory of solids, semiconductors. Nucleus, radioactivity, sources of nuclear energy. Laboratories - measurements of 6 e	experiments related	to the lectures
2011009	Mathematics III	Z,ZK	5
An introductory cou	rse in ordinary differential equation and infinite series.		
2311101	Mechanics I.	Z,ZK	4
Mechanics I deals v	rith the basic concepts of statics. There are described the methods of solution of equilibrium of particles and rigid bodies and thei	ir systems with and	without friction
There are introduce	d the methods of description of position and motion of particles and rigid bodies.		
2321039	Materials Science II.	Z.ZK	4
		_,	•
Fundamentals of me	etallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal ar	1 ' 1	•
		1 ' 1	•
technical iron-carbo	etallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal ar	1 ' 1	•
technical iron-carbo	etallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and an alloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials.	nd thermo-mechani	ical processing,
technical iron-carbo 2133013 Design of assembly	etallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and alloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials. Engineering Design III.	nd thermo-mechani	ical processing,
technical iron-carbo 2133013 Design of assembly 2121023	etallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and nalloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials. Engineering Design III. unit (draft drawing, detail drawing, assembly drawing, technical report)	Z,ZK	ical processing,
technical iron-carbo 2133013 Design of assembly 2121023 The course deal wit	etallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and nalloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials. Engineering Design III. unit (draft drawing, detail drawing, assembly drawing, technical report) Thermodynamics	Z,ZK Basic concepts an	2 5 d principles are
technical iron-carbo 2133013 Design of assembly 2121023 The course deal wit introduced, and they	etallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and nalloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials. Engineering Design III. unit (draft drawing, detail drawing, assembly drawing, technical report) Thermodynamics h a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers.	Z Z,ZK Basic concepts an emphasis on	2 5 d principles are psychometrics.
technical iron-carbo 2133013 Design of assembly 2121023 The course deal wit introduced, and they	etallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and nalloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials. Engineering Design III. unit (draft drawing, detail drawing, assembly drawing, technical report) Thermodynamics h a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. The area applied mostly to systems behaving as ideal gases or typical vapours. Basic notions associated with ideal mixtures are studied we fundamentals of conduction, convection and radiation. Heat exchangers are treated as an engineering application. Exercises are	Z Z,ZK Basic concepts an emphasis on	2 5 d principles are
technical iron-carbo 2133013 Design of assembly 2121023 The course deal wit introduced, and they Heat transfer covers problems and exper	etallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and nalloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials. Engineering Design III. unit (draft drawing, detail drawing, assembly drawing, technical report) Thermodynamics h a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. The area applied mostly to systems behaving as ideal gases or typical vapours. Basic notions associated with ideal mixtures are studied we fundamentals of conduction, convection and radiation. Heat exchangers are treated as an engineering application. Exercises are	Z Z,ZK Basic concepts an emphasis on	2 5 d principles are psychometrics
technical iron-carbo 2133013 Design of assembly 2121023 The course deal wit introduced, and they Heat transfer covers problems and exper	etallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and nalloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials. Engineering Design III.	Z,ZK Basic concepts an with an emphasis on and labs are devoted	2 5 d principles are psychometrics to practical

and functions. Structure of program. Variables, expressions, assignment, and input / output commands. switch. For cycle. Arrays and files. Pointers. Structures. Algorithmization of simple programs: minimum, mean, norm, numerical integration, bisection method, Newton method, matrix operations. Direct methods for solution of systems of linear equations.

Code of the group: 12DSK4P-KMEN

Name of the group: 00 2012 D kmenové 4. semestr STR kombinované

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

Credits in the group: 0

Note on the group:

12B*K4P-KMEN #

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2311102	Mechanics II. Pavel Bastl, Václav Bauma, Petr Beneš, Ivo Bukovský, Martin Ne as, Zden k Neusser, Jan Pelikán, Pavel Steinbauer, Zbyn k Šika, Michael Valášek Václav Bauma (Gar.)	Z,ZK	4	2P+2C	*	Р
2121500	Fluid Dynamics	Z,ZK	5	3P+2C	*	Р
2011049	Numerical Mathematics Radka Keslerová, Ji í Holman, Marta ertíková, Vladimír Hric, Petr Louda, Lukáš Hájek, Jan Valášek, Lud k Beneš, Tomáš Bodnár, Petr Svá ek Petr Svá ek (Gar.)	Z,ZK	4	2P+2C	4	Р
2133014	Engineering Design IV. František Lopot František Lopot (Gar.)	Z	2	0P+2C	L	Р
K331068	Technology I	Z,ZK	5	16B	*	Р

Characteristics of the courses of this group of Study Plan: Code=12DSK4P-KMEN Name=00 2012 D kmenové 4. semestr STR kombinované

2011102	Wiconarios II.	۷,۷۱۸	-T						
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 v	vector method. Gr	aphical methods						
in kinematics. Basic the	ory of gearing. Transmition mechanisms with geers. Strutting and seezing 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 sepparatrion) are introduced as well.

Numerical solution of systems of linear equations, iterative methods. Numerical solution of nonlinear algebraic equations. Least squares method. Numerical solution of ordinary differential equations, initial and boundary value problems. Numerical solution of basic linear partial differential equations by finite difference method.

	,,		
2133014	Engineering Design IV.	Z	2
K331068	Technology I	Z,ZK	5
Foundry properties of r	netals Treatment, Pouring, Casting solidification, Moulding and core making. Thermal treatment, Plastic deformation, Division of t	orming processes	Semi-products

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.

Code of the group: 12DSK5P-KMEN

Mechanics II

Numerical Mathematics

Name of the group: 00 2012 D kmenové 5. semestr STR kombinované

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

Credits in the group: 0

Note on the group:

2311102

12B*K5P-KMEN#

7 7K

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2131512	Machine Elements and Mechanisms I. Martin Dub, Martin Havlí ek, Jan Kanaval, Karel Petr, Marek Štádler, Eliška Cézová, Zden k ešpíro, Jan Hoidekr, František Lopot, František Lopot František Lopot (Gar.)	Z,ZK	6	3P+2C	*	Р
2141504	Electric Circuits and Electronics Jan Chyský, Stanislava Papežová, Jaroslav Novák, Lukáš Novák Jaroslav Novák Jan Chyský (Gar.)	Z,ZK	4	2P+0C+2L	*	Р
2311108	Mechanics III. Michael Valášek	Z,ZK	6	2P+2C	*	Р
2372083	Measurement in Engineering Vladimír Hlavá , Martin Novák Martin Novák (Gar.)	KZ	3	1P+0C+2L	*	Р
K341014	Technology II.	Z,ZK	5	8KP+8KC	*	Р
2153005	Fundamentals of Energy Conversions Ond ej Bartoš, Tomáš Dlouhý, Václav Dostál, Zden k Funda, Miroslav Gleitz, Jan Havlík, Št pán Hrouda, Jitka Jeníková, Guk Chol Jun, Jan Havlík	Z	1	1P+1C	*	Р
2383001	Fundamentals of Law Václav Pilík Václav Pilík (Gar.)	Z	2	1P+1C	*	Р

Characteristics of the courses of this group of Study Plan: Code=12DSK5P-KMEN Name=00 2012 D kmenové 5. semestr STR kombinované

2131512 | Machine Elements and Mechanisms I.

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

2141504 | Electric Circuits and Electronics | Z,ZK | 4 | Introduction into theory of electrical circuits, analysis special types of electrical circuits as DC and AC. Transient states in circuits with accumulators of energy. El. Power and Energy. Introduction into electronics. Principle and twicel parameters of basic semiconductor components. Application in electronic circuits (rectifier, stabilizar, power control operational).

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.

2372083	Measurement in Engineering	KZ	3
Overview of sensor p	inciples for measurement of non-electrical variables (temperature, position, force, speed, acceleration, torque). Calibration and	verification of me	easurement
instruments.			
K341014	Technology II.	Z,ZK	5
2153005	Fundamentals of Energy Conversions	Z	1
2383001	Fundamentals of Law	Z	2

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

Code of the group: 12DSK6P-KMEN

Mechanics III.

Name of the group: 00 2012 D kmenové 6. semestr STR kombinované

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

Credits in the group: 0

Note on the group:

2311108

12B**6P-KMEN #

mote on the group). 12B 01-1	XIVILIA II				
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2371047	Automatic Control Milan Hofreiter, R žena Petrová, Tomáš Vyhlídal, Jaromír Fišer Tomáš Vyhlídal Tomáš Vyhlídal (Gar.)	Z,ZK	5	3P+15C+05L	*	Р
2131026	Machine Elements and Mechanisms II Martin Dub, Jan Flek, Jan Kanaval, Karel Petr, Eliška Cézová, Zden k ešpíro, František Lopot, Ji í Houkal František Lopot František Lopot (Gar.)	ZK	3	3P+0C	*	Р
2141505	Electrical machines and drives Jan Chyský, Lubomír Musálek, Michael Valášek, Jaroslav Novák Jaroslav Novák Jan Chyský (Gar.)	Z,ZK	4	2P+0C+2L	*	Р
2133025	Design František Lopot František Lopot (Gar.)	Z	4	0P+4C	*	Р
2381054	Management and Economics of the Enterprise Olga Heralová, Št pánka Uli ná, Vladimír Brdek, Petr Žemli ka Olga Heralová (Gar.)	Z,ZK	4	2P+2C	*	Р
2181026	Momentum, Mass and Heat Transfer Martin Dostál, Vojt ch B Iohlav, Stanislav Solna, Jan Sko ilas, Tomáš Jirout, Adam Krupica, Ji í Moravec Tomáš Jirout Tomáš Jirout (Gar.)	Z,ZK	5	3P+1C	*	Р

Characteristics	of the courses of this group of Study Plan: Code=12DSK6P-KMEN Name=00 2012 D kmenové 6.	semestr STR k	combinované
2371047	Automatic Control	Z,ZK	5
Automatic controller	s are important part of many industrial processes. The goal of this course is to introduce students into basic knowledge of auto	matic control theor	y and practice
like transfer function	s, open versus closed loop control, design of controllers and frequency based analysis of control systems. The course also conc	entrates on logic co	ntrol and control
via programmable lo	gic controllers. Some seminaries are arranged in laboratories where practical skills and control engineering methods are traine	d. Students begin t	to work with
MATLAB software a	s a common platform of control engineers.		
2131026	Machine Elements and Mechanisms II	ZK	3
Preliminary design,	design calculations and aplication of axles and shafts, sliding and rolling bearings, shaft connections, elements of crank mechani	sm, pipelines and t	heir accessories
and fittings.			
2141505	Electrical machines and drives	Z,ZK	4
AC el. curcuits. Elec	trical power and energy. Calculation, measurement, power factor. Magnetic circuit, materials, hysteresis loop. Electromagnet. Tr	ansformer, principle	e, construction,
3-phase transforme	; operating conditions, rated (scheduled) values. Induction machine, principle, construction, operating conditions. Starting, spec	ed-torque characte	ristic, speed
control. Synchronou	s machines. DC-machines, principle, parameters, operating conditions, construction, starting, speed control, speed-torque char	acteristic. Low-volta	age instruments.
Low-voltage distribu	tion system.		
2133025	Design	Z	4
Design, design calc	ulations and their aplications in case of geared transmissions, axles and shafts, sliding and rolling bearings, shaft couplings and	d clutches.	
2381054	Management and Economics of the Enterprise	Z,ZK	4
The course is desig	ned to give students the understanding of economic principles. The economical part of the course is consisted from: explanation	of relationship be	tween 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 b	pasic structure
of the financial state	ments. The management introduces the basic managerial functions and their contents, the uses of network analysis in project	management, with	the application
of multi-criteria deci	sion, the basics of marketing and strategic management.		
2181026	Momentum, Mass and Heat Transfer	Z,ZK	5
Fundamentals of tra	nsport phenomena balances in homogeneous fluids. Navier-Stokes equations. Momentum transport in turbulent flows. Mechan	ical energy equation	n. Residence
time distributions in	continuous systems. Conduction heat transfer. Forced and natural convection heat transfer. Heat transfer with phase changes and	d thermal radiation.	Multicomponent

Name of the block: Compulsory elective courses

systems. Mass transfer by molecular diffusion, convection, with chemical reactions and interphase mass transfer.

Minimal number of credits of the block: 15

The role of the block: PV

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

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

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

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

Credits in the group: 2

Note on the group:

Ze skupiny humanitních předmětů nutno j e d e n absolvovat

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2383019	Philosophical Issues Of Individual and Science	Z	2	1P+1C	*	PV
2383009	Communication and Dealing with People Jan Horejc Jan Horejc (Gar.)	Z	2	1P+1C	*	PV
2383008	Managerial Psychology	Z	2	1P+1C	*	PV

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

2383008	Managerial Psychology	Z	2
2383019	Philosophical Issues Of Individual and Science	Z	2
2383009	Communication and Dealing with People	Z	2
Human communication	represents an irreplaceable phenomenon in human activity, as it is present in practically all of his activities. The same applie	s (with specific mo	odifications) to

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

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

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

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

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

Credits in the group: 2

Note on the group:

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

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2041061	English-Bachelor Exam Michele Le Blanc, Eliška Vítková, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Nina Procházková Ayyub	Z,ZK	2	0P+2C	*	PV
2041063	French - Bachelor Exam /FME Michaela Schusová, Dušana Jirovská Eliška Vítková Eliška Vítková (Gar.)	Z,ZK	2	0P+2C	*	PV
2041062	German - Bachelor Exam / FME Eliška Vítková, Michaela Schusová, Jaroslava Kommová, Petr Laurich Jaroslava Kommová	Z,ZK	2	0P+2C	*	PV
2041065	Russian - Bachelor Exam / FME Eliška Vítková, Michaela Schusová, Hana Volejníková, Dušana Jirovská Eliška Vítková	Z,ZK	2	0P+2C	*	PV
2041064	Spanish - Bachelor Exam / FME Eliška Vítková, Michaela Schusová, Jaime Andrés Villagómez Eliška Vítková	Z,ZK	2	0P+2C	*	PV

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

2041061	English-Bachelor Exam	Z,ZK	2
Mapped to the Cor	nmon European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater diff	ficulties, to take pa	rt in discussions
to write a summar	y, 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 Cor	nmon European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater diff	ficulties, to take pa	rt in discussions
to write a summar	y, a report and an essay, to read technical texts, to master grammar at advanced level.		
2041062	German - Bachelor Exam / FME	Z,ZK	2
Mapped to the Cor	nmon European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater diff	ficulties, to take pa	rt in discussions
to write a summar	y, 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 Cor	nmon European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater diff	ficulties, to take pa	rt in discussions
to write a summar	a report and an accay to read technical toyte, to master grammer at advanced level		

2041064 Spanish - 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.

Code of the group: 12BS*6Q-OP

Name of the group: 10 2012 BSTR 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:

Student si vybere předmět příslušný oboru, který studuje

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
2372091	Project	KZ	2	0P+2C	*	PV
2362091	Project Jan Hošek	KZ	2	0P+2C	*	PV
2152091	Deparmental Project	KZ	2	0P+2C	*	PV
2182091	Project Tomáš Jirout	KZ	2	0P+2C	*	PV
2162091	Project	KZ	2	0P+2C	*	PV
2132503	Project Ji i Houkal	KZ	2	0P+2C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12BS*6Q-OP Name=10 2012 BSTR 6. sem oborové projektv

2372091	Project	KZ	2
An individual project from	om the branch of specialisation, which student will study on his/her magister level		
2362091	Project	KZ	2
2152091	Deparmental Project	KZ	2
2182091	Project	KZ	2
Absolvent se seznámí	se základy oboru Procesní technika.		
2162091	Project	KZ	2
Student will be informe	d about basics of environmental engineering and creation of thermal comfort.		
2132503	Project	KZ	2

Elaboration of semester global project of mechanical drive of conveyor composed of electric motor, elastic shaft coupling (respectively V-belt drive), gearbox provided with two pairs of mating gears and compensating double-row toothed shaft coupling (respectively roller chain drive). Second, alternative arrangement of projected mechanical drive is provided instead of previous gearbox and additional mechanical drives by means of only one single-stage warm gearbox.. Elaboration of 4 additional reports analysing production and economic problems of assigned machine element (gearbox shaft or gear). Besides project of mechanical drive must be elaborated design project of crank mechanism and its flywheel for assigned single-cylinder piston engine.

Code of the group: 12BS*6Q-PP

Name of the group: 11 2012 BSTR 6. sem prezentace projekt

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:

2363091 nesepsán Student si vybere předmět příslušný oboru, který studuje

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
2133091	Presentation of Project Ji í Houkal	Z	4	4B	*	PV
2153091	Presentation of Project Václav Dostál	Z	4	4B	*	PV
2363091	Project Presentation Jan Hošek	Z	4	4B		PV
2183091	Project Presentation Tomáš Jirout	Z	4	0P+4C	*	PV
2373091	Project presentation	Z	4	4B	*	PV
2163091	Project Presentation	Z	4	4B	*	PV

Characteristics of the courses of this group of Study Plan: Code=12BS*6Q-PP Name=11 2012 BSTR 6. sem prezentace projekt

2133091	Presentation of Project	Z	4
2153091	Presentation of Project	Z	4
2363091	Project Presentation	Z	4

2183091	Project Presentation	Z	4			
Preparation and prese	Preparation and presentation of a given project theme.					
2373091	Project presentation	Z	4			
Diploma thesis or bac	Diploma thesis or bachelor work presentation. Student should study the presentation software possibilities and proposition of the department. Student should prepare the presentation					
of actual version of his	diploma or bachelor work and present it in the face of the other student. The presentation will continue with discussion. Consi	equently, the worl	should be			
presented as a pdf file	presented as a pdf file on a temporal web page.					
2163091	Project Presentation	Z	4			
Processing and prese	Processing and presentation of engaged theme					

Code of the group: 12BS*8Q-IAT-BP

Name of the group: 14 2012 BSTR 8.sem 1povvol IAT-BP

Requirement credits in the group: In this group you have to gain 5 credits

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

Credits in the group: 5 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
2363985	Bachelor Thesis Jan Hošek	Z	5	0P+6C		PV
2373985	Bachelor Thesis	Z	5	0P+6C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12BS*8Q-IAT-BP Name=14 2012 BSTR 8.sem 1povvol IAT-BP

2363985	Bachelor Thesis	Z	5
2373985	Bachelor Thesis	Z	5
Each student will solve	his individual theme under guiding of his individual supervising department specialist. Result is his/her bachelor thesis.		•

Name of the block: Elective courses

Minimal number of credits of the block: 32

The role of the block: V

Code of the group: 12BS**V-ALFA

Name of the group: 02 2012 ALFA volitelné pro STR

Requirement credits in the group: In this group you have to gain 32 credits

Requirement courses in the group: In this group you have to complete 12 courses

Credits in the group: 32

Note on the group: Předměty typu Alfa (A) nejsou u studijního programu B2341 Strojírenství povinné, avšak jsou povinné u studijního programu B2342 Teoretický základ stroiního inženýrství.

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	0P+0L	*	٧
202A025	Physics II.A	ZK	2	0P+0C	*	V
201A021	Constructive Geometry A Ivana Linkeová	ZK	3	0P+0C	*	V
201A056	Mathematics I.A Radka Keslerová	ZK	4	0P+0C	*	٧
201A062	Mathematics II.A Radka Keslerová	ZK	4	0P+0C	*	V
201A009	Mathematics III.A Stanislav Kra mar	ZK	2	0P+0C	*	٧
231A101	Mechanics I.A Michael Valášek	ZK	2	0P+0C	*	V
231A102	Mechanics II.A Michael Valášek	ZK	2	0P+0C	*	V
212A500	Fluid Dynamics A	ZK	3	0P+0C	*	٧
201A049	Numerical Mathematics A Lud k Beneš	ZK	2	0P+0C	*	V
212A023	Thermodynamics A	ZK	2	0P+0C	*	٧

Characteristics of the courses of this group of Study Plan: Code=12BS**V-ALFA Name=02 2012 ALFA voliteIné pro STR

Spectra, x-rays, ;laser.	Band theory of solids, semiconductors. Nucleus, radioactivity, sources of nuclear energy. Laboratories - measurements of 6 e	xperiments rela	ated to the	lectures.
201A021	Constructive Geometry A	ZK		3
The subject is focused	on geometric objects in the space - curves, surfaces and solids and their properties and mutual relations.			
201A056	Mathematics I.A	ZK		4
Introduction to linear al	gebra, analytic geometry of straight lines and planes in E3, calculus of functions of one variable			
201A062	Mathematics II.A	ZK		4

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

201A009	Mathematics III.A	ZK	2
231A101	Mechanics I.A	ZK	2
231A102	Mechanics II.A	ZK	2
212A500	Fluid Dynamics A	ZK	3

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 sepparatrion) are introduced as well.

201A049	Numerical Mathematics A	ZK	2
212A023	Thermodynamics A	ZK	2

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

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

Name of the group: 05 2012 doporu ené seminá e

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

Credits in the group: 0

Note on the group:

Pokud si chce student své dosud získané znalosti (například z matematiky, fyziky, cizích jazyků atd.) doplnit, může si zapsat některý z volitelných předmětů, které příslušné ústavy pro 1. semestr

(zimní) vypisují. Doporučujeme zejména předměty uvedené v této skupině

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

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

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

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

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

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

Credits in the group: 0 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members)	Completion	Credits	Scope	Semester	Role
	Tutors, authors and guarantors (gar.)					
2046155	English Conversation Michele Le Blanc, Eliška Vítková, Ilona Šimice, Nina Procházková Ayyub Nina Procházková Ayyub Michele Le Blanc (Gar.)	Z	2	0P+2C	*	V
2046156	English Conversation Michele Le Blanc, Eliška Vítková, Ilona Šimice, Nina Procházková Ayyub Nina Procházková Ayyub	Z	2	0P+2C	L	V
2046071	English - Lower Intermediate Eliška Vítková, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová	Z	2	0P+2C	L	V
2046070	English - Lower Intermediate Eliška Vítková, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Ilona Šimice (Gar.)	Z	2	0P+2C	Z	V
2046074	English - Advanced Michele Le Blanc, Eliška Vítková, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Ilona Šimice (Gar.)	Z	2	0P+2C	Z	V
2046075	English - Advanced Michele Le Blanc, Eliška Vítková, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Ilona Šimice	Z	2	0P+2C	L	V
2046072	English - Upper Intermediate Eliška Vítková, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Ilona Šimice (Gar.)	Z	2	0P+2C	Z	V
2046073	English - Upper Intermediate Eliška Vítková, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Volejníková, Veronika Kratochvílová Ilona Šimice	Z	2	0P+2C	L	V
2046068	English - Beginners Eliška Vítková, Michaela Schusová, Ilona Šimice, Hana Volejníková, Veronika Kratochvílová Michaela Schusová Ilona Šimice (Gar.)	Z	2	0P+2C	Z	V
2046069	English - Beginners Eliška Vítková, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub, Hana Voleiníková, Veronika Kratochvílová Ilona Šimice	Z	2	0P+2C	L	V
2046126	Czech Lower Intermediate Jaroslava Kommová	Z	2	0P+2C	L	V
2046125	Czech Lower Intermediate Jaroslava Kommová	Z	2	0P+2C	Z	V
2046118	Czech -Advanced	Z	2	0P+2C	L	V
2046117	Jaroslava Kommová Czech -Advanced	Z	2	0P+2C	Z	V
2046127	Jaroslava Kommová Czech - Upper Intermediate	Z	2	0P+2C	Z	V
2046128	Jaroslava Kommová Czech - Upper Intermediate	Z	2	0P+2C	L	
	Jaroslava Kommová					
2046119	Czech Language for Beginners I. Jaroslava Kommová Czech Language for Beginners II.	Z	2	0P+2C	Z	V
2046120	Czech Language for Beginners II. Jaroslava Kommová	Z	2	0P+2C	L	V
2046086	French - Lower Intermediate Course Michaela Schusová, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	Z	V
2046087	French - Lower Intermediate Course Michaela Schusová, Dušana Jirovská Dušana Jirovská	Z	2	0P+2C	L	V
2046091	French - Advanced Michaela Schusová, Dušana Jirovská Dušana Jirovská	Z	2	0P+2C	L	V
2046090	French - Advanced Eliška Vítková, Michaela Schusová, Dušana Jirovská Eliška Vítková Eliška Vítková (Gar.)	Z	2	0P+2C	Z	V
2046089	French - Upper Intermediate Michaela Schusová, Dušana Jirovská Dušana Jirovská	Z	2	0P+2C	L	V
2046088	French - Upper Intermediate Eliška Vítková, Michaela Schusová, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	Z	V
2046084	French - Beginners Michaela Schusová, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	Z	V
2046085	French - Beginners' Course Michaela Schusová, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	L	V
2146060	Indonesian Language Course for Exchange	Z	2	0P+2C	*	V
2146061	Technical Indonesian - Course I.	Z	2	0P+2C	Z	V
2144062	Technical Indonesian - Course II.	Z,ZK	3	1P+2C	L	V

2046078	German - Lower Intermediate Course Eliška Vitková, Michaela Schusová, Jaroslava Kommová, Petr Laurich Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	Z	V
2046079	German - Lower Intermediate Course Eliška Vítková, Michaela Schusová, Jaroslava Kommová, Petr Laurich Eliška Vítková	Z	2	0P+2C	L	V
2046083	German - Advanced Course Eliška Vítková, Michaela Schusová, Jaroslava Kommová, Petr Laurich Jaroslava Kommová	Z	2	0P+2C	L	V
2046082	German - Advanced Course Eliška Vítková, Michaela Schusová, Jaroslava Kommová, Petr Laurich Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	Z	V
2046081	German - Upper Intermediate Course Eliška Vítková, Michaela Schusová, Jaroslava Kommová, Petr Laurich Eliška Vítková	Z	2	0P+2C	L	V
2046080	German - Upper Intermediate Course Eliška Vítková, Michaela Schusová, Jaroslava Kommová, Petr Laurich Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	Z	V
2046076	German - Beginners Eliška Vítková, Michaela Schusová, Jaroslava Kommová, Petr Laurich Michaela	Z	2	0P+2C	Z	V
2046077	Schusová Michaela Schusová (Gar.) German - Beginners Eliška Vítková, Michaela Schusová, Jaroslava Kommová, Petr Laurich Eliška Vítková	Z	2	0P+2C	L	V
2046161	Presentations in English Eliška Vítková, Michaela Schusová, Ilona Šimice, Nina Procházková Ayyub Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	*	V
2046166	Presentations in Czech Eliška Vítková, Jaroslava Kommová, Petr Laurich Jaroslava Kommová Petr Laurich (Gar.)	Z	2	0P+2C	*	V
2046162	Presentations in German Eliška Vítková, Jaroslava Kommová, Petr Laurich Jaroslava Kommová Eliška Vítková (Gar.)	Z	2	0P+2C	*	V
2046164	Presentations in Russian Eliška Vítková, Dušana Jirovská Dušana Jirovská Dušana Jirovská (Gar.)	Z	2	0P+2C	*	V
2046163	Presentations in French language Eliška Vítková, Dušana Jirovská Dušana Jirovská (Gar.)	Z	2	0P+2C	*	V
2046165	Presentations in Spanish Eliška Vítková Eliška Vítková	Z	2	0P+2C	*	V
2046137	Russian - Lower Intermediate Course Eliška Vítková, Michaela Schusová, Hana Volejníková, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	Z	V
2046138	Russian - Lower Intermediate Course Michaela Schusová, Hana Volejníková, Dušana Jirovská Dušana Jirovská	Z	2	0P+2C	L	V
2046141	Russian - Advanced Eliška Vítková, Michaela Schusová, Hana Volejníková, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	Z	V
2046142	Russian - Advanced Michaela Schusová, Hana Volejníková, Dušana Jirovská Dušana Jirovská	Z	2	0P+2C	L	V
2046140	Russian - Upper Intermediate Michaela Schusová, Hana Volejníková, Dušana Jirovská Dušana Jirovská	Z	2	0P+2C	L	V
2046139	Russian - Upper Intermediate Eliška Vítková, Michaela Schusová, Hana Volejníková, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	Z	V
2046136	Russian - Beginners Michaela Schusová, Hana Volejníková, Dušana Jirovská Dušana Jirovská	Z	2	0P+2C	L	V
2046135	Russian - Beginners Eliška Vítková, Michaela Schusová, Hana Volejníková, Dušana Jirovská Michaela Schusová Michaela Schusová (Gar.)	Z	2	0P+2C	Z	V
2046099	Spanish - Lower Intermediate Michaela Schusová, Jaime Andrés Villagómez Eliška Vítková	Z	2	0P+2C	L	V
2046098	Spanish - Lower Intermediate Eliška Vítková, Michaela Schusová, Jaime Andrés Villagómez Eliška Vítková Eliška Vítková (Gar.)	Z	2	0P+2C	Z	V
2046096	Spanish - Beginners Eliška Vítková, Michaela Schusová, Jaime Andrés Villagómez Eliška Vítková Eliška Vítková (Gar.)	Z	2	0P+2C	Z	٧
2046097	Spanish - Beginners Michaela Schusová, Jaime Andrés Villagómez Jaime Andrés Villagómez	Z	2	0P+2C	L	V
	Thayonez Valle And And Vinagonia		L	1		

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

2046155	English Conversation	Z	2
Improving communicati	ve skills in speaking on general topics and general technical topics.		
2046156	English Conversation	Z	2
Improving communicati	ve skills in speaking on general topics and general technical topics.	•	
2046071	English - Lower Intermediate	Z	2
Mapped to the Commo	n European Framework of Reference Level A2 Aim: Understanding clearly spoken language about everyday situations which	a student meets	either at school

Mapped to the Common European Framework of Reference Level A2 Aim: Understanding clearly spoken language about everyday situations which a student meets either at schoo 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.

2046070	English - Lower Intermediate	Z	2
_	arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	em. Writing in a sir	nple way about
	and comprehension of simple texts. Improvement of professional language. A1 - A2.		
2046074	English - Advanced in of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Wri	Z	2 on advanced
•	ummary, a report, an essay. reading and comprehension of popular-scientific and scientific articles or texts from student's fic		
· · · · · · · · · · · · · · · · · · ·	advanced level. B1 - B2.		
2046075	English - Advanced	Z	2
Mapped to the Commo	n European Framework of Reference Level B1 - B2. The aim: comprehension of spoken English as well as lectures given in l	English without gre	eat difficulties
	in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. reading and compre	hension of popula	r-scientific and
	s from student's field of studies without difficulties. Grammar structures on advanced level.		
2046072	English - Upper Intermediate	Z	2
	guage skills taking into consideration professional English and common professional terminology. Comprehension of standar	d English speech a	ind conversation
2046073	y life - at school, at work, during free time, on intermediate level. Broadening grammar knowledge. A2 - B1.	Z	2
	English - Upper Intermediate n European Framework of Reference Level B1. The aim is to extend language skills taking into consideration professional Er		
	nsion of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on interr	-	-
knowledge.			0.0
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 (p	rofessional langua	age). A1
2046069	English - Beginners	Z	2
Mapped to the Commo	n European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understar	ding and use of b	asic expressions
-	ninology (professional language).	,	
2046126	Czech Lower Intermediate	Z	2
-	arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	em. Writing in a sir	nple way about
	and comprehension of simple texts. Improvement of professional language.	7	
2046125	Czech Lower Intermediate arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	Z Mriting in a sir	2
-	and comprehension of simple texts. Improvement of professional language.	ani. Whiting in a sii	ilpie way about
2046118	Czech -Advanced	Z	2
	Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in 0	_	-
	discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and compreher	_	
scientific articles or text	s from student's field of studies without difficulties. Grammar structures on advanced level.		
2046117	Czech -Advanced	Z	2
	en language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in	•	essing opinions
	write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical a		
2046127	Czech - Upper Intermediate	Z	2
_	d speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Abil	ity to describe exp	eriences and
2046128	ne's opinions and plans. Reading and understanding general and technical texts.	Z	2
	Czech - Upper Intermediate n European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professiona		
	nsion of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on intel		
knowledge technical la			J
2046119	Czech Language for Beginners I.	Z	2
Basic vocabulary of eve	eryday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (profes	sional language)	
2046120	Czech Language for Beginners II.	Z	2
* *	n European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understar	iding and use of b	asic expressions
of general scientific terr	ninology (professional language).		
2046086	French - Lower Intermediate Course	Z	2
	what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wi	iting in a simple w	ay about tamilia
	mprehension of simple texts. Improvement of professional language.	Z	2
2046087	French - Lower Intermediate Course Common European Framework of Reference: A2 Aim: Understanding clearly what is spoken about everyday situations which		
	common European Framework of Reference. Az Alm. Onderstanding clearly what is spoken about everyday situations which eaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement		
2046091	French - Advanced	Z	2
	Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in French on to		
Communication with na	tive speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading a	nd understanding	texts concerning
currant issues and pop	ular scientific and technical articles.		
2046090	French - Advanced	Z	2
	ken language as well as lectures in French on topics familiar to the student. Communication with native speakers, participation		Expressing
•	Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and to		
2046089	French - Upper Intermediate	Z	2
	Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students of liking about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding about these topics.		
	Iking about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understa	anding general and	technical texts
2046088	French - Upper Intermediate d speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Abil		
-	a speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Abil The sopinions and plans. Reading and understanding general and technical texts.	icy to describe exp	ononoca anu
events, briefly explain c			
2046084	French - Beginners	Z	2
2046084	French - Beginners what is specified a student meets at school or in his/her free time and speaking about them. Wi	1	2 ay about familia

2046085 Mapped to the level of	Franch Baginnara' Course	7	2
mapped to the level of	French - Beginners´ Course Common European Framework of Reference: A1 Aim: Understanding clearly what is spoken about everyday situations which		
his/her free time and s	peaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of		
2146060	Indonesian Language Course for Exchange	Z	2
	nguage for Student Exchange Program to Indonesia	_ '	
2146061	Technical Indonesian - Course I.	Z	2
Second part of Indone	sian Language for Student Exchange Program to Indonesia	'	
2144062	Technical Indonesian - Course II.	Z,ZK	3
Basic of Indonesian La	nguage for Student Exchange Program to Indonesia		
2046078	German - Lower Intermediate Course	Z	2
Aim: Understanding cle	arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	m. Writing in a sin	nple way abou
familiar topics. Reading	and comprehension of simple texts. Improvement of professional language.		
2046079	German - Lower Intermediate Course	Z	2
	Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which		
	and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvement		
2046083	German - Advanced Course	Z	2
	Common European Framework of Reference: B1- B2 The aim: comprehension of spoken German as well as lectures given in		_
	in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and compre ts from student´s field of studies without difficulties. Grammar structures on advanced level.	enension of popula	ar-scientilic an
2046082	German - Advanced Course	7	2
	German - Advanced Course ken language as well as lectures in German on topics familiar to the student. Communication with native speakers, participation	_	_
	Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and te		Expressing
2046081	German - Upper Intermediate Course	Z	2
	Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students co	_	
* *	Ilking about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understa		
2046080	German - Upper Intermediate Course	Z	2
Understanding standa	d speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Abilit	ty to describe exp	eriences and
events, briefly explain	one's opinions and plans. Reading and understanding general and technical texts.		
2046076	German - Beginners	Z	2
Basic vocabulary of ev	eryday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (profess	sional language) ˈ	
2046077	German - Beginners	Z	2
Mapped to the level Co	mmon 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 termi	nology (professional language).		
2046161	Presentations in English	Z	2
Preparing students to	oresent in English on technical topics, with a possible co-operation with specialized departments.		
2046166	Presentations in Czech	Z	2
Preparing students to	give presentations in English on technical topics, with a possible co-operation with specialized departments.		
2046162	Presentations in German	Z	2
Preparation for presen	ing technical topics in German, possibly in cooperation with specialized departments.		
2046164	Presentations in Russian	Z	2
Preparation for presen	ing technical topics in Russian, possibly in cooperation with specialized departments.		
	Presentations in French language	Z	2
<u> </u>	ing technical topics in French, possibly in cooperation with specialized departments.		
Preparation for presen 2046165	ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish	Z	2
Preparation for presen 2046165 Preparation for presen	ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments.	Z	2
Preparation for presen 2046165 Preparation for presen 2046137	ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course	Z	2
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly	ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wri	Z	2
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly topics. Reading and co	ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish	Z Z iting in a simple w	2 2 ay about famili
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly topics. Reading and co	ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish	Z Z iting in a simple w	2 ay about famili
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly topics. Reading and cot 2046138 Mapped to the level of	Ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wrimprehension of simple texts. Improvement of professional language. Russian - Lower Intermediate Course Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a stu	Z iting in a simple was solutions at schools at school	2 ay about famili
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly topics. Reading and cot 2046138 Mapped to the level of free time and speaking	Ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wrimprehension of simple texts. Improvement of professional language. Russian - Lower Intermediate Course Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a stu about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional comprehension of simple texts.	Z iting in a simple was selected by the selec	2 ay about famili 2 nool or in his/h
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly topics. Reading and cot 2046138 Mapped to the level of free time and speaking 2046141	Ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wrimprehension of simple texts. Improvement of professional language. Russian - Lower Intermediate Course Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a stu about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of profest	Z iting in a simple was the service of the service	2 ay about famili 2 nool or in his/h
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly topics. Reading and conduction of the level of the time and speaking 2046141 Comprehension of sports	Ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wrimprehension of simple texts. Improvement of professional language. Russian - Lower Intermediate Course Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a stu about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of profest Russian - Advanced ken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participation	Z iting in a simple was simple was set set set set set set set set set se	2 ay about famili 2 nool or in his/h
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly opics. Reading and control 2046138 Mapped to the level of the time and speaking 2046141 Comprehension of spopinions. Written skills.	Ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wrimprehension of simple texts. Improvement of professional language. Russian - Lower Intermediate Course Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a sturn about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of profesting Russian - Advanced ken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participation Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and te	Z iting in a simple was a school language. Z on in discussions. chnical articles.	2 ay about famili 2 nool or in his/h 2 Expressing
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly opics. Reading and co 2046138 Mapped to the level of the ree time and speaking 2046141 Comprehension of spoppinions. Written skills. 2046142	Ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish	Z iting in a simple was simple was selected at scheme to the sc	2 ay about famil 2 nool or in his/h 2 Expressing
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly opics. Reading and control 2046138 Mapped to the level of the time and speaking 2046141 Comprehension of spoopinions. Written skills. 2046142 Mapped to the level of	Ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish	Z iting in a simple was simple was selected at select	2 ay about famil 2 nool or in his/h 2 Expressing 2 ee student.
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly opics. Reading and control 2046138 Mapped to the level of the time and speaking 2046141 Comprehension of spoopinions. Written skills. 2046142 Mapped to the level of Communication with necessity and several communication with necessity and several communication of spoopinions.	Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wrimprehension of simple texts. Improvement of professional language. Russian - Lower Intermediate Course Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a sturabout them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of profest Russian - Advanced ken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participatic Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and te Russian - Advanced Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian on totative speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and	Z iting in a simple was simple was selected at select	2 ay about famil 2 nool or in his/h 2 Expressing 2 ee student.
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly opics. Reading and control 2046138 Mapped to the level of the	Ing technical topics in French, possibly in cooperation with specialized departments. Presentations in Spanish Ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course Intermediate Intermediate course Intermediate Intermed	Z Iting in a simple was a school and anguage. Z on in discussions. chnical articles. Z opics familiar to the dunderstanding the simple was a si	2 ay about famil 2 nool or in his/r 2 Expressing 2 ee student. texts concerni
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly opics. Reading and control of the level of the le	Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course	Z iting in a simple was at scheme to the sc	2 ay about famil 2 nool or in his/h 2 Expressing 2 ae student. texts concerni
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly topics. Reading and concept 2046138 Mapped to the level of the time and speaking 2046141 Comprehension of sporpinions. Written skills. 2046142 Mapped to the level of Communication with natural tissues and pop 2046140 Mapped to the level of 2046140 Mapped to the level of 2046140 Mapped to the level of 2046140	Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course	Z iting in a simple was at scheme to the sc	2 ay about famil 2 nool or in his/h 2 Expressing 2 ae student. texts concerni 2 school, during
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly opics. Reading and concept 2046138 Mapped to the level of free time and speaking 2046141 Comprehension of spopinions. Written skills. 2046142 Mapped to the level of Communication with necurrant issues and pop 2046140 Mapped to the level of free time, and talking a	Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course What is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wrimprehension of simple texts. Improvement of professional language. Russian - Lower Intermediate Course Russian - Lower Intermediate Course Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a stu about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of profest Russian - Advanced ken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participation Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and texts Russian - Advanced Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian on to attive speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and ular scientific and technical articles. Russian - Upper Intermediate Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a student mount these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understandout these topics. Ability to describe experiences and events, briefly explain one's opinions and plans.	Z iting in a simple was at scheme to the sc	2 ay about famil 2 nool or in his/h 2 Expressing 2 ae student. texts concerni 2 school, during
Preparation for present 2046165 Preparation for present 2046137 Understanding clearly topics. Reading and control 2046138 Mapped to the level of free time and speaking 2046141 Comprehension of spoopinions. Written skills. 2046142 Mapped to the level of Communication with necurrant issues and pop 2046140 Mapped to the level of free time, and talking as 2046139	Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course What is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing the simple texts. Improvement of professional language. Russian - Lower Intermediate Course Russian - Lower Intermediate Course Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a stuabout them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of profess Russian - Advanced ken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participation Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and texts Russian - Advanced Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian on to ative speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and under scientific and technical articles. Russian - Upper Intermediate Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a student mout these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understal Russian - Upper Intermediate	Z iting in a simple was a scheme to the simple was at scheme to the simple and the simple was a scheme to the simple was a scheme to the simple was at scheme to the sche	2 ay about famil 2 nool or in his/h 2 Expressing 2 ae student. texts concerni 2 school, during at technical tex 2
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Preparation for present 2046165 Preparation for present 2046137 Understanding clearly topics. Reading and corporation of the level of free time and speaking 2046141 Comprehension of spoopinions. Written skills. 2046142 Mapped to the level of Communication with necurrant issues and pop 2046140 Mapped to the level of free time, and talking a 2046139 Understanding standard events, briefly explain or a 2046140 Present in the level of free time, and talking a 2046139 Understanding standard events, briefly explain or a 2046140	Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wrimprehension of simple texts. Improvement of professional language. Russian - Lower Intermediate Course what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wrimprehension of simple texts. Improvement of professional language. Russian - Lower Intermediate Course	Z iting in a simple was a scheme to the simple was at scheme to the simple and the simple was a scheme to the simple was a scheme to the simple was at work, at sending general and the simple was at work, at sending general and the simple was at work, at sending general and the simple was at work, at sending general and the simple was at work, at sending general and the simple was at work, at sending general and the simple was at work, at sending general and the simple was at sending general and the simple was at sending general and the simple was at sending	2 ay about famil 2 nool or in his/h 2 Expressing 2 ae student. dexts concerni 2 school, during at technical text 2 eriences and
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Preparation for present 2046165 Preparation for present 2046137 Understanding clearly opics. Reading and control of the level of the level of the level of comprehension of spontant issues and population with necessary and talking at 2046139 Understanding standard ovents, briefly explain of 2046136 Mapped to the level of comprehension with necessary and talking at 2046139 Understanding standard ovents, briefly explain of 2046136 Mapped to the level of 2046136 Mapped to the level of 2046136	Presentations in Spanish ing technical topics in Spanish, possibly in cooperation with specialized departments. Russian - Lower Intermediate Course	Z iting in a simple was a simp	2 ay about famil 2 nool or in his/h 2 Expressing 2 estudent. texts concerni 2 school, during ditechnical tex 2 eriences and
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2046099	Spanish - Lower Intermediate	Z	2		
Mapped to the level of C	dent meets at sch	iool or in his/her			
free time and speaking	free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.				
2046098	Spanish - Lower Intermediate	Z	2		
Understanding clearly w	hat is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Wr	iting in a simple w	ay about familiar		
topics. Reading and cor	nprehension of simple texts. Improvement of professional language.				
2046096	Spanish - Beginners	Z	2		
Aim:Understanding clea	rly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	m. Writing in a sin	nple way about		
familiar topics. Reading and comprehension of simple texts. Improvement of professional language.					
2046097	Spanish - Beginners	Z	2		
Mapped to the Commor	apped 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 sp	s/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	Z,ZK	5
	An introductory course in ordinary differential equation and infinite series.		
2011021	Constructive Geometry	Z,ZK	6
	The subject is focused on geometric objects in the space - curves, surfaces and solids and their properties and mutual relative		
2011049	Numerical Mathematics	Z,ZK	4
Numerical solution	of systems of linear equations, iterative methods. Numerical solution of nonlinear algebraic equations. Least squares method. Numerical	solution of ordinar	y differentia
	equations, initial and boundary value problems. Numerical solution of basic linear partial differential equations by finite difference		
2011056	Mathematics I	Z,ZK	8
, 0	ter emphasis is placed on the theoretical basis of the concepts discussed and on the derivation of basic relationships and connection		
will also get to know	the procedures for solving problems with parametric input. In addition, students will gain extended knowledge in some thematic areas:	eigennumbers and e	eigenvector
2211222	of a matrix, Taylor polynomial, integral as a limit function, integration of some special functions.	7 714	
2011062	Matematika II.	Z,ZK	8
-	set, boundary in E^k. Real function of k-variables. Partial derivatives and differentiability. Gradient and directional derivative. Different		
	Function given implicitly. Local and global (= absolute) extremes of a function of more variables. Double integral, volume (=triple) integral,		
	r, cylindrical and spherical coordinates. A simple smooth curve and line integral of a scalar and vector function. Circulation and Gree ce of a line integral on the path. Simple smooth surface and surface integral of a scalar function and a vector function. Flow of a vect	=	
ileia, iliaeperiaeri	Gauss-Ostrogradskij theorem.	or neid tillodgir a st	unace. The
2012035	Algorithmization and Programming Fundamentals	KZ	4
	Trigoritimization and rilogramming randamentals MATLAB and its programming language. MATLAB command line. Elementary commands, variable, assignment and expression. Matr	l .	I
	nput and output. Condition and cycle. Algorithmization of simple problems in MATLAB. Graphical commands. Matrix operations. Systematical commands and cycle.		
	ructure of program. Variables, expressions, assignment, and input / output commands. switch. For cycle. Arrays and files. Pointers. S		
	s: minimum, mean, norm, numerical integration, bisection method, Newton method, matrix operations. Direct methods for solution of		
2012037	Computer Graphics	KZ	3
2016007	Mathematics I Seminar	Z	2
201A009	Mathematics III.A	ZK	2
201A021	Constructive Geometry A	ZK	3
_0.7.0	The subject is focused on geometric objects in the space - curves, surfaces and solids and their properties and mutual relative	I	,
201A049	Numerical Mathematics A	ZK	2
201A056	Mathematics I.A	ZK	4
_0.7.1000	Introduction to linear algebra, analytic geometry of straight lines and planes in E3, calculus of functions of one variable		
201A062	Mathematics II.A	ZK	4
	set, boundary in E^k. Real function of k-variables. Partial derivatives and differentiability. Gradient and directional derivative. Different	1	
-	Function given implicitly. Local and global (= absolute) extremes of a function of more variables. Double integral, volume (=triple) integral,		
of integrals to pola	r, cylindrical and spherical coordinates. A simple smooth curve and line integral of a scalar and vector function. Circulation and Gree	n's theorem. A pote	ential vector
field, independen	ce of a line integral on the path. Simple smooth surface and surface integral of a scalar function and a vector function. Flow of a vecto	or field through a su	urface. The
	Gauss-Ostrogradskij theorem.		
2021025	Physics II.	Z,ZK	4
Faraday's law of ele	ectromagnetic induction. Maxwell's equations, electromagnetic waves. Light, wave optics, geometrical optics. Quantum properties of elec	ctromagnetic waves	s. Interaction
	natter. Photoelectric effect. Wave-particle mature of matter. Quantum-mechanical description of particle's motion. Hydrogen atom and		
Spectra, x-rays, ;la	ser. Band theory of solids, semiconductors. Nucleus, radioactivity, sources of nuclear energy. Laboratories - measurements of 6 expe		the lectures
2021041	Physics I.	Z,ZK	7
-	namics of a particle motion. Principle of conservation of energy. System of particles, centre of mass. Rigid body. Continuum, elastic pro	•	
	echanics. Temperature and heat transfer. Kinetic theory of gases. Thermodynamics. Electric field, current, conductivity, resistance. Co		
insulators. Magnet	ic field. Magnetic materials. Laboratories - accuracy of measurements, systematic and random errors, uncertainty of direct and indire	ect measurements,	regression
0000010	measurements of 11 various experiments related to the lectures.	-	
2026016	Physics - Seminar The subject is mainly meant for high-school students for repetition of high-school physics.	Z	2

202A025 Physics II.A ZK Faraday's law of electromagnetic induction. Maxwell's equations, electromagnetic waves. Light, wave optics, geometrical optics. Quantum properties of electromagnetic waves. Interaction of radiation with matter. Photoelectric effect, Wave-particle mature of matter, Quantum-mechanical description of particle's motion. Hydrogen atom and periodic system of elements. Spectra, x-rays, ;laser. Band theory of solids, semiconductors. Nucleus, radioactivity, sources of nuclear energy. Laboratories - measurements of 6 experiments related to the lectures. 202A041 Physics I. 7K 3 Kinematics and dynamics of a particle motion. Principle of conservation of energy. System of particles, centre of mass. Rigid body. Continuum, elastic properties of bodies. Oscillations, waves. Fluid mechanics. Temperature and heat transfer. Kinetic theory of gases. Thermodynamics. Electric field, current, conductivity, resistance. Conductors, semiconductors, insulators. Magnetic field. Magnetic materials. Laboratories - accuracy of measurements, systematic and random errors, uncertainty of direct and indirect measurements, regression, measurements of 11 various experiments related to the lectures. 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. 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 7.7K 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 Ζ 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 7 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 Ζ 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. Ζ 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. 2046072 English - Upper Intermediate 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 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 7 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 7 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 Ζ 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 7 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 Ζ 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. 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 comprehesion of simple texts. Improvement of professional language. German - Upper Intermediate Course 2046080 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. 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. 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 currant issues and popular scientific and technical articles.

2046083	German - Advanced Course	Z	2
Manage and 4 at 4 land 1 according			
	l of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken German as well as lectures given in G6		
and active particip	ation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehen	nsion of popular-so	cientific and
	scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.		
2046084	French - Beginners	Z	2
Understanding clea	rly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing	in a simple way al	bout familiar
	topics. Reading and comprehension of simple texts. Improvement of professional language.		
2046085	French - Beginners' Course	Z	2
	el of Common European Framework of Reference: A1 Aim: Understanding clearly what is spoken about everyday situations which a		l
	e and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement		
2046086	French - Lower Intermediate Course	Z	2
Understanding clea	rly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing	, in a simple way al	bout familiar
	topics. Reading and comprehension of simple texts. Improvement of professional language.		
2046087	French - Lower Intermediate Course	Z	2
	el of Common European Framework of Reference: A2 Aim: Understanding clearly what is spoken about everyday situations which a	. – .	
1	e and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement		
2046088	French - Upper Intermediate		2
Understanding st	andard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability	to describe experi-	ences and
	events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.		
2046089	French - Upper Intermediate	7	2
	el of Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students com	_	
_	d talking about these topics. Ability to describe experiences and events, explain one's opinions and plans. Reading and understanding	g general and tec	
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. Ex	pressing
opinions.	Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific a	and technical article	es.
2046091	French - Advanced	7	2
		j – – – j nice femilier to the	
	evel of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in French on to		
Communication with	h native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and u	nderstanding texts	concerning
	currant issues and popular scientific and technical articles.		
2046096	Spanish - Beginners	Z	2
Aim:Understandin	g 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	wav about
	familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	3 [.	.,
2040007		7	
2046097	Spanish - Beginners	Z	2
	ommon European Framework of Reference Level A1. Aim: Understanding clearly what is spoken about everyday situations which a s		
his/her free tin	e and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement	of professional lan	nguage.
2046098	Spanish - Lower Intermediate	Z	2
Understanding clea	rly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing	in a simple wav al	bout familiar
	topics. Reading and comprehension of simple texts. Improvement of professional language.	. ,	
2040000		7	
2046099	Spanish - Lower Intermediate	Z	2
Mapped to the leve	l of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a studen	it meets at school	or in his/her
free time a	nd speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of p	professional langua	age.
2046117	Czech -Advanced	Z	2
	spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in disc		
	en skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and to		na opinions I
		•	ng opinions.
2046118		echnical articles.	
	Czech -Advanced	echnical articles.	2
	of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech	echnical articles. Z ch without great diff	2 ficulties and
		echnical articles. Z ch without great diff	2 ficulties and
	of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech	echnical articles. Z ch without great diff	2 ficulties and
active participati	of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czec on in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehens scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level.	echnical articles. Z ch without great dificion of popular-scie	2 ficulties and entific and
active participati 2046119	of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czecon in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehens scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level. Czech Language for Beginners I.	echnical articles. Z ch without great difficion of popular-scie	2 ficulties and entific and
active participati 2046119 Basic voca	of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czec on in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehens scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level. Czech Language for Beginners I. bulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (p	echnical articles. Z h without great difficion of popular-scie Z rofessional langua	2 ficulties and entific and 2 ge)
2046119 Basic voca 2046120	l of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech on in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehens scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level. Czech Language for Beginners I. Czech Language for Beginners II.	echnical articles. Z ch without great difficion of popular-scie Z rofessional languar Z	2 ficulties and entific and 2 ge) 2
2046119 Basic voca 2046120	l of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech on in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehens scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level. Czech Language for Beginners I. Czech Language for Beginners II.	echnical articles. Z ch without great difficion of popular-scie Z rofessional languar Z	2 ficulties and entific and 2 ge) 2
2046119 Basic voca 2046120	l of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech on in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehens scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level. Czech Language for Beginners I. Czech Language for Beginners II.	echnical articles. Z ch without great difficion of popular-scie Z rofessional languar Z	2 ficulties and entific and 2 ge) 2
2046119 Basic voca 2046120 Mapped to the Con	l of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech on in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehens scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level. Czech Language for Beginners I. Czech Language for Beginners II.	echnical articles. Z ch without great difficion of popular-scie Z rofessional languar Z	2 ficulties and entific and 2 ge) 2
2046119 Basic voca 2046120 Mapped to the Con 2046125	of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czecon in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehens scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level. Czech Language for Beginners I. bulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (p Czech Language for Beginners II. mon European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding of general scientific terminology (professional language). Czech Lower Intermediate	echnical articles. Z ch without great difficion of popular-scie Z rofessional languar Z g and use of basic of	2 ficulties and intific and 2 ge) 2 expressions
2046119 Basic voca 2046120 Mapped to the Con 2046125	of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehens scientific articles or texts from student's field of studies without difficulties. Grammar structures on advanced level. Czech Language for Beginners I. Ibulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (particle) Czech Language for Beginners II. Interpretation of general scientific terminology (professional language). Czech Lower Intermediate g clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them.	echnical articles. Z ch without great difficion of popular-scie Z rofessional languar Z g and use of basic of	2 ficulties and intific and 2 ge) 2 expressions
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Understanding clea	Russian - Lower Intermediate Course	l	2
	rly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing topics. Reading and comprehension of simple texts. Improvement of professional language.	g in a simple way a	bout familiar
2046138	Russian - Lower Intermediate Course	Z	2
''	of Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a student		
	nd speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of p	professional langua	<u> </u>
2046139	Russian - Upper Intermediate andard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability	to describe experi	ences and
Oriderstanding ste	events, briefly explain one's opinions and plans. Reading and understanding general and technical texts.	to describe experi	crices and
2046140	Russian - Upper Intermediate	Z	2
	el of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a student me		_
2046141	ng about these topics. Ability to describe experiences and events, briefly explain one's opinions and plans. Reading and understanding Russian - Advanced	ng general and ted	nnicai texts.
	russian - Advanced of spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participatio	│ ∠ n in discussions. E	
	Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific a		
2046142	Russian - Advanced	Z	2
1 ' '	evel of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian on to h native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and u	-	
Communication wit	currant issues and popular scientific and technical articles.	inderstanding texts	concerning
2046155	English Conversation	Z	2
	Improving communicative skills in speaking on general topics and general technical topics.		
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	Z	2
	Preparation for presenting technical topics in French, possibly in cooperation with specialized departments.	_	_
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	Z	2
	Preparing students to give presentations in English on technical topics, with a possible co-operation with specialized department	ents.	
2121022	Thermodynamics		5
2121023 The course deal wi	Thermodynamics th a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. Bas	Z,ZK	5 rinciples are
The course deal wi	th a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. Bas y are applied mostly to systems behaving as ideal gases or typical vapours. Basic notions associated with ideal mixtures are studied with	Z,ZK sic concepts and p an emphasis on psy	rinciples are ychometrics.
The course deal wi	th a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. Basic resplied mostly to systems behaving as ideal gases or typical vapours. Basic notions associated with ideal mixtures are studied with a gers fundamentals of conduction, convection and radiation. Heat exchangers are treated as an engineering application. Exercises and	Z,ZK sic concepts and p an emphasis on psy	rinciples are ychometrics.
The course deal wind introduced, and they Heat transfer cover	th a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. Basic reapplied mostly to systems behaving as ideal gases or typical vapours. Basic notions associated with ideal mixtures are studied with a ers fundamentals of conduction, convection and radiation. Heat exchangers are treated as an engineering application. Exercises and problems and experimental technique.	Z,ZK sic concepts and p an emphasis on psy labs are devoted t	rinciples are ychometrics. o practical
The course deal wi introduced, and the Heat transfer cover 2121500	th a basic engineering approach to classical thermodynamics, heat transfer and compressible flow through nozzles and diffusers. Basic resplied mostly to systems behaving as ideal gases or typical vapours. Basic notions associated with ideal mixtures are studied with a gers fundamentals of conduction, convection and radiation. Heat exchangers are treated as an engineering application. Exercises and	Z,ZK sic concepts and p an emphasis on psy labs are devoted t	rinciples are ychometrics. o practical
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2132503 Flaboration of sem	Project nester global project of mechanical drive of conveyor composed of electric motor, elastic shaft coupling (respectively V-belt drive), ge	KZ arbox provided with	2 n two pairs
	I compensating double-row toothed shaft coupling (respectively roller chain drive). Second, alternative arrangement of projected mech	•	•
	and additional mechanical drives by means of only one single-stage warm gearbox Elaboration of 4 additional reports analysing prod		-
of assigned mad	chine element (gearbox shaft or gear). Besides project of mechanical drive must be elaborated design project of crank mechanism at single-cylinder piston engine.	nd its flywheel for a	issigned
2133013	Engineering Design III.	Z	2
	Design of assembly unit (draft drawing, detail drawing, assembly drawing, technical report)	'	
2133014	Engineering Design IV.	Z	2
2133025	Design	7	4
	design calculations and their aplications in case of geared transmissions, axles and shafts, sliding and rolling bearings, shaft coupli		•
2133091	Presentation of Project	Z	4
2141006	Embedded systems	Z,ZK	4
1	rocomputers history. Block diagram of computer. Busses, processors, memories, input and output circuits. Single chip microcomputer		•
	e, assembler, ANSY-C language. Software and hardware tools for application developing. Simulator, emulator, logical analyzer. Com		
	utput. Analogous signal discretization, methods and errors of D/A and A/D conversion. Standard analogous signal. Interrupt system.		
	8051/52 microcomputer family.		
2141504	Electric Circuits and Electronics	Z,ZK	4
	eory of electrical circuits, analysis special types of electrical circuits as DC and AC. Transient states in circuits with accumulators of		nd Energy.
	electronics. Principle and typical parameters of basic semiconductor components. Application in electronic circuits (rectifier, stabilize		
	amplifier). Analogue and digital circuits. Principle of analogue and digital signal processing. Logical circuits, converters, micropro		
2141505	Electrical machines and drives	Z,ZK	4
AC el. curcuits. Ele	ctrical power and energy. Calculation, measurement, power factor. Magnetic circuit, materials, hysteresis loop. Electromagnet. Transf	ormer, principle, co	onstruction,
3-phase transforr	ner, operating conditions, rated (scheduled) values. Induction machine, principle, construction, operating conditions. Starting, speed-	torque characteris	tic, speed
control. Synchronou	us machines. DC-machines, principle, parameters, operating conditions, construction, starting, speed control, speed-torque character	istic. Low-voltage i	nstruments.
	Low-voltage distribution system.		
2141519	Electrical Measurement and Diagnostics	Z,ZK	4
The trans	mission of signals in measure systems. Electromagnetic compatibility. Electronics measurements circuits and a conversion of signal	for the transmissio	n.
2144062	Technical Indonesian - Course II.	Z,ZK	3
'	Basic of Indonesian Language for Student Exchange Program to Indonesia		
2146060	Indonesian Language Course for Exchange	Z	2
'	Basic of Indonesian Language for Student Exchange Program to Indonesia	'	
2146061	Technical Indonesian - Course I.	Z	2
	Second part of Indonesian Language for Student Exchange Program to Indonesia	'	
2152091	Deparmental Project	KZ	2
2153005	Fundamentals of Energy Conversions	Z	1
2100000	Tundamentale of Energy Conversions	_	•
2153001	Presentation of Project	7	1
2153091	Presentation of Project	Z	4
2153091 2162091	Project	Z KZ	2
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	Project Student will be informed about basics of environmental engineering and creation of thermal comfort. Project Presentation		
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2361005	Instrumental Technology This subject gives students a detail review of technology used for instrumentation production.	Z,ZK	4
2361097	Design of Instruments Basics of instruments design.	Z,ZK	5
2362091	Project	KZ	2
2362502	Technical optics	KZ	3
	n interpretation of the principle of image forming by planar and spherical surfaces under the laws of geometric optics. It also de colour aberrations and basic visual instruments.		1
2362503	Applied Optics The course introduces students to the functions of basic optical instruments and shows their applications.	KZ	4
2363091	Project Presentation	Z	4
2363985	Bachelor Thesis	Z	5
2371047	Automatic Control	Z,ZK	5
Automatic controllers are in ke transfer functions, open	mportant part of many industrial processes. The goal of this course is to introduce students into basic knowledge of automatic versus closed loop control, design of controllers and frequency based analysis of control systems. The course also concentrate ontrollers. Some seminaries are arranged in laboratories where practical skills and control engineering methods are trained. S MATLAB software as a common platform of control engineers.	c control theory a es on logic contro	and practic
type sof PLC and application model, common elements languages LD, IL, ST and	Programmable Controller Applications e automaton - introduction, Petri nets -application for industrial processes control. Programmable Logic Controller (PLC), PLCs is ion areas. Function principles of PLC, configuration, HW structure of PLC, PLC software. Standard IEC 1131-3: software, programming languages, standard and derived functions and function blocks, structuring resource - sequential function die FBD. Control applications design -methodology. Software tools for PLC programming. Industrial processes visualization. Systematics of PLCs. Industrial communication standards (Profibus, ASi). Laboratory exercises on technological models via PLCs: Tesiemens.	ogram mand com agram (SFC), pro ems of PLCs, ne	munication ogramming tworking o
2371524	Means of Automatic Control	Z,ZK	5
	ans for automatic control according to the different criterions. Main features in each category. Air and hydraulic fluid as a mediu	•	
ymbols and descriptions in	pneumatic and hydraulic diagrams. Pneumatic control systems design. Pneumatic actuators, valves, special pneumatic, electroning, design, applications. Inteligent pneumatics as an integration of pneumatic, electronic and control components and systems standard, with industrial buses communication, programmable. Pneumatic positioning systems.	tropneumatic dev	rices. Cont
2371710	Computer Simulation Models	Z,ZK	4
he course provides a basic	c knowledge on formulation and computer implementation of dynamical system models. It starts from theoretical issues of Lap	place and Z trans	sform in th
		•	
application to describing the	e continuous and discrete linear systems respectively. A particular emphasis is given on the skills in describing the dynamic p	-	state spac
2372041 he course introduces stude	e continuous and discrete linear systems respectively. A particular emphasis is given on the skills in describing the dynamic papproach in both linear and non-linear systems. Computer Support for Study ents into creating technical and professional documents on computers or Web and into realizing technical computations with the y creating an essay in a text editor, by realizing technical computations with a spreadsheet calculator, and by creating technical	KZ ne use of compute cal-based WWW	3 ers. Studer page.
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