Study plan

Name of study plan: 13 80 85 00 BVES EKO 2012 P základ

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Manufacturing and Economy in Mechanical Engineering
Type of study: Bachelor full-time
Required credits: 182
Elective courses credits: -1
Sum of credits in the plan: 181
Note on the plan: první pokus

Name of the block: Compulsory courses in the program
Minimal number of credits of the block: 171
The role of the block: P

Code of the group: 12B*P*P-TV
Name of the group: 07 2012 bakalá ský t locvik
Requirement credits in the group: In this group you have to gain 3 credits
Requirement courses in the group: In this group you have to complete 3 courses
Credits in the group: 3
Note on the group: Letní výcvikový kurz je předmět povinný. Student jej může vykonat kdykoliv v průběhu studia, avšak v souladu s příslušnými ustanoveními Ústavu tělesné výchovy a sportu ČVUT

Code of the group: 12B*P*P-ZT21
Name of the group: 04 2012 prezen ní ZT v po adí 21
Requirement credits in the group: In this group you have to gain 6 credits
Requirement courses in the group: In this group you have to complete 2 courses
Credits in the group: 6
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* **authors** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
2333038	**Fundamentals of Technology I.**	Z	3	1P+1C	*	P

Characteristics of the courses of this group of Study Plan: Code=12B*P*P-ZT21 Name=04 2012 prezen ní ZT v po adí 21

2333038	Fundamentals of Technology I.	Z	3

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

Code of the group: 12B-KMEN* VES
Name of the group: 01 2012 souhrn 12B**1P-KMEN a 12B**2P-KMEN
Requirement credits in the group: In this group you have to gain 50 credits
Requirement courses in the group: In this group you have to complete 11 courses
Credits in the group: 50
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
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	P
2021041	**Physics I.**	Z,ZK	7	4P+1L	*	P
2011021	**Constructive Geometry**	Z,ZK	6	3P+2C	*	P
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	*	P
2011062	**Matematika II.** *Radka Keslerová*	Z,ZK	8	4P+4C	*	P
2322029	**Materials Science I.** *Jana Sobotová*	KZ	3	2P+1L	2	P
2012037	**Computer Graphics**	KZ	3	1P+1C	*	P
2372041	**Computer Support for Study**	KZ	3	1P+1C	*	P
2132001	**Engineering Design I.**	KZ	2	1P+2C	1	P
2131002	**Engineering Design II**	Z,ZK	4	2P+3C	2	P
2131005	**History of Technology**	ZK	3	2P+0C	1	P

Characteristics of the courses of this group of Study Plan: Code=12B-KMEN* VES Name=01 2012 souhrn 12B1P-KMEN a 12B**2P-KMEN**

2182019	Chemistry		KZ	3

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

2021041	Physics I.		Z,ZK	7

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

2011021	Constructive Geometry		Z,ZK	6

The subject is focused on geometric objects in the space - curves, surfaces and solids and their properties and mutual relations.

2011056	Mathematics I		Z,ZK	8

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

2011062	Matematika II.		Z,ZK	8

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

2322029	Materials Science I.		KZ	3

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

2012037	Computer Graphics		KZ	3

2372041	Computer Support for Study		KZ	3

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

2132001	Engineering Design I.		KZ	2

Basic of technical representation, dimensioning and tolerancing

2131002	Engineering Design II		Z,ZK	4

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

2131005	History of Technology		ZK	3

Developement of human knowledge in the domain of science and technology in the retrospective of the developement of our civilization. Emphasis is given upon new branches of technology with special attention to the contribution of mining, iron metallurgy, power engineering, transportation and of the machine industry in the narrower sense of the word.

Code of the group: 12BVP3P

Name of the group: 08 2012 BVES 3.sem prezen ní povinné

Requirement credits in the group: In this group you have to gain 31 credits

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

Credits in the group: 31

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
2021025	**Physics II.**	Z,ZK	4	1P+2L	3	P
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	*	P
2311004	**Mechanics for Technology**	Z,ZK	7	4P+2C	*	P
2321039	**Materials Science II.** *Ji í Cejp, Jakub Horník, Jana Sobotová, Ladislav Cvr ek, Elena ižmárová, Eliška Gal íková, Pavlína Hájková, Jakub Horváth, Zde ka Jeníková, ...* **Jana Sobotová** *Jana Sobotová (Gar.)*	Z,ZK	4	2P+2L	*	P
2331068	**Technology I.**	Z,ZK	5	2P+2C	*	P
2121023	**Thermodynamics**	Z,ZK	5	3P+2C	*	P

Characteristics of the courses of this group of Study Plan: Code=12BVP3P Name=08 2012 BVES 3.sem prezen ní povinné

2021025	Physics II.		Z,ZK	4
Faraday's law of electromagnetic induction. Maxwell's equations, electromagnetic waves. Light, wave optics, geometrical optics. Quantum properties of electromagnetic waves. Interaction of radiation with matter. Photoelectric effect. Wave-particle 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.				
2011009	Mathematics III		Z,ZK	5
An introductory course in ordinary differential equation and infinite series.				
2311004	Mechanics for Technology		Z,ZK	7
2321039	Materials Science II.		Z,ZK	4
Fundamentals of metallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and thermo-mechanical processing, technical iron-carbon alloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials.				
2331068	Technology I.		Z,ZK	5
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. Brazing. Surface treatments.				
2121023	Thermodynamics		Z,ZK	5
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: 12BVP4P

Name of the group: 09 2012 BVES 4.sem prezen ní povinné

Requirement credits in the group: In this group you have to gain 22 credits

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

Credits in the group: 22

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
2381075	**Enterprise Management and Economics**	Z,ZK	5	2P+2C	4	P
2383102	**Personnel Management** *Jan Horejc*	Z	2	2P+1C	*	P
2342005	**Quality Control**	KZ	2	1P+1C+1L	*	P
2341014	**Technology II.**	Z,ZK	5	2P+0C+2L	*	P

Characteristics of the courses of this group of Study Plan: Code=12BVP4P Name=09 2012 BVES 4.sem prezen ní povinné

2381075	Enterprise Management and Economics		Z,ZK	5
2383102	Personnel Management		Z	2
Personnel / human resource management is concerned with the effective management of people at work. Subject examines what can or should be done to make people both more productive and more satisfied with their working life. Its goal is to help develop more effective managers and staff specialists who work directly with the human resources of organizations.				
2342005	Quality Control		KZ	2
Basic quality control terms, where is quality created, who is responsible for a quality. Basic statistical terms and distributions. Statistical methods: statistical process control, statistical sampling. Tools and methods for a quality assurance during product lifetime cycle. Standards 9 000 and 14 000, certification of quality control systems.				
2341014	Technology II.		Z,ZK	5
mechanics of chip formation, cutting processes, finishing operations, non-traditional machining processes. Production rates calculation, machining economics. Automation of processes, programming of manufacture. Engineering metrology. Assembly techniques. Introduction to process planing.				

Code of the group: 12BV*5P

Name of the group: 12 2012 BVES 5.sem povinné

Requirement credits in the group: In this group you have to gain 11 credits

Requirement courses in the group: In this group you have to complete 3 courses

Credits in the group: 11

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
2131519	**Machine Elements for Technology**	Z,ZK	5	2P+3C	*	P
2381068	**Cost Accounting**	Z,ZK	5	2P+2C	*	P
2141204	**Introduction to Electrical Engineering for Technology** *Jan Chyský, Lubomír Musálek, Martin Novák* **Lubomír Musálek** *Jan Chyský (Gar.)*	Z,ZK	4	2P+0C+2L	*	P
2383001	**Fundamentals of Law**	Z	2	1P+1C	*	P

Characteristics of the courses of this group of Study Plan: Code=12BV*5P Name=12 2012 BVES 5.sem povinné

2131519	Machine Elements for Technology		Z,ZK	5
2381068	Cost Accounting		Z,ZK	5

The subject presents an introduction to the problems of value management as the enterprise on the whole and its parts - centres - by means of budgeting (expected cost), so the individual achievements (intermediate products, products, services) - by means of preliminary costing (expected costs) and actual costing (actual costs). Emphasis is laid on the relation of costs on the whole - enterprise costs - to the costs of individual achievements and the understanding of the transformation from costs in the budgeting and accounting structure (individual cost items) into the costing structure (direct and overhead costs), and fixed and variable costs. There are taught conventional and also modern approaches in costing. The subject Cost Accounting is connected directly with the subject Accounting and represents an introduction to the problems of cost allocation to separate products, which are compared with the market price and finding out as their profitability, so their acceptability or unacceptability manufacturing program.

2141204	Introduction to Electrical Engineering for Technology		Z,ZK	4

Elements of electrical circuits, analysis of electrical circuits as DC and AC. El. Power and Energy. Principle and typical parameters diodes, transistors, thyristors,operation amplifiers. Analogue and digital circuits. AC el. curcuits. Electrical power and energy. Calculation, measurement, power factor. Transformer. Induction machines. Synchronous machines. DC-machines

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: 12BV*5P-EKO

Name of the group: 14 2012 BVES 5.sem zam EKO povinné

Requirement credits in the group: In this group you have to gain 18 credits

Requirement courses in the group: In this group you have to complete 4 courses

Credits in the group: 18

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
2381514	**Project management**	Z,ZK	4	2P+2C	*	P
2381059	**Industrial Marketing**	Z,ZK	5	3P+1C	*	P
2381504	**Accounting**	Z,ZK	4	2P+2C	*	P

Characteristics of the courses of this group of Study Plan: Code=12BV*5P-EKO Name=14 2012 BVES 5.sem zam EKO povinné

2381514	Project management		Z,ZK	4
2381059	Industrial Marketing		Z,ZK	5
2381504	Accounting		Z,ZK	4

The objective of the subject is to become acquainted with the significance of accounting for enterprise management, with the content and formal structure and realization of the stages and changes of the economic results during the accounting period; further with accounting as a system needful for tax declaration and not least as a resource to financial analysis. The stress is laid on understanding the dichotomy as the basis of the double entry accounting system, which distinguishes the terms assets (in the long term and short term) and liabilities (share-holders? equity, liabilities). Of great importance is the assessing of assets and their parts. Ac-counting relates to other information subsystems as budgeting, cost accounting, short term and long term planning. There are further some other subjects concerning enterprise manage-ment, connected with accounting, especially in the field of financial management. Accounting is one of the fundamental instrument of a business manager who understands the content and structure of the balance sheet, profit and loss account and the cash/flow statement. It is very possible that some of the students will exploit the knowledge of accounting in their future occupation as managers, financial directors, in consulting firms and auditing companies.

Code of the group: 12BV*6P

Name of the group: 15 2012 BVES 6.sem povinné

Requirement credits in the group: In this group you have to gain 9 credits

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

Credits in the group: 9
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
2331071	**Automation of Production Processes**	Z,ZK	5	3P+2C	*	P
2381098	**Enterprise Finance**	Z,ZK	4	2P+2C	*	P
2382048	**Statistical and Decision Analysis**	KZ	4	2P+1C	*	P

Characteristics of the courses of this group of Study Plan: Code=12BV*6P Name=15 2012 BVES 6.sem povinné

2331071	Automation of Production Processes			Z,ZK	5

Automation of basic technological processes - casting, welding, forming and finishing. Facilities and equipment required to automate offices. Mechanization and automation in iron and steel foundries. Automation and robotics of die casting process, including other peripherals. Designing and programming of robotic welding centers. Designing and programming of robotic workstations for sheet metal forming. Design of automated forging cells. Design of automated finishing lines.

2381098	Enterprise Finance			Z,ZK	4

The subject Financing of the Enterprise provides a broad-based introduction to financial management. Students have an opportunity to acquire an understanding of the main con-cepts and their practical application in decision-making. Students gain knowledge of financial management role within a business, financial ratios, nature and purpose of projected finan-cial statements and their role in the development of future plans for a business and in the assessing the impact of management decision on the performance and position of a busi-ness, factors which must be taken into account when managing the working capital of a business, various aspects of financing the business through external and internal sources of finance available to a business, ways how business can make decision and evaluation involv-ing investments in new technology, and various aspects of mergers and takeovers.

2382048	Statistical and Decision Analysis			KZ	4

Statistical analysis is a good basis for a creation of decision-making models. The goal of this subject is to teach students to apply the selected statistical method, to apply models of decision analysis, to create models for the management of industrial enterprises.

Code of the group: 12BV*6P-EKO
Name of the group: 16 2012 BVES 6.sem zam EKO povinné
Requirement credits in the group: In this group you have to gain 21 credits
Requirement courses in the group: In this group you have to complete 5 courses
Credits in the group: 21
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
2383993	**Bachelor Thesis**	Z	5	0P+6C	*	P
2381712	**Managerial Counting**	Z,ZK	4	2P+2C	*	P
2381174	**Enterprise Information Systems** *Vladimír Brdek*	Z,ZK	4	2P+2C	*	P
2381107	**Engineering Ergonomy**	Z,ZK	4	2P+2C	*	P

Characteristics of the courses of this group of Study Plan: Code=12BV*6P-EKO Name=16 2012 BVES 6.sem zam EKO povinné

2383993	Bachelor Thesis			Z	5

Work on specialized tasks related to the focus of a thesis.

2381712	Managerial Counting			Z,ZK	4

The course is oriented to project management approach. During the course are solved cases that respond to practical situations. The cases are stressed on cost-returns calculations, on the solving interactions among costs, capacity of resources and the price. And also on the calculation typical kinds of variations and their explanation and the selection of the appropriate managerial decision. The students are concerning on the right way of operational budget creation and assessment. The link on the internal company accounting is shown and explain. The computerized models are used by explanation.

2381174	Enterprise Information Systems			Z,ZK	4
2381107	Engineering Ergonomy			Z,ZK	4

The aim of the subject engineering ergonomics is to become acquainted with the problems, constraints and the optimal solution of the fundamental unit of an enterprise or organization, i.e. with system - man - technology (machine) - environment. The character of the subject is going out from the anthropocentric principle, i. e. that every system MTE as in the manufacturing, managing, technological, designing so in other spheres it is important unambiguously to accommodate them to the possibilities, abilities and skills of the weakest link - that is to the given man. The students will learn not only to start from the man?s limitations during the designing of the MTE system, but also evaluate the existing economic level of the system and design rationalization measures for its optimization. The mission of the subject is that the students will be able in their work on all levels of economic spheres to ensure the optimal wellbeing for themselves and for the users of the designed systems as well as for their subordinates. The not-excludable output is also the health of man and higher quality and productivity of labour.

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 11
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, Vladimír Brdek **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

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 applies (with specific modifications) to the activities of managers. So you can't not communicate - you can only communicate badly, well and excellently.			
2383008	Managerial Psychology	Z	2

Code of the group: 12BV*4Q-BZJ VES
Name of the group: 11 2012 bakalá ské zkoušky z jazyk pro VES
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:

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

Characteristics of the courses of this group of Study Plan: Code=12BV*4Q-BZJ VES Name=11 2012 bakalá ské zkoušky z jazyk pro VES

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

Code of the group: 12BV*4Q-ZAM
Name of the group: 10 2012 BVES 4.sem zam 1povvol
Requirement credits in the group: In this group you have to gain at least 5 credits (at most 10)
Requirement courses in the group: In this group you have to complete at least 1 course (at most 2)
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
2321067	**Technical Application of Materials** *Stanislav Krum*	Z,ZK	5	3P+1C	*	PV
2381002	**Fundamentals of Economics**	Z,ZK	5	2P+2C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12BV*4Q-ZAM Name=10 2012 BVES 4.sem zam 1povvol

2321067	Technical Application of Materials		Z,ZK	5
P edm t popisuje aplikovatelnost jednotlivých skupin inženýrských materiál a jejich odpovídající vlastnosti. Rovn ž se v nuje aktuálním vývojovým trend m t chto skupin. The subject describes applicability of specific engineering material types and their characteristics. It deals with the current development trends in these materials as well.				
2381002	Fundamentals of Economics		Z,ZK	5
The course is focused on the following subjects: basic economic relations and consequences. Economic aggregates and their consequences. Operating of the economics according to so called macroekonomic circle, various economic theories. Consumption behaviour in microeconomics. Theory of production. Different markets and competitions.				

Code of the group: 12BV*5Q-OP
Name of the group: 13 2012 BVES 5.sem 1povvol oborové projekty
Requirement credits in the group: In this group you have to gain at least 2 credits (at most 8)
Requirement courses in the group: In this group you have to complete at least 1 course (at most 4)
Credits in the group: 2
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* **authors** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
2322091	**Project** *Ji í Čejp, Jakub Horník, Jana Sobotová, Ladislav Cvr ek, Elena ižmárová, Pavlína Hájková, Jakub Horváth, Zde ka Jeníková, Jan Kr il, ...* **Jana Sobotová** *Jana Sobotová (Gar.)*	KZ	2	0P+2C	*	PV
2382091	**Specialization Project**	KZ	2	0P+2C	*	PV
2332091	**Project**	KZ	2	0P+2C	*	PV
2342091	**Project**	KZ	2	0P+2C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12BV*5Q-OP Name=13 2012 BVES 5.sem 1povvol oborové projekty

2322091	Project		KZ	2
On the basis of the preliminary submission of a bachelor thesis the students, under supervision of their supervisors, prepare a review summarizing and evaluating the studied literature with particular emphasis on experimental technologies which can be applied in their bachelor theses. They can also mention a planned experiment or evaluate hitherto obtained knowledge or results.				
2382091	Specialization Project		KZ	2
2332091	Project		KZ	2
2342091	Project		KZ	2
Work on specialized tasks.				

Name of the block: Elective courses
Minimal number of credits of the block: 0
The role of the block: V

Code of the group: 12BV**V-ALFA
Name of the group: 02 2012 ALFA volitelné pro VES
Requirement credits in the group:
Requirement courses in the group:
Credits in the group: 0
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* **authors** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
202A041	**Physics I.**	ZK	3	0P+0L	*	V
201A021	**Constructive Geometry A**	ZK	3	0P+0C	*	V
201A056	**Mathematics I.A** *Radka Keslerová*	ZK	4	0P+0C	*	V

201A062	**Mathematics II.A** *Radka Keslerová*	ZK	4	0P+0C	*	V

Characteristics of the courses of this group of Study Plan: Code=12BVV-ALFA Name=02 2012 ALFA volitelné pro VES**

202A041	Physics I.				ZK	3
Kinematics and dynamics of a particle motion. Principle of conservation of energy. System of particles, centre of mass. Rigid body. Continuum, elastic properties of bodies. Oscillations, waves. Fluid mechanics. Temperature and heat transfer. Kinetic theory of gases. Thermodynamics. Electric field, current, conductivity, resistance. Conductors, semiconductors, insulators. Magnetic field. Magnetic materials. Laboratories - accuracy of measurements, systematic and random errors, uncertainty of direct and indirect measurements, regression, measurements of 11 various experiments related to the lectures.							

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 algebra, 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.							

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, Hynek ezní ek, Olga Majlingová* **Radka Keslerová** *Gejza Dohnal (Gar.)*	Z	2	0P+2C	1	V

Characteristics of the courses of this group of Study Plan: Code=12B1V-DOP SEMI Name=05 2012 doporu ené seminá e**

2026016	Physics - Seminar				Z	2
The subject is mainly meant for high-school students for repetition of high-school physics.							

2016007	Mathematics I. - Seminar				Z	2

Code of the group: 12B**1V-DOP ZJK
Name of the group: 06 2012 doporu ené základní jazykové kurzy a prezentace
Requirement credits in the group:

Requirement courses in the group:

Credits in the group: 0

Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* **authors** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
2046155	**English Conversation** *Ilona Šimice, Michele Le Blanc* **Ilona Šimice** *Michele Le Blanc (Gar.)*	Z	2	0P+2C	*	V
2046156	**English Conversation** *Michele Le Blanc*	Z	2	0P+2C	L	V
2046071	**English - Lower Intermediate** *Veronika Kratochvílová*	Z	2	0P+2C	L	V
2046070	**English - Lower Intermediate** *Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová* **Michaela Schusová** *Ilona Šimice (Gar.)*	Z	2	0P+2C	Z	V
2046074	**English - Advanced** *Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová, Michele Le Blanc* **Michaela Schusová** *Ilona Šimice (Gar.)*	Z	2	0P+2C	Z	V
2046075	**English - Advanced** *Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová, Michele Le Blanc* **Ilona Šimice** *Ilona Šimice (Gar.)*	Z	2	0P+2C	L	V

2046072	**English - Upper Intermediate** *Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová* **Michaela Schusová** *Ilona Šimice (Gar.)*	Z	2	0P+2C	Z		V
2046073	**English - Upper Intermediate** *Ilona Šimice* **Ilona Šimice** *Ilona Šimice (Gar.)*	Z	2	0P+2C	L		V
2046068	**English - Beginners** *Ilona Šimice, Michaela Schusová, Hana Volejníková, Veronika Kratochvílová* **Michaela Schusová** *Ilona Šimice (Gar.)*	Z	2	0P+2C	Z		V
2046069	**English - Beginners** *Veronika Kratochvílová* **Ilona Šimice**	Z	2	0P+2C	L		V
2046126	**Czech Lower Intermediate** *Jaroslava Kommová*	Z	2	0P+2C	L		V
2046125	**Czech Lower Intermediate** *Jaroslava Kommová*	Z	2	0P+2C	Z		V
2046118	**Czech -Advanced** *Jaroslava Kommová*	Z	2	0P+2C	L		V
2046117	**Czech -Advanced** *Jaroslava Kommová*	Z	2	0P+2C	Z		V
2046127	**Czech - Upper Intermediate** *Jaroslava Kommová*	Z	2	0P+2C	Z		V
2046128	**Czech - Upper Intermediate** *Jaroslava Kommová*	Z	2	0P+2C	L		V
2046119	**Czech Language for Beginners I.** *Jaroslava Kommová*	Z	2	0P+2C	Z		V
2046120	**Czech Language for Beginners II.** *Jaroslava Kommová*	Z	2	0P+2C	L		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** *Dušana Jirovská* **Dušana Jirovská** *Dušana Jirovská (Gar.)*	Z	2	0P+2C	L		V
2046091	**French - Advanced** *Dušana Jirovská* **Dušana Jirovská** *Dušana Jirovská (Gar.)*	Z	2	0P+2C	L		V
2046090	**French - Advanced** *Michaela Schusová, Dušana Jirovská, Eliška Vítková* **Eliška Vítková** *Eliška Vítková (Gar.)*	Z	2	0P+2C	Z		V
2046089	**French - Upper Intermediate** *Dušana Jirovská* **Dušana Jirovská** *Dušana Jirovská (Gar.)*	Z	2	0P+2C	L		V
2046088	**French - Upper Intermediate** *Michaela Schusová, Dušana Jirovská* **Michaela Schusová** *Michaela Schusová (Gar.)*	Z	2	0P+2C	Z		V
2046084	**French - Beginners** *Michaela Schusová, Dušana Jirovská* **Michaela Schusová** *Michaela Schusová (Gar.)*	Z	2	0P+2C	Z		V
2046085	**French - Beginners´ Course** *Dušana Jirovská* **Michaela Schusová** *Dušana Jirovská (Gar.)*	Z	2	0P+2C	L		V
2146060	**Indonesian Language Course for Exchange**	Z	2	0P+2C	*		V
2146061	**Technical Indonesian - Course I.**	Z	2	0P+2C	Z		V
2144062	**Technical Indonesian - Course II.**	Z,ZK	3	1P+2C	L		V
2046078	**German - Lower Intermediate Course** *Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich* **Michaela Schusová** *Michaela Schusová (Gar.)*	Z	2	0P+2C	Z		V
2046079	**German - Lower Intermediate Course** *Jaroslava Kommová, Eliška Vítková, Petr Laurich* **Eliška Vítková** *Jaroslava Kommová (Gar.)*	Z	2	0P+2C	L		V
2046083	**German - Advanced Course** *Jaroslava Kommová, Eliška Vítková, Petr Laurich* **Jaroslava Kommová** *Jaroslava Kommová (Gar.)*	Z	2	0P+2C	L		V
2046082	**German - Advanced Course** *Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich* **Michaela Schusová** *Michaela Schusová (Gar.)*	Z	2	0P+2C	Z		V
2046081	**German - Upper Intermediate Course** *Jaroslava Kommová, Eliška Vítková, Petr Laurich* **Eliška Vítková** *Jaroslava Kommová (Gar.)*	Z	2	0P+2C	L		V
2046080	**German - Upper Intermediate Course** *Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich* **Michaela Schusová** *Michaela Schusová (Gar.)*	Z	2	0P+2C	Z		V
2046076	**German - Beginners** *Michaela Schusová, Jaroslava Kommová, Eliška Vítková, Petr Laurich* **Michaela Schusová** *Petr Laurich (Gar.)*	Z	2	0P+2C	Z		V
2046077	**German - Beginners** *Jaroslava Kommová, Petr Laurich* **Eliška Vítková** *Jaroslava Kommová (Gar.)*	Z	2	0P+2C	L		V
2046161	**Presentations in English** **Michaela Schusová**	Z	2	0P+2C	*		V
2046166	**Presentations in Czech** **Jaroslava Kommová**	Z	2	0P+2C	*		V

Code	Course					
2046162	**Presentations in German** *Jaroslava Kommová, Eliška Vítková, Petr Laurich* **Jaroslava Kommová** *Jaroslava Kommová (Gar.)*	Z	2	0P+2C	*	v
2046164	**Presentations in Russian** *Dušana Jirovská*	Z	2	0P+2C	*	v
2046163	**Presentations in French language** *Dušana Jirovská* **Dušana Jirovská**	Z	2	0P+2C	*	v
2046165	**Presentations in Spanish** *Eliška Vítková*	Z	2	0P+2C	*	v
2046137	**Russian - Lower Intermediate Course** *Michaela Schusová, Hana Volejníková, Dušana Jirovská, Eliška Vítková* **Michaela Schusová** *Michaela Schusová (Gar.)*	Z	2	0P+2C	Z	v
2046138	**Russian - Lower Intermediate Course** *Hana Volejníková, Dušana Jirovská* **Dušana Jirovská**	Z	2	0P+2C	L	v
2046141	**Russian - Advanced** *Michaela Schusová, Hana Volejníková, Dušana Jirovská, Eliška Vítková* **Michaela Schusová** *Michaela Schusová (Gar.)*	Z	2	0P+2C	Z	v
2046142	**Russian - Advanced** *Hana Volejníková, Dušana Jirovská* **Dušana Jirovská**	Z	2	0P+2C	L	v
2046140	**Russian - Upper Intermediate** *Hana Volejníková, Dušana Jirovská* **Dušana Jirovská**	Z	2	0P+2C	L	v
2046139	**Russian - Upper Intermediate** *Michaela Schusová, Hana Volejníková, Dušana Jirovská, Eliška Vítková* **Michaela Schusová** *Michaela Schusová (Gar.)*	Z	2	0P+2C	Z	v
2046136	**Russian - Beginners** *Hana Volejníková, Dušana Jirovská* **Dušana Jirovská**	Z	2	0P+2C	L	v
2046135	**Russian - Beginners** *Michaela Schusová, Hana Volejníková, Dušana Jirovská, Eliška Vítková* **Michaela Schusová** *Michaela Schusová (Gar.)*	Z	2	0P+2C	Z	v
2046099	**Spanish - Lower Intermediate** *Jaime Andrés Villagómez* **Eliška Vítková** *Jaime Andrés Villagómez (Gar.)*	Z	2	0P+2C	L	v
2046098	**Spanish - Lower Intermediate** *Michaela Schusová, Eliška Vítková, Jaime Andrés Villagómez* **Eliška Vítková** *Eliška Vítková (Gar.)*	Z	2	0P+2C	Z	v
2046096	**Spanish - Beginners** *Michaela Schusová, Eliška Vítková, Jaime Andrés Villagómez* **Eliška Vítková** *Eliška Vítková (Gar.)*	Z	2	0P+2C	Z	v
2046097	**Spanish - Beginners** *Jaime Andrés Villagómez* **Jaime Andrés Villagómez** *Jaime Andrés Villagómez (Gar.)*	Z	2	0P+2C	L	v

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

Code	Course		
2046155	English Conversation	Z	2
Improving communicative skills in speaking on general topics and general technical topics.			
2046156	English Conversation	Z	2
Improving communicative skills in speaking on general topics and general technical topics.			
2046071	English - Lower Intermediate	Z	2
Mapped to the Common European Framework of Reference Level A2 Aim: Understanding clearly spoken language about everyday situations which a student meets either at school or at his/her free time and speaking about them. Writing in a simple way about familiar topics. reading and comprehension of simple texts. Improvement of professional language.			
2046070	English - Lower Intermediate	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language. A1 - A2.			
2046074	English - Advanced	Z	2
The aim: comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. reading and comprehension of popular-scientific and scientific articles or texts from student´s field of studies without difficulties. Grammar structures on advanced level. B1 - B2.			
2046075	English - Advanced	Z	2
Mapped to the Common European Framework of Reference Level B1 - B2. The aim: comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. reading and comprehension of popular-scientific and scientific articles or texts from student´s field of studies without difficulties. Grammar structures on advanced level.			
2046072	English - Upper Intermediate	Z	2
The aim is to extend language skills taking into consideration professional English and common professional terminology. Comprehension of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening grammar knowledge. A2 - B1.			
2046073	English - Upper Intermediate	Z	2
Mapped to the Common European Framework of Reference Level B1. The aim is to extend language skills taking into consideration professional English and common professional terminology. Comprehension of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening grammar knowledge.			
2046068	English - Beginners	Z	2
Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language). A1			
2046069	English - Beginners	Z	2
Mapped to the Common European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language).			
2046126	Czech Lower Intermediate	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			

2046125	Czech Lower Intermediate	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046118	Czech -Advanced	Z	2
Mapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student´s field of studies without difficulties. Grammar structures on advanced level.			
2046117	Czech -Advanced	Z	2
Comprehension of spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.			
2046127	Czech - Upper Intermediate	Z	2
Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one´s opinions and plans. Reading and understanding general and technical texts.			
2046128	Czech - Upper Intermediate	Z	2
Mapped to the Common European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professional Czech and common professional terminology. Comprehension of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening the knowledge technical language.			
2046119	Czech Language for Beginners I.	Z	2
Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)			
2046120	Czech Language for Beginners II.	Z	2
Mapped to the Common European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language).			
2046086	French - Lower Intermediate Course	Z	2
Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046087	French - Lower Intermediate Course	Z	2
Mapped to the level of Common European Framework of Reference: A2 Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046091	French - Advanced	Z	2
Mapped to the level of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in French on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.			
2046090	French - Advanced	Z	2
Comprehension of spoken language as well as lectures in French on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.			
2046089	French - Upper Intermediate	Z	2
Mapped to the level of Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students comes across at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, explain one´s opinions and plans. Reading and understanding general and technical texts.			
2046088	French - Upper Intermediate	Z	2
Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one´s opinions and plans. Reading and understanding general and technical texts.			
2046084	French - Beginners	Z	2
Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046085	French - Beginners´ Course	Z	2
Mapped to the level of Common European Framework of Reference: A1 Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
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			
2144062	Technical Indonesian - Course II.	Z,ZK	3
Basic of Indonesian Language for Student Exchange Program to Indonesia			
2046078	German - Lower Intermediate Course	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046079	German - Lower Intermediate Course	Z	2
Mapped to the level of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a student meets either at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvement of professional language.			
2046083	German - Advanced Course	Z	2
Mapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken German as well as lectures given in German without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student´s field of studies without difficulties. Grammar structures on advanced level.			
2046082	German - Advanced Course	Z	2
Comprehension of spoken language as well as lectures in German on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.			
2046081	German - Upper Intermediate Course	Z	2
Mapped to the level of Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students comes across at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, explain one´s opinions and plans. Reading and understanding general and technical texts.			
2046080	German - Upper Intermediate Course	Z	2
Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one´s opinions and plans. Reading and understanding general and technical texts.			

2046076	German - Beginners	Z	2
Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)			
2046077	German - Beginners	Z	2
Mapped to the level Common European Framework of Reference A1 Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language).			
2046161	Presentations in English	Z	2
Preparing students to present 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 presenting technical topics in German, possibly in cooperation with specialized departments.			
2046164	Presentations in Russian	Z	2
Preparation for presenting technical topics in Russian, possibly in cooperation with specialized departments.			
2046163	Presentations in French language	Z	2
Preparation for presenting technical topics in French, possibly in cooperation with specialized departments.			
2046165	Presentations in Spanish	Z	2
Preparation for presenting technical topics in Spanish, possibly in cooperation with specialized departments.			
2046137	Russian - Lower Intermediate Course	Z	2
Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046138	Russian - Lower Intermediate Course	Z	2
Mapped to the level of Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a student meets at 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.			
2046141	Russian - Advanced	Z	2
Comprehension of spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, 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.			
2046142	Russian - Advanced	Z	2
Mapped to the level of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.			
2046140	Russian - Upper Intermediate	Z	2
Mapped to the level of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one´s opinions and plans. Reading and understanding general and technical texts.			
2046139	Russian - Upper Intermediate	Z	2
Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one´s opinions and plans. Reading and understanding general and technical texts.			
2046136	Russian - Beginners	Z	2
Mapped to the level of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)			
2046135	Russian - Beginners	Z	2
Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)			
2046099	Spanish - Lower Intermediate	Z	2
Mapped to the level of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a student meets at 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.			
2046098	Spanish - Lower Intermediate	Z	2
Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046096	Spanish - Beginners	Z	2
Aim:Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046097	Spanish - Beginners	Z	2
Mapped to the Common European Framework of Reference Level A1. Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
2011009	Mathematics III	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 relations.			
2011056	Mathematics I	Z,ZK	8
In the course, greater emphasis is placed on the theoretical basis of the concepts discussed and on the derivation of basic relationships and connections between concepts. Students will also get to know the procedures for solving problems with parametric input. In addition, students will gain extended knowledge in some thematic areas: eigennumbers and eigenvectors of a matrix, Taylor polynomial, integral as a limit function, integration of some special functions.			

2011062	Matematika II.	Z,ZK	8
Open and closed set, boundary in E^k. Real function of k-variables. Partial derivatives and differentiability. Gradient and directional derivative. Differential operators div (divergence) and curl (rotation). Function given implicitly. Local and global (= absolute) extremes of a function of more variables. Double integral, volume (=triple) integral, Fubini theorem. Transformation of integrals to polar, cylindrical and spherical coordinates. A simple smooth curve and line integral of a scalar and vector function. Circulation and Green's theorem. A potential vector field, independence of a line integral on the path. Simple smooth surface and surface integral of a scalar function and a vector function. Flow of a vector field through a surface. The Gauss-Ostrogradskij theorem.			

2012037	Computer Graphics	KZ	3

2016007	Mathematics I. - Seminar	Z	2

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 algebra, 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.			

2021025	Physics II.	Z,ZK	4
Faraday's law of electromagnetic induction. Maxwell's equations, electromagnetic waves. Light, wave optics, geometrical optics. Quantum properties of electromagnetic waves. Interaction of radiation with matter. Photoelectric effect. Wave-particle 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.			

2021041	Physics I.	Z,ZK	7
Kinematics and dynamics of a particle motion. Principle of conservation of energy. System of particles, centre of mass. Rigid body. Continuum, elastic properties of bodies. Oscillations, waves. Fluid mechanics. Temperature and heat transfer. Kinetic theory of gases. Thermodynamics. Electric field, current, conductivity, resistance. Conductors, semiconductors, insulators. Magnetic field. Magnetic materials. Laboratories - accuracy of measurements, systematic and random errors, uncertainty of direct and indirect measurements, regression, measurements of 11 various experiments related to the lectures.			

2026016	Physics - Seminar	Z	2
The subject is mainly meant for high-school students for repetition of high-school physics.			

202A041	Physics I.	ZK	3
Kinematics and dynamics of a particle motion. Principle of conservation of energy. System of particles, centre of mass. Rigid body. Continuum, elastic properties of bodies. Oscillations, waves. Fluid mechanics. Temperature and heat transfer. Kinetic theory of gases. Thermodynamics. Electric field, current, conductivity, resistance. Conductors, semiconductors, insulators. Magnetic field. Magnetic materials. Laboratories - accuracy of measurements, systematic and random errors, uncertainty of direct and indirect measurements, regression, measurements of 11 various experiments related to the lectures.			

2041061	English-Bachelor Exam	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.			

2041062	German - Bachelor Exam / FME	Z,ZK	2
Mapped to the Common European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficulties, to take part in discussions, to write a summary, a report and an essay, to read technical texts, to master grammar at advanced level.			

2041063	French - Bachelor Exam /FME	Z,ZK	2
Mapped to the Common European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficulties, to take part in discussions, to write a summary, a report and an essay, to read technical texts, to master grammar at advanced level.			

2041064	Spanish - Bachelor Exam / FME	Z,ZK	2
Mapped to the Common European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficulties, to take part in discussions, to write a summary, a report and an essay, to read technical texts, to master grammar at advanced level.			

2041065	Russian - Bachelor Exam / FME	Z,ZK	2
Mapped to the Common European Framework Level B2. The aim is to understand spoken language and lectures on technical topics without greater difficulties, to take part in discussions, to write a summary, a report and an essay, to read technical texts, to master grammar at advanced level.			

2046068	English - Beginners	Z	2
Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language). A1			

2046069	English - Beginners	Z	2
Mapped to the Common European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language).			

2046070	English - Lower Intermediate	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language. A1 - A2.			

2046071	English - Lower Intermediate	Z	2
Mapped to the Common European Framework of Reference Level A2 Aim: Understanding clearly spoken language about everyday situations which a student meets either at school or at his/her free time and speaking about them. Writing in a simple way about familiar topics. reading and comprehension of simple texts. Improvement of professional language.			

2046072	English - Upper Intermediate	Z	2
The aim is to extend language skills taking into consideration professional English and common professional terminology. Comprehension of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening grammar knowledge. A2 - B1.			

2046073	English - Upper Intermediate	Z	2
Mapped to the Common European Framework of Reference Level B1. The aim is to extend language skills taking into consideration professional English and common professional terminology. Comprehension of standard English speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening grammar knowledge.			

2046074	English - Advanced	Z	2
The aim: comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. reading and comprehension of popular-scientific and scientific articles or texts from student´s field of studies without difficulties. Grammar structures on advanced level. B1 - B2.			

2046075	English - Advanced	Z	2

Mapped to the Common European Framework of Reference Level B1 - B2. The aim: comprehension of spoken English as well as lectures given in English without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. reading and comprehension of popular-scientific and scientific articles or texts from student´s field of studies without difficulties. Grammar structures on advanced level.

2046076	German - Beginners	Z	2

Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)

2046077	German - Beginners	Z	2

Mapped to the level Common European Framework of Reference A1 Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language).

2046078	German - Lower Intermediate Course	Z	2

Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.

2046079	German - Lower Intermediate Course	Z	2

Mapped to the level of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a student meets either at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvement of professional language.

2046080	German - Upper Intermediate Course	Z	2

Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one´s opinions and plans. Reading and understanding general and technical texts.

2046081	German - Upper Intermediate Course	Z	2

Mapped to the level of Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students comes across at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, explain one´s opinions and plans. Reading and understanding general and technical texts.

2046082	German - Advanced Course	Z	2

Comprehension of spoken language as well as lectures in German on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.

2046083	German - Advanced Course	Z	2

Mapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken German as well as lectures given in German without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student´s field of studies without difficulties. Grammar structures on advanced level.

2046084	French - Beginners	Z	2

Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.

2046085	French - Beginners´ Course	Z	2

Mapped to the level of Common European Framework of Reference: A1 Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.

2046086	French - Lower Intermediate Course	Z	2

Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.

2046087	French - Lower Intermediate Course	Z	2

Mapped to the level of Common European Framework of Reference: A2 Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.

2046088	French - Upper Intermediate	Z	2

Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one´s opinions and plans. Reading and understanding general and technical texts.

2046089	French - Upper Intermediate	Z	2

Mapped to the level of Common European Framework of Reference:A2 - B1 Understanding standard speech about familiar topics, that a students comes across at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, explain one´s opinions and plans. Reading and understanding general and technical texts.

2046090	French - Advanced	Z	2

Comprehension of spoken language as well as lectures in French on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.

2046091	French - Advanced	Z	2

Mapped to the level of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in French on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.

2046096	Spanish - Beginners	Z	2

Aim:Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.

2046097	Spanish - Beginners	Z	2

Mapped to the Common European Framework of Reference Level A1. Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.

2046098	Spanish - Lower Intermediate	Z	2

Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.

2046099	Spanish - Lower Intermediate	Z	2

Mapped to the level of Common European Framework of Reference A2 Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.

2046117	Czech -Advanced	Z	2

Comprehension of spoken language as well as lectures in Czech on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.

Code	Course	Type	Credits
2046118	Czech -Advanced	Z	2
Mapped to the level of Common European Framework of Reference: B1- B2 The aim: comprehension of spoken Czech as well as lectures given in Czech without great difficulties and active participation in a discussion. Written and oral skills on advanced level. Ability to write a summary, a report, an essay. Reading and comprehension of popular-scientific and scientific articles or texts from student´s field of studies without difficulties. Grammar structures on advanced level.			
2046119	Czech Language for Beginners I.	Z	2
Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)			
2046120	Czech Language for Beginners II.	Z	2
Mapped to the Common European Framework of Reference Level A1 Aim: Basic vocabulary of everyday life in a written and spoken form. Understanding and use of basic expressions of general scientific terminology (professional language).			
2046125	Czech Lower Intermediate	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046126	Czech Lower Intermediate	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046127	Czech - Upper Intermediate	Z	2
Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one´s opinions and plans. Reading and understanding general and technical texts.			
2046128	Czech - Upper Intermediate	Z	2
Mapped to the Common European Framework of Reference Level A2-B1. The aim is to extend language skills taking into consideration professional Czech and common professional terminology. Comprehension of standard Czech speech and conversation about topics of everyday life - at school, at work, during free time, on intermediate level. Broadening the knowledge technical language.			
2046135	Russian - Beginners	Z	2
Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)			
2046136	Russian - Beginners	Z	2
Mapped to the level of Common European Framework of Reference: A1 Basic vocabulary of everyday life in a spoken and written form. Understanding and use of basic expressions of general scientific terminology (professional language)			
2046137	Russian - Lower Intermediate Course	Z	2
Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2046138	Russian - Lower Intermediate Course	Z	2
Mapped to the level of Common European Framework of Reference: A2 Understanding clearly what is spoken about everyday situations which a student meets at 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.			
2046139	Russian - Upper Intermediate	Z	2
Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one´s opinions and plans. Reading and understanding general and technical texts.			
2046140	Russian - Upper Intermediate	Z	2
Mapped to the level of Common European Framework of Reference: A2 - B1 Understanding standard speech about familiar matters that a student meets at work, at school, during free time, and talking about these topics. Ability to describe experiences and events, briefly explain one´s opinions and plans. Reading and understanding general and technical texts.			
2046141	Russian - Advanced	Z	2
Comprehension of spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, 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.			
2046142	Russian - Advanced	Z	2
Mapped to the level of Common European Framework of reference: B1 - B2 Comprehension of spoken language as well as lectures in Russian on topics familiar to the student. Communication with native speakers, participation in discussions. Expressing opinions. Written skills. Ability to write an essay or a report. Reading and understanding texts concerning currant issues and popular scientific and technical articles.			
2046155	English Conversation	Z	2
Improving communicative skills in speaking on general topics and general technical topics.			
2046156	English Conversation	Z	2
Improving communicative skills in speaking on general topics and general technical topics.			
2046161	Presentations in English	Z	2
Preparing students to present in English on technical topics, with a possible co-operation with specialized departments.			
2046162	Presentations in German	Z	2
Preparation for presenting technical topics in German, possibly in cooperation with specialized departments.			
2046163	Presentations in French language	Z	2
Preparation for presenting technical topics in French, possibly in cooperation with specialized departments.			
2046164	Presentations in Russian	Z	2
Preparation for presenting technical topics in Russian, possibly in cooperation with specialized departments.			
2046165	Presentations in Spanish	Z	2
Preparation for presenting technical topics in Spanish, possibly in cooperation 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.			
2121023	Thermodynamics	Z,ZK	5
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.			
2131002	Engineering Design II	Z,ZK	4
Principles of ISO GPS (Geometrical Products Specification). Students will get critical knowledge about ISO system of limits and fits, tolerancing, surface texture, geometrical tolerance, dimensional loops, tolerancing of angles and cones, tolerancing of threads. Integral part of course is a project where students apply and practice their knowledge from lectures.			

2131005	History of Technology	ZK	3

Developement of human knowledge in the domain of science and technology in the retrospective of the developement of our civilization. Emphasis is given upon new branches of technology with special attention to the contribution of mining, iron metallurgy, power engineering, transportation and of the machine industry in the narrower sense of the word.

2131519	Machine Elements for Technology	Z,ZK	5

2132001	Engineering Design I.	KZ	2

Basic of technical representation, dimensioning and tolerancing

2141204	Introduction to Electrical Engineering for Technology	Z,ZK	4

Elements of electrical circuits, analysis of electrical circuits as DC and AC. El. Power and Energy. Principle and typical parameters diodes, transistors, thyristors,operation amplifiers. Analogue and digital circuits. AC el. curcuits. Electrical power and energy. Calculation, measurement, power factor. Transformer. Induction machines. Synchronous machines. DC-machines

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

2182019	Chemistry	KZ	3

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

2311004	Mechanics for Technology	Z,ZK	7

2321039	Materials Science II.	Z,ZK	4

Fundamentals of metallurgy, iron-carbon alloys and influence of other elements, phase transformations, thermal, combined chemical and thermal and thermo-mechanical processing, technical iron-carbon alloys, non-ferrous metals and their alloys, plastics, structural ceramics, composites, selection of materials.

2321067	Technical Application of Materials	Z,ZK	5

P edm t popisuje aplikovatelnost jednotlivých skupin inženýrských materiál a jejich odpovídající vlastnosti. Rovn ž se v nuje aktuálním vývojovým trend m t chto skupin. The subject describes applicability of specific engineering material types and their characteristics. It deals with the current development trends in these materials as well.

2322029	Materials Science I.	KZ	3

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

2322091	Project	KZ	2

On the basis of the preliminary submission of a bachelor thesis the students, under supervision of their supervisors, prepare a review summarizing and evaluating the studied literature with particular emphasis on experimental technologies which can be applied in their bachelor theses. They can also mention a planned experiment or evaluate hitherto obtained knowledge or results.

2331068	Technology I.	Z,ZK	5

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. Brazing. Surface treatments.

2331071	Automation of Production Processes	Z,ZK	5

Automation of basic technological processes - casting, welding, forming and finishing. Facilities and equipment required to automate offices. Mechanization and automation in iron and steel foundries. Automation and robotics of die casting process, including other peripherals. Designing and programming of robotic welding centers. Designing and programming of robotic workstations for sheet metal forming. Design of automated forging cells. Design of automated finishing lines.

2332091	Project	KZ	2

2333038	Fundamentals of Technology I.	Z	3

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

2341014	Technology II.	Z,ZK	5

mechanics of chip formation, cutting processes, finishing operations, non-traditional machining processes. Production rates calculation, machining economics. Automation of processes, programming of manufacture. Engineering metrology. Assembly techniques. Introduction to process planing.

2342005	Quality Control	KZ	2

Basic quality control terms, where is quality created, who is responsible for a quality. Basic statistical terms and distributions. Statistical methods: statistical process control, statistical sampling. Tools and methods for a quality assurance during product lifetime cycle. Standards 9 000 and 14 000, certification of quality control systems.

2342091	Project	KZ	2

Work on specialized tasks.

2372041	Computer Support for Study	KZ	3

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

2381002	Fundamentals of Economics	Z,ZK	5

The course is focused on the following subjects: basic economic relations and consequences. Economic aggregates and their consequences. Operating of the economics according to so called macroekonomic circle, various economic theories. Consumption behaviour in microeconomics. Theory of production. Different markets and competitions.

2381059	Industrial Marketing	Z,ZK	5

2381068	Cost Accounting	Z,ZK	5

The subject presents an introduction to the problems of value management as the enterprise on the whole and its parts - centres - by means of budgeting (expected cost), so the individual achievements (intermediate products, products, services) - by means of preliminary costing (expected costs) and actual costing (actual costs). Emphasis is laid on the relation of costs on the whole - enterprise costs - to the costs of individual achievements and the understanding of the transformation from costs in the budgeting and accounting structure (individual cost items) into the costing structure (direct and overhead costs), and fixed and variable costs. There are taught conventional and also modern approaches in costing. The subject Cost Accounting is connected directly with the subject Accounting and represents an introduction to the problems of cost allocation to separate products, which are compared with the market price and finding out as their profitability, so their acceptability or unacceptability manufacturing program.

2381075	Enterprise Management and Economics	Z,ZK	5

2381098	Enterprise Finance	Z,ZK	4

The subject Financing of the Enterprise provides a broad-based introduction to financial management. Students have an opportunity to acquire an understanding of the main con-cepts and their practical application in decision-making. Students gain knowledge of financial management role within a business, financial ratios, nature and purpose of projected finan-cial statements and their role in the development of future plans for a business and in the assessing the impact of management decision on the performance and position of a busi-ness, factors which must be taken into account when managing the working capital of a business, various aspects of financing the business through external and internal sources of finance available to a business, ways how business can make decision and evaluation involv-ing investments in new technology, and various aspects of mergers and takeovers.

2381107	Engineering Ergonomy	Z,ZK	4

The aim of the subject engineering ergonomics is to become acquainted with the problems, constraints and the optimal solution of the fundamental unit of an enterprise or organization, i.e. with system - man - technology (machine) - environment. The character of the subject is going out from the anthropocentric principle, i. e. that every system MTE as in the manufacturing, managing, technological, designing so in other spheres it is important unambiguously to accommodate them to the possibilities, abilities and skills of the weakest link - that is to the given man. The students will learn not only to start from the man?s limitations during the designing of the MTE system, but also evaluate the existing economic level of the system and design rationalization measures for its optimization. The mission of the subject is that the students will be able in their work on all levels of economic spheres to ensure the optimal wellbeing for themselves and for the users of the designed systems as well as for their subordinates. The not-excludable output is also the health of man and higher quality and productivity of labour.

2381174	Enterprise Information Systems	Z,ZK	4
2381504	Accounting	Z,ZK	4

The objective of the subject is to become acquainted with the significance of accounting for enterprise management, with the content and formal structure and realization of the stages and changes of the economic results during the accounting period; further with accounting as a system needful for tax declaration and not least as a resource to financial analysis. The stress is laid on understanding the dichotomy as the basis of the double entry accounting system, which distinguishes the terms assets (in the long term and short term) and liabilities (share-holders? equity, liabilities). Of great importance is the assessing of assets and their parts. Ac-counting relates to other information subsystems as budgeting, cost accounting, short term and long term planning. There are further some other subjects concerning enterprise manage-ment, connected with accounting, especially in the field of financial management. Accounting is one of the fundamental instrument of a business manager who understands the content and structure of the balance sheet, profit and loss account and the cash/flow statement. It is very possible that some of the students will exploit the knowledge of accounting in their future occupation as managers, financial directors, in consulting firms and auditing companies.

2381514	Project management	Z,ZK	4
2381712	Managerial Counting	Z,ZK	4

The course is oriented to project management approach. During the course are solved cases that respond to practical situations. The cases are stressed on cost-returns calculations, on the solving interactions among costs, capacity of resources and the price. And also on the calculation typical kinds of variations and their explanation and the selection of the appropriate managerial decision. The students are concerning on the right way of operational budget creation and assessment. The link on the internal company accounting is shown and explain. The computerized models are used by explanation.

2382048	Statistical and Decision Analysis	KZ	4

Statistical analysis is a good basis for a creation of decision-making models. The goal of this subject is to teach students to apply the selected statistical method, to apply models of decision analysis, to create models for the management of industrial enterprises.

2382091	Specialization Project	KZ	2
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

2383008	Managerial Psychology	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 applies (with specific modifications) to the activities of managers. So you can't not communicate - you can only communicate badly, well and excellently.

2383019	Philosophical Issues Of Individual and Science	Z	2
2383102	Personnel Management	Z	2

Personnel / human resource management is concerned with the effective management of people at work. Subject examines what can or should be done to make people both more productive and more satisfied with their working life. Its goal is to help develop more effective managers and staff specialists who work directly with the human resources of organizations.

2383993	Bachelor Thesis	Z	5

Work on specialized tasks related to the focus of a thesis.

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