Study plan

Name of study plan: 09 116 NSTI VMI 2012 základ

Faculty/Institute/Others: Department: Branch of study guaranteed by the department: Welcome page Garantor of the study branch: Program of study: Welcome page Type of study: unknown Required credits: 121 Elective courses credits: 0 Sum of credits in the plan: 121 Note on the plan:

Name of the block: Compulsory courses in the program Minimal number of credits of the block: 84 The role of the block: P

Code of the group: 12NS*1P-VMI Name of the group: 2012 NSTI 1.sem povinné VMI Requirement credits in the group: In this group you have to gain 26 credits Requirement courses in the group: In this group you have to complete 6 courses Credits in the group: 26 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
2321071	Physical metallurgy Lucie Pilsová, Ji í Janovec, Jan Kr il, Jana Sobotová Jan Kr il Jana Sobotová (Gar.)	Z,ZK	5	3P+1C	*	Ρ
2321075	Integrity of materials Lucie Pilsová, Ji í Janovec, Pavlína Hájková, Jakub Horváth, Tomáš Vampola Jakub Horváth Jakub Horváth (Gar.)	Z,ZK	4	2P+1C	*	Р
2331090	Theory of Casting Bohumír Bedná , Barbora Bryksí Stunová, Aleš Herman, Irena Kubelková, Milan N mec, Jind ich Zeman, Zden k Kopanica Aleš Herman Aleš Herman (Gar.)	Z,ZK	5	3P+1C	*	Р

Characteristics of	the courses of this group of Study Plan: Code=12NS*1P-VMI Name=2012 NSTI 1.sem povi	nné VMI						
2321071	Physical metallurgy	Z,ZK	5					
The course deals with t	The course deals with the explanation of processes and procedures which form the the theoretical fundamentals of engineering and mechanical engineering technologies. Emphasis							
is laid on thermodynam	ics, diffusion, crystal lattice structures and their imperfections, phase transformations and hardening and dehardening proces	sses. Attention is	also paid to					
degradation processes,	i.e. failure of materials, fatigue, creep, corrosion, wear and radiation failures.							
2321075	Integrity of materials	Z,ZK	4					
Dealing with tasks of co	ntinuum mechanics; finite element method. Matrix and tensor calculus of stress and strain. Linear and nonlinear fracture med	, chanics. Assessm	ent of conditions					
of integrity of structures	, operation, safety and reliability of structures with defects.							
2331090	Theory of Casting	Z,ZK	5					
Properties of liquid alloy	s. Crystallization of foundry alloys. Volume changes during cooling and solidification, and their consequences. Principles of F	eeding. Controlle	d solidification.					
Interaction the metal with	th the mold. Defects resulting from shrinkage. Cast iron with lamellar graphite. Cast iron with spheroidal graphite. Malleable c	ast iron. Cast iron	with vermicular					
graphite. Iron for specia	l use. Metallurgy of steel. Metallurgy of aluminum alloys, magnesium and titanium. Alloys of copper.							

Code of the group: 12NS*2P-VMI Name of the group: 2012 NSTI 2.sem povinné VMI Requirement credits in the group: In this group you have to gain 32 credits Requirement courses in the group: In this group you have to complete 7 courses Credits in the group: 32 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
2321072	Metallic Materials Jakub Horník, Petr Zuna, Elena ižmárová Jakub Horník Jakub Horník (Gar.)	Z,ZK	5	2P+2C	*	Р
2341082	Non-convetional material removal processes Pavel Novák	Z,ZK	4	2P+1C	*	Р
2322042	Advanced materials in engineering <i>Ji í Janovec</i>	KZ	4	1P+2C	*	Р
2341066	Programming of metal cutting on CNC machines Jan Tomí ek, Pavel Novák Pavel Novák Jan Tomí ek (Gar.)	Z,ZK	5	2P+3C	*	Р
2332114	Project II František Tatí ek	KZ	5	0P+5C	*	Р
2332025	Special Technologies of Surface Treatments Jaroslav ervený, Zden k Hazdra, Viktor Kreibich, Ji í Kucha Ji í Kucha Viktor Kreibich (Gar.)	КZ	4	1P+2C	*	Р
2331097	Theory of Joining and Cutting Tomáš Gur ík, Ladislav Kola ík, Marie Kola íková, Antonín K íž, Pavel Rohan Ladislav Kola ík Ladislav Kola ík (Gar.)	Z,ZK	5	2P+2C	*	Р
Characteristics of the	e courses of this group of Study Plan: Code=12NS*2P-VMI Nam	ne=2012 NSTI	2.sem p	ovinné V	/MI	

2321072	Metallic Materials	Z,ZK	5
Metallic materials. Class	ification of metallic materials. Low-carbon weldable steels with higher strength. Stainless steels. Austenitic stainless steels, ferr	itic stainless steel	s. Heat-resisting
and creep-resisting stee	Is. Tool steels. Non-ferrous metal alloys - basic classification. Copper and copper alloys. Aluminium and aluminium alloys. Tit	anium and titaniur	n alloys. Heat
treatment of metallic ma	terials		
2341082	Non-convetional material removal processes	Z,ZK	4
Basic working principles	, current machining apllications, future development. Electrodischarge machining - principle, mechanism of material removal, $\dot{ m f}$	nole and 3 - D scha	apes production,
wire electrodischarge ma	aschining. The utilization of the energy beams for machining - laser, electron and ion beams, plasma arc. Electrochemical machi	ning - basic princip	ple, applications,
full - form shaping. Cher	nical machining. Water - jet and ultrasonic machining. Technological, economical and surface quality consideration when usin	ng nonconvention	al
processes.Environment	al and Safety Aspacts of Electrophysical and Electrochemical Processes.		
2322042	Advanced materials in engineering	KZ	4
Subject promising mate	rials provide an overview of selected recent construction materials. It is presented the development and the physico-mechan	ical properties of	these materials
and listed the most com	mon types of these materials. Demonstrated their fundamental characteristics, including economic considerations and intern	ational manufactu	irers. They
presented their technolo	gical capabilities, usability and design methods for marking.		
2341066	Programming of metal cutting on CNC machines	Z,ZK	5
Processing mock-up for	casting, let us say mock-up of die tool models to the form of NC programme for CNC controlled milling machine. Usage of C	AM system. Optin	nalization of tool
paths with reference to	cycle time and achieved quality of finished machined surface.		
2332114	Project II	KZ	5
The subject deals with t	he usage of computer aided techniques in production processes of forming, casting and welding. Basic characteristics of the	software FORGE	, PAMSTAMP,
QForm, Novacast, ProC	AST, MagmaSoft and SYSWELD with demonstration of selected examples.		
2332025	Special Technologies of Surface Treatments	KZ	4
Special surface treatme	nt technology, advanced technology trends. Measurement of process parameters in surface technology, computer technolog	gy in the manager	ment and control
of surface treatment . Sp	pecial surface preparation, combined pretreatment, pretreatment quality control. Conversion layer, in-process protection, an	odic oxidation. Te	sting and quality
control of surface treatm	ents. Ways of creating functional coatings, verification of performance. Finishes to heat and abrasion, special skid coatings	. Abrasion resista	nce , tribological
properties. Galvanic allo	y and composite coatings. Thermally sprayed coatings and their composition. Hot-dip coated in molten metals. Electroforming	J, the excretion of	heavy coatings.
Molds for engineering te	chnology methods of surface treatment. Finishes in electrical engineering and electronics. Surface finishing machine tools. Coa	tings with nanopa	rticles . Disposal
of waste water and envi	ronmental issues . Techno-economic indicators finishes.		
2331097	Theory of Joining and Cutting	Z,ZK	5
Course covers technolo	gies of welding, brazing and thermal cutting. Description of joining methods, their principals, equipment and typical application	on in the industry i	s done. In focus
are welding technologies	s (SMAW, GMAW, GTAW, SAW), oxyacetylene cutting, plasma cutting. Covered is also topic of material weldability and assess	ment of joint quali	ty by destructive

and non-destructive methods.

Code of the group: 12NS*3P-VMI

Name of the group: 2012 NSTI 3.sem povinné VMI

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
2321073	Non-metallic metals Zde ka Jeníková, Ta ana Vacková Ta ana Vacková Ta ana Vacková (Gar.)	Z,ZK	4	2P+2C	*	Р
2382052	Business and Management Petr Žemli ka, Miroslav Žilka Miroslav Žilka (Gar.)	KZ	3	2P+1C	*	Р
2342114	Project III. Pavel Novák	КZ	5	0P+5C	*	Р
2341004	Manufacturing systems design Ji í Kyncl Pavel Novák Libor Beránek (Gar.)	Z,ZK	4	2P+2C	*	Р

2331012	Vít Novák, František Tatí ek František Tatí ek František Tatí ek (Gar.)	Z,ZK	5 3	P+2C	8	P
Characteristics o	f the courses of this group of Study Plan: Code=12NS*3P-VMI Nam	e=2012 NSTI	3.sem pov	vinné VN	/11	·
2321073	Non-metallic metals			Ζ,	ZK	4
The lectures cover the	entire range of non-metallic engineering materials, a majority of them are devoted to polymer	materials which a	re most freque	ntly used ir	n mechanio	cal engineering
and the volume of thei	r consumption highly exceeds that of the rest of non-metallic materials. Emphasis is laid on e	explanation and re	alization of ba	sic terms i	n the field	of non-metallic
materials. The lectures	also deal with standardization, environmental and economical aspects which follow from the	e different propert	ies of non-met	allic and m	etallic ma	terials.
2382052	Business and Management			K	Z	3
This course introduces	entrepreneurship as a way relevant to student's future professional career. Technically oriented	d students who ha	ven't any speci	alized ecor	nomical an	d management
courses in their curricu	llum are introduced to the fundamental issues needed to start of their own businesses using	simple and unde	rstandable form	n. To study	the basic	information of
individual topics e-learn	ning materials accessible on the web portal are prepared. Acquired knowledge is then practiced	l at workshops inv	olving external	lectors. Ev	aluation ar	nd classification
is based on the e-learn	ning tests and student?s case study, related to small business issues (mostly the business p	an of a start-up c	ompany).			
2342114	Project III.			K	Z	5
Course is feelinged on						
Course is locused on s	solving a complex tasts from the field of machining, process planning and metrology.					
2341004	solving a complex tasts from the field of machining, process planning and metrology. Manufacturing systems design			Ζ,	ZK	4
2341004 Theory and methodolo	solving a complex tasts from the field of machining, process planning and metrology. Manufacturing systems design gy of technological designing, time and spatial structures of production systems. The aim of	the course is to te	each students	Z,	ZK	4 ches and
2341004 Theory and methodolo methodology of produc	solving a complex tasts from the field of machining, process planning and metrology. Manufacturing systems design gy of technological designing, time and spatial structures of production systems. The aim of ction systems designing with respect to their flexibility, productivity and production quality. Int	the course is to te roduct students to	each students the complex of	Z,i with mode design of p	ZK rn approad roduction	4 ches and systems within
2341004 Theory and methodolo methodology of produc the supply chain. Stud	Solving a complex tasts from the field of machining, process planning and metrology. Manufacturing systems design agy of technological designing, time and spatial structures of production systems. The aim of action systems designing with respect to their flexibility, productivity and production quality. Int ents will be acquainted with modern methods of industrial engineering and lean manufacturi	the course is to te roduct students to ng.	each students the complex o	Z, with mode design of p	ZK rn approad roduction	4 ches and systems within
2341004 Theory and methodolo methodology of produc the supply chain. Stud 2331012	Manufacturing systems design by of technological designing, time and spatial structures of production systems. The aim of ction systems designing with respect to their flexibility, productivity and production quality. Int ents will be acquainted with modern methods of industrial engineering and lean manufacturing Theory and Practise of Metal Forming	the course is to to roduct students to ng.	each students the complex o	Z,, with mode design of p	ZK rn approad roduction ZK	4 ches and systems within 5
2341004 Theory and methodolo methodology of produc the supply chain. Stud 2331012 Fundamentals of meta	Solving a complex tasts from the field of machining, process planning and metrology. Manufacturing systems design bgy of technological designing, time and spatial structures of production systems. The aim of ction systems designing with respect to their flexibility, productivity and production quality. Int ents will be acquainted with modern methods of industrial engineering and lean manufacturing Theory and Practise of Metal Forming I forming theory. Stress-strain relationships in elasticity and plasticity. Methods for analyzing r	the course is to to roduct students to ng. netalworking proc	each students the complex of esses. Workab	Z,, with mode design of p Z,, ility of met	ZK rn approad roduction ZK als. Individ	4 ches and systems within 5 dual constraints
2341004 Theory and methodolo methodology of produc the supply chain. Stud 2331012 Fundamentals of meta in metalforming and th	Solving a complex tasts from the field of machining, process planning and metrology. Manufacturing systems design bgy of technological designing, time and spatial structures of production systems. The aim of ction systems designing with respect to their flexibility, productivity and production quality. Int ents will be acquainted with modern methods of industrial engineering and lean manufacturing Theory and Practise of Metal Forming I forming theory. Stress-strain relationships in elasticity and plasticity. Methods for analyzing r eir influence on the forming process. Fundamentals of theory and practice of basic bulk meta	the course is to to roduct students to ng. netalworking proc al and sheet meta	each students o the complex o esses. Workab	Z,, with mode design of p Z,, ility of met sses. Calc	ZK rn approad roduction ZK als. Indivic rulation of	4 ches and systems within 5 dual constraints energy and
2341004 Theory and methodolo methodology of produc the supply chain. Stud 2331012 Fundamentals of meta in metalforming and the loads in forming, select	Solving a complex tasts from the field of machining, process planning and metrology. Manufacturing systems design Bay of technological designing, time and spatial structures of production systems. The aim of ction systems designing with respect to their flexibility, productivity and production quality. Intents will be acquainted with modern methods of industrial engineering and lean manufacturing Theory and Practise of Metal Forming I forming theory. Stress-strain relationships in elasticity and plasticity. Methods for analyzing reir influence on the forming process. Fundamentals of theory and practice of basic bulk metation of forming equipment.	the course is to to roduct students to ng. netalworking proc al and sheet meta	each students o the complex o esses. Workab Iworking proce	Z,, with mode lesign of p Z,, ility of met ssses. Calc	ZK rn approad roduction ZK als. Individ culation of	4 ches and systems within 5 dual constraints energy and
2341004 Theory and methodolo methodology of produc the supply chain. Stud 2331012 Fundamentals of meta in metalforming and the loads in forming, select	Solving a complex tasts from the field of machining, process planning and metrology. Manufacturing systems design Bay of technological designing, time and spatial structures of production systems. The aim of ction systems designing with respect to their flexibility, productivity and production quality. Intents will be acquainted with modern methods of industrial engineering and lean manufacturing Theory and Practise of Metal Forming I forming theory. Stress-strain relationships in elasticity and plasticity. Methods for analyzing reir influence on the forming process. Fundamentals of theory and practice of basic bulk metation of forming equipment.	the course is to to roduct students to ng. netalworking proc al and sheet meta	each students o the complex o esses. Workab Iworking proce	Z,, with model design of p Z,, ility of met esses. Calc	ZK rn approad roduction ZK als. Individ culation of	4 ches and systems within 5 dual constraints energy and

Code of the group: 12NS*4P-VMI Name of the group: 2012 NSTI 4.sem povinné VMI Requirement credits in the group: In this group you have to gain 5 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 5 Note on the group:

Theory and Practice of Motel Ferming

Name of the block: Compulsory elective courses Minimal number of credits of the block: 37 The role of the block: PV

Code of the group: 12N**3Q--JV

Name of the group: 2012 N 3.sem povinná jazyková výuka

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

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

Credits in the group: 2

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2043081	English - Preparatory Course / FME Veronika Kratochvílová, Eliška Vítková, Ilona Šimice, Michaela Schusová, Hana Volejníková Nina Procházková Ayyub	Z	2	0P+2C	*	PV
2043086	Czech - Preparatory Course Michaela Schusová, Hana Volejníková, Petr Laurich	Z	2	0P+2C	*	PV
2043083	French - Preparatory Course / FME Michaela Schusová, Dušana Jirovská Michaela Schusová Dušana Jirovská (Gar.)	Z	2	0P+2C	*	PV
2043082	German - Lower Intermediate Course Eliška Vítková, Michaela Schusová, Petr Laurich, Jaroslava Kommová Jaroslava Kommová Jaroslava Kommová (Gar.)	Z	2	0P+2C	*	PV
2043085	Russian - Preparatory Course / FME Michaela Schusová, Hana Volejníková, Dušana Jirovská Eliška Vítková	Z	2	0P+2C	*	PV
2043084	Spanish - Preparatory Course / FME Michaela Schusová, Jaime Andrés Villagómez Eliška Vítková	Z	2	0P+2C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12N**3Q--JV Name=2012 N 3.sem povinná jazyková výuka

2043081	English - Preparatory Course / FME	Z	2					
Aim: Understanding clea	im: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about							
familiar topics. Reading	and comprehension of simple texts. Improvement of professional language. European level A1 - A2.							
2043086	Czech - Preparatory Course	Z	2					
Aim: Understanding clea	arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	m. Writing in a sin	nple way about					
familiar topics. Reading	and comprehension of simple texts. Improvement of professional language.							

2043083	French - Preparatory Course / FME	Z	2
Aim: Understanding clea	arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	m. Writing in a si	mple way about
familiar topics. Reading	and comprehension of simple texts. Improvement of professional language.		
2043082	German - Lower Intermediate Course	Z	2
Mapped to the level of C	common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic	h a student meet	s either at school
or in his/her free time ar	nd speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improveme	nt of professional	language.
2043085	Russian - Preparatory Course / FME	Z	2
Aim: Understanding clea	arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	m. Writing in a si	mple way about
familiar topics. Reading	and comprehension of simple texts. Improvement of professional language.		
2043084	Spanish - Preparatory Course / FME	Z	2
Aim: Understanding clea	arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	m. Writing in a si	mple way about
familiar topics. Reading	and comprehension of simple texts. Improvement of professional language.		

Code of the group: 12N**3Q--JZ

Name of the group: 2012 N 3.sem povinná jazyková zkouška

Requirement credits in the group: In this group you have to gain 1 credit

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

Credits in the group: 1

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
2041081	English - Master Exam Veronika Kratochvílová, Eliška Vítková, Ilona Šimice, Michaela Schusová, Hana Volejníková, Michele Le Blanc, Nina Procházková Ayyub Nina Procházková Ayyub Ilona Šimice (Gar.)	ZK	1	0P+0C	*	PV
2041086	Czech- Master Exam Michaela Schusová, Hana Volejníková, Petr Laurich	ZK	1	0P+0C	*	PV
2041083	French - Master Exam / FME Michaela Schusová, Dušana Jirovská Dušana Jirovská (Gar.)	ZK	1	0P+0C	*	PV
2041082	German - Master Exam / FME Eliška Vítková, Michaela Schusová, Petr Laurich, Jaroslava Kommová Jaroslava Kommová Jaroslava Kommová (Gar.)	ZK	1	0P+0C	*	PV
2041085	Russian - Master Exam / FME Michaela Schusová, Hana Volejníková, Dušana Jirovská Eliška Vítková	ZK	1	0P+0C	*	PV
2041084	Spanish - Master Exam / FME Michaela Schusová, Jaime Andrés Villagómez Eliška Vítková Jaime Andrés Villagómez (Gar.)	ZK	1	0P+0C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12N**3Q--JZ Name=2012 N 3.sem povinná jazyková zkouška

2041081 English - Master Exam	ZK	1
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	of professional lar	nguage.
2041086 Czech- Master Exam	ZK	1
2041083 French - Master Exam / FME	ZK	1
Mapped to the level of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic	h 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. Improveme	nt of professional	language.
2041082 German - Master Exam / FME	ZK	1
Mapped to the level of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic	h a student meets	s 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. Improveme	nt of professional	language.
2041085 Russian - Master Exam / FME	ZK	1
Mapped to the level of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic	h a student meets	s 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. Improveme	nt of professional	language.
2041084 Spanish - Master Exam / FME	ZK	1
Mapped to the level of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic	h 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. Improveme	nt of professional	language.

Code of the group: 12NS*1Q-VMI Name of the group: 2012 NSTI 1.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 4 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 4 Note on the group:

2182001 Physical chemistry Jaromir Stand Radek Šulc Radek Šulc (Gar.) KZ 4 2P+1C * P 2022010 Physical Foundations of Advanced Technologies Tomáš Horaž ovský. Petr VI ák, Zden k Tolde Petr VI ák (Gar.) KZ 4 2P+1C * P Characteristics of the courses of this group of Study Plan: Code=12NS*1Q-VMI Name=2012 NSTI 1.sem 1povvol VMI 2182001 Physical chemistry Basic principles of physical chemistry in the field assuming real behavior especially that are demonstrated on technical applications. Volumetric properties of fluids. Thermodynamics. Thermochemistry. Chemical reaction equilibrium. KZ 4 2022010 Physical Foundations of Advanced Technologies KZ 4 2022010 Physical Foundations of Advanced Technologies KZ 4 Vacuum technology : theoretical foundations, vacuum pumps, gauges for low pressure measurements, applications in engineering. Gas discharges, physical and plasmochemic methods of surface modification and coaling deposition. Lasers: laser fundamentals, laser categories, laser technology application in mechanical engineering. Piezoelectricity : fundamentals, application in technology. Ultrasound generation, piezoelectric pumps, nanofeeds. - Code of the group: 12NS*3Q-VMI Name of the group: 12NS*3Q-VMI - Name of the group: 5 Name of the group: 5 - - Orde on the group: 5	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
2022010 Physical Foundations of Advanced Technologies Tomáš Horaž ovský, Petr VI ák, Zden k Tolde Petr VI ák (Gar.) KZ 4 2P+1C * P Characteristics of the courses of this group of Study Plan: Code=12NS*1Q-VMI Name=2012 NSTI 1.sem 1povvol VMI KZ 4 2182001 Physical chemistry KZ 4 2P+1C * P 2182001 Physical chemistry in the field assuming real behavior especially that are demonstrated on technical applications. Volumetric properties of fluids. Thermodynamics. Thermochemistry. Chemical reaction equilibrium. KZ 4 2022010 Physical Foundations, vacuum pumps, gauges for low pressure measurements, applications in engineering. Gas discharges, physical and plasmochemics KZ 4 Vacuum technology: theoretical foundations, vacuum gumps, gauges for low pressure measurements, application in mechanical engineering. Piezoelectricity : fundamentals, application in technology application in technology, ultrasound generation, piezoelectric pumps, nanofeeds. - Code of the group: 12NS*3Q-VMI Name of the group: 2012 NSTI 3.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 5 credits - Requirement courses in the group: In this group you have to complete 1 course - - - Orde of the group: 5 Name of the course / Name of the group of courses - - - <th>2182001</th> <th>Physical chemistry Jaromír Štancl Radek Šulc Radek Šulc (Gar.)</th> <th>KZ</th> <th>4</th> <th>2P+1C</th> <th>*</th> <th>PV</th>	2182001	Physical chemistry Jaromír Štancl Radek Šulc Radek Šulc (Gar.)	KZ	4	2P+1C	*	PV
Characteristics of the courses of this group of Study Plan: Code=12NS*1Q-VMI Name=2012 NSTI 1.sem 1povvol VMI 2182001 Physical chemistry KZ 4 Basic principles of physical chemistry in the field assuming real behavior especially that are demonstrated on technical applications. Volumetric properties of fluids. Thermodynamics. Thermochemistry. Chemical reaction equilibrium. KZ 4 2022010 Physical Foundations of Advanced Technologies KZ 4 Vacuum technology : theoretical foundations, vacuum pumps, gauges for low pressure measurements, applications in engineering. Gas discharges, physical and plasmochemicar methods of surface modification and coatings deposition. Lasers: laser fundamentals, laser categories, laser technology application in mechanical engineering. Piezoelectricity : fundamentals, application in technology, ultrasound generation, piezoelectric pumps, nanofeeds. Code of the group: 12NS*3Q-VMI Name of the group: 2012 NSTI 3.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 5 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 5 Note on the group: 5 Note on the group: 5 Name of the course / Name of the group of courses	2022010	Physical Foundations of Advanced Technologies Tomáš Horaž ovský, Petr VI ák, Zden k Tolde Petr VI ák (Gar.)	KZ	4	2P+1C	*	PV
2182001 Physical chemistry KZ 4 Basic principles of physical chemistry in the field assuming real behavior especially that are demonstrated on technical applications. Volumetric properties of fluids. Thermodynamics. Thermochemistry. Chemical reaction equilibrium. KZ 4 2022010 Physical Foundations of Advanced Technologies KZ 4 Vacuum technology : theoretical foundations, vacuum pumps, gauges for low pressure measurements, applications in engineering. Gas discharges, physical and plasmochemicar methods of surface modification and coatings deposition. Lasers: laser fundamentals, laser categories, laser technology application in mechanical engineering. Piezoelectricity : fundamentals, application in technology, ultrasound generation, piezoelectric pumps, nanofeeds. Code of the group: 12NS*3Q-VMI Name of the group: 2012 NSTI 3.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 5 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 5 Vote on the group: 5 Name of the course / Name of the group in the group of courses 4	Characteristics	of the courses of this group of Study Plan: Code=12NS*1Q-VMI Na	me=2012 NST	1 1.sem 1	povvol \	/MI	
Basic principles of physical chemistry in the field assuming real behavior especially that are demonstrated on technical applications. Volumetric properties of fluids. Thermodynamics. Thermodynamics. Thermochemistry. Chemical reaction equilibrium. 2022010 Physical Foundations of Advanced Technologies KZ 4 Vacuum technology : theoretical foundations, vacuum pumps, gauges for low pressure measurements, applications in engineering. Gas discharges, physical and plasmochemicar methods of surface modification and coatings deposition. Lasers: laser fundamentals, laser categories, laser technology application in mechanical engineering. Piezoelectricity : fundamentals, application in technology, ultrasound generation, piezoelectric pumps, nanofeeds. Code of the group: 12NS*3Q-VMI Name of the group: 2012 NSTI 3.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 5 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 5 Note on the group: 5 Note on the group: 10	2182001	Physical chemistry			<u> </u>	KZ	4
properties of fluids. Phase equilibria. Solution Thermodynamics. Thermochemistry. Chemical reaction equilibrium. 2022010 Physical Foundations of Advanced Technologies KZ 4 Vacuum technology : theoretical foundations, vacuum pumps, gauges for low pressure measurements, applications in engineering. Gas discharges, physical and plasmochemicar methods of surface modification and coatings deposition. Lasers: laser fundamentals, laser categories, laser technology application in mechanical engineering. Piezoelectricity : fundamentals, application in technology, ultrasound generation, piezoelectric pumps, nanofeeds. Code of the group: 12NS*3Q-VMI Name of the group: 2012 NSTI 3.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 5 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 5 Note on the group: 5 Name of the course / Name of the group of courses	Basic principles of ph	nysical chemistry in the field assuming real behavior especially that are demonstrated on tec	chnical applications	. Volumetric	properties	of fluids. Therm	odynamic
2022010 Physical Foundations of Advanced Technologies KZ 4 Vacuum technology : theoretical foundations, vacuum pumps, gauges for low pressure measurements, applications in engineering. Gas discharges, physical and plasmochemicar methods of surface modification and coatings deposition. Lasers: laser fundamentals, laser categories, laser technology application in mechanical engineering. Piezoelectricity : fundamentals, application in technology, ultrasound generation, piezoelectric pumps, nanofeeds. Vacuum technology application in mechanical engineering. Piezoelectricity : fundamentals, application in technology, ultrasound generation, piezoelectric pumps, nanofeeds. Code of the group: 12NS*3Q-VMI Value Name of the group: 2012 NSTI 3.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 5 credits Requirement courses in the group: In this group you have to complete 1 course Corde of the group: 5 Note on the group: Name of the group: 5 Note on the group: Name of the group: 0	properties of fluids. P	Phase equilibria. Solution Thermodynamics. Thermochemistry. Chemical reaction equilibrium	۱.				
Vacuum technology : theoretical foundations, vacuum pumps, gauges for low pressure measurements, applications in engineering. Gas discharges, physical and plasmochemicar methods of surface modification and coatings deposition. Lasers: laser fundamentals, laser categories, laser technology application in mechanical engineering. Piezoelectricity : fundamentals, application in technology, ultrasound generation, piezoelectric pumps, nanofeeds. Code of the group: 12NS*3Q-VMI Name of the group: 2012 NSTI 3.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 5 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 5 Note on the group: 10 Name of the course / Name of the group of courses	2022010	Physical Foundations of Advanced Technologies				KZ	4
methods of surface modification and coatings deposition. Lasers: laser fundamentals, laser categories, laser technology application in mechanical engineering. Piezoelectricity : fundamentals, application in technology, ultrasound generation, piezoelectric pumps, nanofeeds. Code of the group: 12NS*3Q-VMI Name of the group: 2012 NSTI 3.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 5 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 5 Note on the group: Name of the course / Name of the group of courses	Vacuum technology :	theoretical foundations, vacuum pumps, gauges for low pressure measurements, application	ons in engineering.	Gas dischar	ges, physic	al and plasmoo	hemical
fundamentals, application in technology, ultrasound generation, piezoelectric pumps, nanofeeds. Code of the group: 12NS*3Q-VMI Name of the group: 2012 NSTI 3.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 5 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 5 Note on the group: Name of the course / Name of the group of courses	methods of surface n	nodification and coatings deposition. Lasers: laser fundamentals, laser categories, laser tech	hnology application	in mechanie	cal enginee	ring. Piezoelec	tricity :
Code of the group: 12NS*3Q-VMI Name of the group: 2012 NSTI 3.sem 1povvol VMI Requirement credits in the group: In this group you have to gain 5 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 5 Note on the group:	fundamentals, applic	ation in technology, ultrasound generation, piezoelectric pumps, nanoteeds.					
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Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 5 Note on the group:	Requirement	t credits in the group: In this group you have to gain 5	credits				
Credits in the group: 5 Note on the group:	Requirement	t courses in the group: In this group you have to comp	lete 1 cours	se			
Note on the group: Name of the course / Name of the group of courses	Credits in the	e group: 5					
Name of the course / Name of the group of courses	Note on the	group:					
	- 、	Name of the course / Name of the group of courses					

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
2332010	Design of the production of castings, forgings, stampings and welded parts	KZ	5	1P+4C	Z	PV
2322043	Project-heat treatment Elena ižmárová	KZ	5	1P+4C	*	PV
2342119	Technical Standardization, Quality, Metrology Pavel Novák	KZ	5	1P+4C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12NS*3Q-VMI Name=2012 NSTI 3.sem 1povvol VMI

2332010 Design of the production of castings, forgings, stampings and welded parts 5 K7 Principles for the preparation of production of machine parts with respect to the required quality and production efficiencies. Design of manufacturing processes, tools, equipment and machinery in foundries, smitheries, mills and welding shops. Adjustments to design machine parts with regard to manufacturing technology, materials and prescribed volume production. Determination of technological additions, production conditions, parameters and production times. Basic capacity calculations. Data for cost calculation. Design and comparison of alternatives. 2322043 Project-heat treatment ΚZ 5 2342119 Technical Standardization, Quality, Metrology ΚZ 5 The course aims to zoom coherence to students of technical standardization, metrology and quality and to acquaint them with the basic themes of these fields.

Code of the group: 12NS*4Q-VMI-DP

Name of the group: 2012 NSTI 4.sem 1povvol VMI - DP

Requirement credits in the group: In this group you have to gain 10 credits

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

Credits in the group: 10

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
2323998	Thesis	Z	10	0P+10C	*	PV
2333998	Diploma Thesis Aleš Herman	Z	10	0P+10C	*	PV
2343998	Diploma thesis Pavel Novák	Z	10	0P+10C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12NS*4Q-VMI-DP Name=2012 NSTI 4.sem 1povvol VMI - DP

2323998	Thesis	Z	10		
Preparation of a thesis under the instructions and guidance of a supervisor.					
2333998	Diploma Thesis	Z	10		
2343998	Diploma thesis	Z	10		
Sources of information in the field. Databases and corporate literature. Normalization. Search activity. News from the field of engineering technology. Principles of research and work					
in laboratories. The principles of work safety in technological devices. Work on specialized tasks related to the focus of a thesis.					

Code of the group: 12NS*4Q-VMI Name of the group: 2012 NSTI 4.sem 3povvol VMI Requirement credits in the group: In this group you have to gain at least 15 credits (at most 18) Requirement courses in the group: In this group you have to complete 3 courses Credits in the group: 15 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
2321504	Experimental Methods in Materials Science Jana Sobotová	Z,ZK	6	2P+2C	*	PV
2321080	Material Engineering Jana Sobotová	Z,ZK	5	2P+2C	*	PV
2331027	Metallurgy of Casting Alloys Irena Kubelková	Z,ZK	5	2P+2C	*	PV
2321074	Nano and Biomaterials	Z,ZK	5	2P+2C	*	PV
2331076	Design of Surface Treatment	Z,ZK	5	2P+2C	*	PV
2341702	Industrial Metrology Libor Beránek, Petr Mikeš, Jan Urban Pavel Novák Libor Beránek (Gar.)	Z,ZK	5	2P+2C	*	PV
2341063	Technology of cutting with CAM Pavel Novák	Z,ZK	6	2P+2C	*	PV
2331507	Processing Technology of Plastics and Composites Barbora Bryksi Stunová	Z,ZK	6	2P+2C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12NS*4Q-VMI Name=2012 NSTI 4.sem 3povvol VMI

2321504	Experimental Methods in Materials Science	Z,ZK	6		
Methods of diffraction of X-ray and electron diffraction (for the phase analysis to determine the residual stress, texture and analysis of lattice defects). Imaging methods: light and					
electron microscopy (pr	eparation of sample and display characteristics, contrast theory). Advanced methods of physical and chemical microanalysis	: scan-ning electro	on microscopy		
(emission, transmission	and conductivity method). Electron probe microanalysis: wave-length and energy-dispersive X-ray spectroscopy, quantitative	microanalysis, si	gnal processing.		
2321080	Material Engineering	Z,ZK	5		
The course is an analys	is of the fundamental approaches materials engineering as an interdisciplinary field of study which is based on physics, che	mistry and other to	echnical fields,		
but is also interested in	knowledge of medicine, economics and ecology. It follows the courses Physical metallurgy, metal and non-metallic materials				
2331027	Metallurgy of Casting Alloys	Z,ZK	5		
The course is aimed at	ncreasing knowledge of basic studies of foundry technology. It focuses mainly on the following topics: melting of gray iron, m	etallurgical treatm	nent and its		
influence on the structu	re and properties of gray iron; production of the ductile cast iron; inoculation and modification of cast irons; production of the	vermicular, mallea	able iron and of		
other special cast iron ty	/pes; production and metallurgical treatment of cast steel; production and metallurgical treatment of aluminum and magnesiu	ım alloys; melt qua	ality assurance		
methods; casting defect	S.				
2321074	Nano and Biomaterials	Z,ZK	5		
Introduction to nanomat	erials and nanotechnology, links between nanomaterials and biomaterials, nanopowders, nanotubes, fluereny, surface and n	anomaterials, pra	ctical application		
- industry, energy, medie	cine. Properties and structure of materials and their relationship to the live system. Immune system, biocompatibility tests, st	erilization. Morpho	ology, roughness		
and tribological properti	es of the surface of biomaterials. Application of thin films and coatings.				
2331076	Design of Surface Treatment	Z,ZK	5		
Subject is specialized to	design of convenient technology and operations surface treatments. Takes respect up to material, quality, construction and e	enviroment engine	ering parts. And		
also tekes respect up to	best accessible techniques agreable integrated prevention dle EU laws.				
2341702	Industrial Metrology	Z,ZK	5		
Theoretical introduction to measurement on coordinate measuring machines (CMMs). Students will acquainted familiar with the construction and sensors of CMM. They will gain					
important knowledge of computer tomography and reverse engineering. We introduce them to the CMM application in industry. This is related to method of MSA, including the					
determination of measurement uncertainty.					
	rement uncertainty.				
2341063	rement uncertainty. Technology of cutting with CAM	Z,ZK	6		
2341063 CAM systems for NC pr	rement uncertainty. Technology of cutting with CAM ogram generation for milling and turning operation. CAM system structure and new CNC technologies.	Z,ZK	6		
2341063 CAM systems for NC pr 2331507	rement uncertainty. Technology of cutting with CAM ogram generation for milling and turning operation. CAM system structure and new CNC technologies. Processing Technology of Plastics and Composites	Z,ZK Z,ZK	6		

List of courses of this pass:

Code	Name of the course	Completion	Credits		
2022010	Physical Foundations of Advanced Technologies	KZ	4		
Vacuum technolo	gy : theoretical foundations, vacuum pumps, gauges for low pressure measurements, applications in engineering. Gas discharges, p	hysical and plasmo	ochemical		
methods of surfa	methods of surface modification and coatings deposition. Lasers: laser fundamentals, laser categories, laser technology application in mechanical engineering. Piezoelectricity :				
	fundamentals, application in technology, ultrasound generation, piezoelectric pumps, nanofeeds.				
2041081	English - Master Exam	ZK	1		
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.					

20/1082	German - Master Evam / EME	71	1
Z04100Z	Lef Cammon Furghage Francework of Peferance A.2 Ains: Understanding allocks applications instructions which a	ctudent meete eith	
or in his/her free	to common Luopean namework or Reletence A2 Am. Ondersativity sport nanguage about every availability or selections which a	of professional k	
	a une and speaking about them. Writing in a single way about familiar topics reading and comprehesion of single texts, improvement		
2041083	French - Master Exam / FME		1
Mapped to the leve	I or Common European Framework or Reference A2 Aim: Understanding clearly spoken language about everyday situations which a	student meets eith	ner at school
or in his/her free	a time and speaking about them. Writing in a simple way about familiar topics, reading and comprehesion of simple texts, improvement	it of professional la	anguage.
2041084	Spanish - Master Exam / FME	ZK	1
Mapped to the leve	l of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a	student meets eith	ner at school
or in his/her free	e time and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvement	nt of professional la	anguage.
2041085	Russian - Master Exam / FME	ZK	1
Mapped to the leve	of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a	student meets eith	ner at school
or in his/her free	e time and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvemen	nt of professional la	anguage.
2041086	Czech- Master Exam	ZK	1
20/3081	English - Preparatory Course / EME	7	2
2043001	Lingholi - Treparatory Course / Trut	Writing in a simple	
	g clearly what is spoker about every vary studations which a student meets at school of in mismen nee time and speaking about ment.	vinuing in a simple	e way about
0040000	taminar topics. Reading and completension of simple texts, improvement of processional language. European rever AT-A		0
2043082	German - Lower Intermediate Course		2
Mapped to the leve	l of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a	student meets eith	ner at school
or in his/her free	e time and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvemen	nt of professional la	anguage.
2043083	French - Preparatory Course / FME	Z	2
Aim: Understandin	g clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them.	Writing in a simple	way about
	familiar topics. Reading and comprehension of simple texts. Improvement of professional language.		
2043084	Spanish - Preparatory Course / FME	Z	2
Aim: Understandin	i dearly 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	e way about
	familiar topics. Reading and comprehension of simple texts. Improvement of professional language	in a ompio	, naj about
2042095	Turnina opioci redaing and compromotion of compromotion of protocolorial anguago.	7	2
ZU43U03	Cussian - Preparationy Course / Five		
Aim: Understandin	g cleany what is spoken about everyoay situations which a student meets at school of in mis/her nee time and speaking about them.	whiting in a simple	e way about
	tamiliar topics. Reading and comprehension of simple texts. Improvement of professional language.		-
2043086	Czech - Preparatory Course	Z	2
Aim: Understandin	g clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them.	Writing in a simple	e way about
	familiar topics. Reading and comprehension of simple texts. Improvement of professional language.		
2182001	Physical chemistry	KZ	4
Basic principles o	f physical chemistry in the field assuming real behavior especially that are demonstrated on technical applications. Volumetric proper	ties of fluids. Thern	nodynamic
	properties of fluids. Phase equilibria. Solution Thermodynamics. Thermochemistry. Chemical reaction equilibrium.		
2321071	Physical metallurgy	Z.ZK	5
The course deals	with the explanation of processes and procedures which form the the theoretical fundamentals of engineering and mechanical engine	erina technologies	s. Emphasis
is laid on thermo	dynamics, diffusion, crystal lattice structures and their imperfections, phase transformations and hardening and dehardening process	ses. Attention is als	so paid to
	degradation processes, i.e. failure of materials, fatigue, creep, corrosion, wear and radiation failures.		
2321072	Metallic Materials	7.7K	5
Actallic materials (Necality international and the strangth Stainless steak Austanitic stainless steak Austanitic stainless steak farritic	stainless steels Hu	
and aroon registin	plassingation of metallic halehals. Low-carbon weldable steels with right strength. Stainess steels, Austernice stainess steels, lentide a steel real steels. An are farst and the state of the steels with right strength. Stainess steels, Austernice st	stairliess steels. I le	
and creep-resistin	g steels. Tool steels, Non-terrous metal alloys - basic classification, copper and copper and copper and steels	ium anu ilamum a	alloys. Heat
0004070		7 71/	
2321073	Non-metallic metals	Z,ZK	4
The lectures cover	the entire range of non-metallic engineering materials, a majority of them are devoted to polymer materials which are most frequently u	sed in mechanical	engineering
and the volume of t	heir consumption highly exceeds that of the rest of non-metallic materials. Emphasis is laid on explanation and realization of basic te	rms in the field of r	non-metallic
materials. The	lectures also deal with standardization, environmental and economical aspects which follow from the different properties of non-meta	Ilic and metallic ma	aterials.
2321074	Nano and Biomaterials	Z,ZK	5
Introduction to nan	omaterials and nanotechnology, links between nanomaterials and biomaterials, nanopowders, nanotubes, fluereny, surface and nano	materials, practica	application
- industry, energy, r	nedicine. Properties and structure of materials and their relationship to the live system. Immune system, biocompatibility tests, steriliz	zation. Morphology	/, roughness
	and tribological properties of the surface of biomaterials. Application of thin films and coatings.		
2321075	Integrity of materials	Z.ZK	4
Dealing with tasks	of continuum mechanics; finite element method. Matrix and tensor calculus of stress and strain. Linear and nonlinear fracture mechan	nics. Assessment c	of conditions
	of integrity of structures, operation, safety and reliability of structures with defects.		
2321080	Material Engineering	7 7K	5
	initiate i a traditione i interneti a pare a de interneti i a la constructione de la const Constructione de la constructione de la constructine de la constructine de la constructine de l	$\angle, \angle \cap$	
	analysis of the fundamental approaches materials engineering as an interdisciplinary new of study which is based on physics, clematic to also interacted is knowledge of materials engineering as an interdisciplinary new of study which is based on	allic motorials	nical neius,
0004504	It is also interested in knowledge of medicine, economics and econgy. It blows the courses in yacal metallulity, metal and non-metal		
2321504	Experimental Methods in Materials Science	Z,ZK	6
Methods of diffra	iction or x-ray and electron diffraction (for the phase analysis to determine the residual stress, texture and analysis of lattice defects).	imaging methods:	: light and
electron microsco	py (preparation of sample and display characteristics, contrast theory). Advanced methods of physical and chemical microanalysis: s	can-ning electron r	microscopy
emission, transmis	ssion and conductivity method). Electron probe microanalysis: wave-length and energy-dispersive X-ray spectroscopy, quantitative min	croanalysis, signal	processing.
2322042	Advanced materials in engineering	KZ	4
Subject promising	materials provide an overview of selected recent construction materials. It is presented the development and the physico-mechanica	I properties of thes	se materials
and listed the m	ost common types of these materials. Demonstrated their fundamental characteristics, including economic considerations and intern-	- 4	ers They
	osi common types of these materials. Demonstrated their fundamental characteristics, including economic considerations and intern	ational manufactur	0.01110)
2222042	presented their technological capabilities, usability and design methods for marking.		
2322043	presented their technological capabilities, usability and design methods for marking. Project-heat treatment	KZ	5
2322043	presented their technological capabilities, usability and design methods for marking. Project-heat treatment Thesis	KZ 7	5
2322043	Project-heat treatment Preparation of a thesis under the instructions and quidance of a supervisor	KZ Z	5 10
2322043	Project-heat treatment Preparation of a thesis under the instructions and guidance of a supervisor.	KZ Z	5 10
2322043 2323998 2331012	Project-heat treatment Project-heat treatment Preparation of a thesis under the instructions and guidance of a supervisor. Theory and Practise of Metal Forming presented their relationships in clasticity. Matheda for any state of the supervisor.	KZ Z,ZK	5 10 5
2322043 2323998 2331012 Fundamentals of m	Project-heat treatment Project-heat treatment Project-heat treatment Thesis Preparation of a thesis under the instructions and guidance of a supervisor. Theory and Practise of Metal Forming tetal forming theory. Stress-strain relationships in elasticity and plasticity. Methods for analyzing metalworking processes. Workability of thesis hulk metal and short metalworking processes. Workability of thesis hulk metal and short metalworking processes. Workability of thesis hulk metal and short metalworking processes. Workability of thesis hulk metal and short metalworking processes. Workability of thesis hulk metal and short metalworking processes.	KZ Z,ZK f metals. Individual	5 10 5 I constraints
2322043 2323998 2331012 Fundamentals of m in metalforming a	Project-heat treatment Project-heat treatment Project-heat treatment Thesis Preparation of a thesis under the instructions and guidance of a supervisor. Theory and Practise of Metal Forming Theory Stress-strain relationships in elasticity and plasticity. Methods for analyzing metalworking processes. Workability of their influence on the forming process. Fundamentals of theory and practice of basic bulk metal and sheet metalworking processes.	KZ Z Z,ZK If metals. Individual s. Calculation of e	5 10 5 I constraints energy and

2331027	Metallurgy of Casting Alloys	Z,ZK	5		
The course is air	ned at increasing knowledge of basic studies of foundry technology. It focuses mainly on the following topics: melting of gray iron, me	tallurgical treatment	nt and its		
influence on the st	ructure and properties of gray iron; production of the ductile cast iron; inoculation and modification of cast irons; production of the ver	micular, malleable	iron and of		
other special cast i	iron types; production and metallurgical treatment of cast steel; production and metallurgical treatment of aluminum and magnesium methods; casting defects.	alloys; melt quality	assurance		
2331076	Design of Surface Treatment	Z,ZK	5		
Subject is specialized	ed to design of convenient technology and operations surface treatments. Takes respect up to material, quality, construction and envir	roment engineering	parts. And		
	also tekes respect up to best accessible techniques agreable integrated prevention dle EU laws.				
2331090	Theory of Casting	Z,ZK	5		
Properties of liquid	I alloys. Crystallization of foundry alloys. Volume changes during cooling and solidification, and their consequences. Principles of Fee	ding. Controlled so	lidification.		
Interaction the met	al with the mold. Detects resulting from shrinkage. Cast fron with lameliar graphite. Cast fron with spheroidal graphite. Maileable cast graphite from for special use. Metalluray of steel, Metalluray of aluminum alloys, magnesium and titanium. Alloys of conpar	Iron. Cast Iron with	vermicular		
2221007	Theory of Joining and Cutting	77K	5		
Course covers tech	inclosies of welding, brazing and thermal cutting. Description of joining methods, their principals, equipment and typical application in	the industry is do	one In focus		
are welding technol	ogies (SMAW, GMAW, GTAW, SAW), oxyacetylene cutting, plasma cutting. Covered is also topic of material weldability and assessme	nt of joint quality by	destructive		
<u> </u>	and non-destructive methods.				
2331507	Processing Technology of Plastics and Composites	Z,ZK	6		
2332010	Design of the production of castings, forgings, stampings and welded parts	KZ	5		
Principles for the pr	reparation of production of machine parts with respect to the required quality and production efficiencies. Design of manufacturing pro-	cesses, tools, equ	ipment and		
machinery in found Determination of	ries, smitheries, mills and welding shops. Adjustments to design machine parts with regard to manufacturing technology, materials and technological additions, production conditions, parameters and production times. Basic capacity calculations. Data for cost calculation	prescribed volume n. Design and com	production. Darison of		
	alternatives.				
2332025	Special Technologies of Surface Treatments	KZ	4		
Special surface trea	atment technology, advanced technology trends. Measurement of process parameters in surface technology, computer technology ir	n the management	and control		
of surface treatmen	t. Special surface preparation, combined pretreatment, pretreatment quality control. Conversion layer, in-process protection, anodi-	c oxidation. Testing	and quality		
properties. Calvani	eatments, ways of creating functional coatings, venification of performance. Finishes to heat and abrasion, special skid coatings. Ab	orasion resistance,			
Molds for engineering	c alloy and composite coatings. Thermany sprayed coatings and their composition. Hot-up coated in molten metals, Electroionning, it	ie excretion of near	s Disposal		
Molds for engineerin	of waste water and environmental issues. Techno-economic indicators finishes.		5 . Disposai		
2332114	Project II	K7	5		
The subject deals	with the usage of computer aided techniques in production processes of forming, casting and welding. Basic characteristics of the so	oftware FORGE. PA	MSTAMP.		
	QForm, Novacast, ProCAST, MagmaSoft and SYSWELD with demonstration of selected examples.		, ,		
2333998	Diploma Thesis	Z	10		
2341004	Manufacturing systems design	 7 7K	4		
Theory and met	hodology of technological designing, time and spatial structures of production systems. The aim of the course is to teach students wi	th modern approac	hes and		
methodology of pro	duction systems designing with respect to their flexibility, productivity and production quality. Introduct students to the complex design	n of production sys	tems within		
	the supply chain. Students will be acquainted with modern methods of industrial engineering and lean manufacturing.				
2341063	Technology of cutting with CAM	Z,ZK	6		
	CAM systems for NC program generation for milling and turning operation. CAM system structure and new CNC technologie	es.			
2341066	Programming of metal cutting on CNC machines	Z,ZK	5		
Processing mock-u	p for casting, let us say mock-up of die tool models to the form of NC programme for CNC controlled milling machine. Usage of CAM	system. Optimalization	ation of tool		
	paths with reference to cycle time and achieved quality of finished machined surface.				
2341082	Non-convetional material removal processes	Z,ZK	4		
Basic working princ	iples, current machining apllications, future development. Electrodischarge machining - principle, mechanism of material removal, hole	and 3 - D schapes	production,		
wire electrodischarg	ge maschining. The utilization of the energy beams for machining - laser, electron and ion beams, plasma arc. Electrochemical machining	g - basic principle, a	pplications,		
	naping. Chemical machining, water - jet and unasonic machining, recinological, economical and Sunace quality consideration when	using nonconvention	Jildi		
2241702	processes. Linvionnenial and salety Aspacts of Electrophysical and Electrochemical Processes.	7.71	F		
ZO417UZ	IIIUUSUIALIVIEUOUUUU duction to measurement on coordinate measuring machines (CMMs). Students will acquainted familiar with the construction and con-	Sors of CMM Thou	C nien lliw		
important know	ledge of computer tomography and reverse engineering. We introduce them to the CMM application in industry This is related to met	thod of MSA includ	ling the		
important know	determination of measurement uncertainty.		ing the		
2342114	Project III.	K7	5		
	Course is focused on solving a complex tasts from the field of machining, process planning and metrology.		Ũ		
2342119	Technical Standardization, Quality, Metrology	KZ	5		
The cou	irse aims to zoom coherence to students of technical standardization, metrology and quality and to acquaint them with the basic ther	nes of these fields.			
2343998	Diploma thesis	Z	10		
Sources of information	tion in the field. Databases and corporate literature. Normalization. Search activity. News from the field of engineering technology. Pr	inciples of research	n and work		
	in laboratories. The principles of work safety in technological devices. Work on specialized tasks related to the focus of a the	sis.			
2382052	Business and Management	KZ	3		
This course introduc	ces entrepreneurship as a way relevant to student's future professional career. Technically oriented students who haven't any specialized	l economical and m	anagement		
courses in their cur	rriculum are introduced to the fundamental issues needed to start of their own businesses using simple and understandable form. To	study the basic info	ormation of		
individual topics e-le	earning materials accessible on the web portal are prepared. Acquired knowledge is then practiced at workshops involving external lector	rs. Evaluation and c	assification		
	is based on the e-rearning tests and student's case study, related to small business issues (mostly the business plan of a start-up company).				
For updated	information see http://bilakniha.cvut.cz/en/FF.html				

For updated information see <u>http://bilakniha.cvu</u> Generated: day 2025-06-30, time 23:13.