Study plan

Name of study plan: 12 131 NSTI PRT 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: 108 The role of the block: P

Code of the group: 12NS*1P-PRT Name of the group: 2012 NSTI 1.sem povinné PRT Requirement credits in the group: In this group you have to gain 29 credits Requirement courses in the group: In this group you have to complete 5 courses Credits in the group: 29 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2373111	Project I	Z	5	0P+5C	*	Р
2371519	Means of Automatic Control I.	Z,ZK	6	3P+0C+2L	*	Р
2181136	Processing Equipments Design	Z,ZK	6	3P+2C	*	Р
2151026	Energy Sources and Conversions	Z,ZK	6	3P+2C	*	Р

Characteristics of the courses of this group of Study Plan: Code=12NS*1P-PRT Name=2012 NSTI 1.sem povinné PRT

2373111	Project I	Z	5			
Projection training; Use of the PLM (Process Life Management) type projection software "COMOS". Preparation of the part of the project for technological process projecting.						
2371519	Means of Automatic Control I.	Z,ZK	6			
Various categories of m	eans for automatic control according to the different criterions. Main features in each category. Air and hydraulic fluid as a me	edium for informati	on transfer.			
Symbols and description	ns in pneumatic and hydraulic diagrams. Pneumatic control systems design. Pneumatic actuators, valves, special pneumatic,	electropneumatic	devices. Control			
valves, categories, dime	nsioning, design, applications. Inteligent pneumatics as an integration of pneumatic, electronic and control components and sy	stems. Valve island	ds and terminals,			
standard, with industrial buses communication, programmable. Pneumatic positioning systems.						
2181136	Processing Equipments Design	Z,ZK	6			
2181136 PEs classification, their	Processing Equipments Design parameters and criteria of their rating. Ways of PEs design according their purpose and utilization. Materials used for PEs, w	Z,ZK elding, corrosion r	6 nechanisms and			
2181136 PEs classification, their anticorrosion prevention	Processing Equipments Design parameters and criteria of their rating. Ways of PEs design according their purpose and utilization. Materials used for PEs, w . Dimension of shafts, beams, supports, pipes, heat exchangers and pressure vessels. Sealing and packing of fix parts (flam	Z,ZK elding, corrosion r ges) and moving	6 nechanisms and parts (rotating			
2181136 PEs classification, their anticorrosion prevention shafts etc.). Practical exa	Processing Equipments Design parameters and criteria of their rating. Ways of PEs design according their purpose and utilization. Materials used for PEs, w . Dimension of shafts, beams, supports, pipes, heat exchangers and pressure vessels. Sealing and packing of fix parts (flan amples of proper and improper designs of apparatuses. Example of heat exchanger design (heat transfer area calculation, its a	Z,ZK elding, corrosion r ges) and moving rrangement, head	6 nechanisms and parts (rotating loss calculation,			
2181136 PEs classification, their anticorrosion prevention shafts etc.). Practical exa thermal dilatation, stren	Processing Equipments Design parameters and criteria of their rating. Ways of PEs design according their purpose and utilization. Materials used for PEs, w . Dimension of shafts, beams, supports, pipes, heat exchangers and pressure vessels. Sealing and packing of fix parts (flan amples of proper and improper designs of apparatuses. Example of heat exchanger design (heat transfer area calculation, its a gth calculation, low cycle fatigue (thermal dilatation)).	Z,ZK elding, corrosion r ges) and moving rrangement, head	6 nechanisms and parts (rotating loss calculation,			
2181136 PEs classification, their anticorrosion prevention shafts etc.). Practical exa thermal dilatation, stren 2151026	Processing Equipments Design parameters and criteria of their rating. Ways of PEs design according their purpose and utilization. Materials used for PEs, w . Dimension of shafts, beams, supports, pipes, heat exchangers and pressure vessels. Sealing and packing of fix parts (flan amples of proper and improper designs of apparatuses. Example of heat exchanger design (heat transfer area calculation, its a gth calculation, low cycle fatigue (thermal dilatation)). Energy Sources and Conversions	Z,ZK elding, corrosion r ges) and moving j rrangement, head Z,ZK	6 nechanisms and parts (rotating loss calculation, 6			

Code of the group: 12NS*2P-PRT Name of the group: 2012 NSTI 2.sem povinné PRT Requirement credits in the group: In this group you have to gain 30 credits Requirement courses in the group: In this group you have to complete 8 courses Credits in the group: 30 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
2371526	Algorithms for Engineering Informatics	Z,ZK	4	2P+1C	*	Р
2371134	Engineering Informatics	Z,ZK	4	3P+1C	*	Р
2142008	Microelectronics	KZ	2	2P+0C+1L	*	Р
2371711	Computer Models	Z,ZK	4	2P+1C	*	Р
2373112	Project II Milan Hofreiter	Z	5	0P+5C	*	Р
2371509	Means of Automatic Control	Z,ZK	4	2P+0C+1L	*	Р
2372086	Simulation programming, Matlab	KZ	3	1P+1C	*	Р
Characteristics of the	courses of this group of Study Plan: Code=12NS*2P-PRT Nar		l 2.sem p	ovinné	PRT	1
Basic concepts: algorithm, pa structured statements, structured procedures and functions. Ab	arallel algorithms, reentrance. Difference between program and process. Structuring o ured data types. Language Pascal (Delphi): block and its properties, program, declarati ostract data types: table, stack, LIFO, list, tree. Binary tree, AVL tree. Abstract operation	of data, 4GL, visua on of function and ons: search, sort, i	al programm procedures, nterpolation	ing aids. Str parameters , iteration, r	-,∠r uctured prog s (incl. function ecursion, bac	ramming: nal). Standard ktracking.
2371134 Eng	gineering Informatics			Z	Z,ZK	4
Meanings of Information. Info (metallic, optical, wireless). D	rmation theory. Channel capacity. Coding theory. Data coding, markup languages, XI bata link layer. Network layer, communication protocols, TCP/IP suite. Digitization of a	ML. Cryptography. nalog signals. Qua	OSI Referen	nce Model. ⁻ nation. Gene	Transmission tic informatio	media n.
2142008 Mic Basic characteristics of logic of communications, electronic	croelectronics circuits and programmable logical systems, input and output circuits - voltage and cu c and optoelectronic parts for microelectronics, microprocessor system applications.	irrent matching, D/	/A and A/D o	converters,	KZ coding, lines a	2 and protocols
2371711 Coi	mputer Models			Z	Z,ZK	4
The course provides a basic	knowledge on formulation and computer implementation of dynamical system model	s. It starts from the	eoretical issu	ues of Lapla	ce and Z tran	sform in their
application to describing the	continuous and discrete linear systems respectively. A particular emphasis is given o non-linear systems.	n the skills in desc	ribing the d	ynamic proc	esses in the	state space
2373112 Pro	piect II				Z	5
Project learning - students we on the Department's intranet	ork in groups of three, max four students on a given topic. The solution of problem reac and subsequently defended at the final presentation of projects.	ched by the team o	f students is	presented i	n the form of	pdf document
2371509 Me	ans of Automatic Control			Z	Z,ZK	4
Various categories of means	for automatic control according to the different criterions. Main features in each catego	gory.Air and hydra	ulic fluid as	a medium fo	or information	transfer.
Symbols and descriptions in pneumatic and hydraulic diagrams. Pneumatic control systems design. Pneumatic actuators, valves, special pneumatic, electropneumatic devices. Control valves, categories, dimensioning, design, applications. Inteligent pneumatics as an integration of pneumatic, electronic and control components and systems. Valve islands and terminals, standard, with industrial buses communication, programmable. Pneumatic positioning systems.						
2372086 Simulation programming, Matlab KZ 3 The subject is focused on methods for developing mathematical models of engineering applications and on the use of mathematical software Matlab, Simulink for advanced calculus and extensive computations, including visualization of the results.						

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

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

Requirement credits in the group: In this group you have to gain 29 credits Requirement courses in the group: In this group you have to complete 6 courses Credits in the group: 29

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2373113	Project III	Z	10	0P+10C	*	Р
2361016	Instrumentation technology Jan Hošek	Z,ZK	3	2P+0C+1L	*	Р
2371098	Automatic Control Theory	Z,ZK	4	2P+1C	*	Р
2371077	Artificial Intelligence and Neural Networks	Z,ZK	4	2P+1C	*	Р
2141073	Embedded Systems	Z,ZK	4	2P+0C+1L	*	Р

Characteristics of the courses of this group of Study Plan: Code=12NS*3P-PRT Name=2012 NSTI 3.sem povinné PRT

2373113	Project III	Z	10			
Project in the specialization of future diploma thesis. One theme solved by two or three students in cooperation. Research, design or application creation from one of following branches:						
electrical or electronic d	electrical or electronic device design, instrument design, small robot design or control, automatic control (PLC), process control, database application, web application, laboratory device,					
laboratory experiment c	ontrol, process, biological process or artificial life simulation. Previous knowledge and/or skills required. The solution of proble	n reached by the	team of students			
is presented in the form of pdf document on the Department's intranet and subsequently defended at the final presentation of projects, including discussion.						
2361016	Instrumentation technology	Z,ZK	3			
The course acquaints students with special technologies used in the production of instrumentation focusing on microtechnology and nanotechnology.						

2371098	Automatic Control Theory	Z,ZK	4			
In technological plants a	and processes, a desired state or operation sequence is ensured by means of automatic control circuits. Fundamental notion	is, examples of co	ontrol problems			
in continuous, discrete a	and eventually logical versions of control are the substantial subjects for part 1. A more detailed attention is paid to the role and	d forms of the mat	hematical model			
used in linear theory of	continuous and discrete PID control. Methods of control loop synthesis and parameter optimization are dealt with in detail.					
2371077	Artificial Intelligence and Neural Networks	Z,ZK	4			
Students will learn abou	t basic problems in the field of artificial intelligence and methods of solving them. The content of the course is: State space,	its search method	Is and their			
complexity; Genetic algorithms; Basic machine learning algorithms; Clustering; Learning from classified data; Combination of classifiers; Fundamentals of formal propositional and						
predicate logic as problem solving tools; Automatic theorem proving - resolution method; Neural networks (MLP, CNN, RNN, LSTM), Deep learning.						
2141073	Embedded Systems	Z,ZK	4			

Code of the group: 12NS*4P-PRT

Name of the group: 2012 NSTI 4.sem povinné PRT

Requirement credits in the group: In this group you have to gain 20 credits Requirement courses in the group: In this group you have to complete 3 courses Credits in the group: 20

Note on the group. 2

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		
2373998	Diploma thesis	Z	10	0P+10C	*	Р		
2371089	Dynamic Systems Identification Milan Hofreiter	Z,ZK	5	2P+1C	*	Р		
2371135	Programmable logic controllers and visualisation	Z,ZK	5	2P+0C+1L	*	Р		

Characteristics of the courses of this group of Study Plan: Code=12NS*4P-PRT Name=2012 NSTI 4.sem povinné PRT

2373998	Diploma thesis	Z	10				
Each student will solve	Each student will solve his individual theme under guiding of his individual supervising department specialist. Result is his/her diploma thesis.						
2371089	Dynamic Systems Identification	Z,ZK	5				
The subject is aimed to	The subject is aimed to explanation of basic identification methods to obtain mathematical description of deterministic and stochastic systems. Experimental identification methods are						
explained for linear stor	chastic and deterministic dynamic systems in greater detail. Analytic identification is applied for several examples and compa	red to experiment	al identification.				
Lectures are concentra	ted to the most frequent methods which are applied in practice.						
2371135	Programmable logic controllers and visualisation	Z,ZK	5				
PCA course suitable prior to this course Application of the SCADA (Supervisory Control and Data Acquisition) system Reliance in PLC control of the technological process models.							

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 13 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 cle	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 abou						
familiar topics. Reading	and comprehension of simple texts. Improvement of professional language. European level A1 - A2.						
2043086	Czech - Preparatory Course	Z	2				
Aim: Understanding cle	arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	m. Writing in a sir	nple way about				
familiar topics. Reading	and comprehension of simple texts. Improvement of professional language.						
2043083	French - Preparatory Course / FME	Z	2				
Aim: Understanding cle	arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	m. Writing in a sir	nple way about				
familiar topics. Reading and comprehension of simple texts. Improvement of professional language.							
lamilar topico: rtoading	and complementation of simple texts, improvement of professional language.						
2043082	German - Lower Intermediate Course	Z	2				
2043082 Mapped to the level of C	German - Lower Intermediate Course Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic	Z h a student meets	2 either at school				
2043082 Mapped to the level of C or in his/her free time at	German - Lower Intermediate Course Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic nd speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improveme	Z h a student meets nt of professional	2 either at school language.				
2043082 Mapped to the level of C or in his/her free time at 2043085	German - Lower Intermediate Course Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic ad speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improveme Russian - Preparatory Course / FME	Z h a student meets nt of professional Z	2 s either at school language. 2				
2043082 Mapped to the level of C or in his/her free time an 2043085 Aim: Understanding clea	German - Lower Intermediate Course Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic nd speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improveme Russian - Preparatory Course / FME arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	Z h a student meets nt of professional Z m. Writing in a sir	2 either at school language. 2 nple way about				
2043082 Mapped to the level of C or in his/her free time at 2043085 Aim: Understanding clea familiar topics. Reading	German - Lower Intermediate Course Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic nd speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improveme Russian - Preparatory Course / FME arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the and comprehension of simple texts. Improvement of professional language.	Z h a student meets nt of professional Z m. Writing in a sir	2 either at school language. 2 nple way about				
2043082 Mapped to the level of C or in his/her free time at 2043085 Aim: Understanding clea familiar topics. Reading 2043084	German - Lower Intermediate Course Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improveme Russian - Preparatory Course / FME arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the and comprehension of simple texts. Improvement of professional language. Spanish - Preparatory Course / FME	Z h a student meets nt of professional Z m. Writing in a sir Z	2 e either at school language. 2 nple way about 2				
2043082 Mapped to the level of C or in his/her free time at 2043085 Aim: Understanding clea familiar topics. Reading 2043084 Aim: Understanding clea	German - Lower Intermediate Course Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improveme Russian - Preparatory Course / FME arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the and comprehension of simple texts. Improvement of professional language. Spanish - Preparatory Course / FME arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the	Z h a student meets nt of professional Z m. Writing in a sir Z m. Writing in a sir	2 e either at school language. 2 nple way about 2 nple way about				
2043082 Mapped to the level of C or in his/her free time at 2043085 Aim: Understanding clea familiar topics. Reading 2043084 Aim: Understanding clea familiar topics. Reading	German - Lower Intermediate Course Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvement Russian - Preparatory Course / FME arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the and comprehension of simple texts. Improvement of professional language. Spanish - Preparatory Course / FME arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the and comprehension of simple texts. Improvement of professional language. Spanish - Preparatory Course / FME arly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about the and comprehension of simple texts. Improvement of professional language.	Z h a student meets nt of professional Z m. Writing in a sir Z m. Writing in a sir	2 e either at school language. 2 nple way about 2 nple way about				

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 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 (a student meets	at school or in			
his/her free time and sp	eaking 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 C	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 a	nd speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvement	nt of professional	language.		
2041082	German - Master Exam / FME	ZK	1		
Mapped to the level of C	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 a	nd speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvement	nt of professional	language.		
2041085	Russian - Master Exam / FME	ZK	1		
Mapped to the level of C	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 a	nd speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvement	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 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.					

Code of the group: 12NS*4Q-PRT-HEM

Name of the group: 2012 NSTI 4.sem 1povvol PRT H+E+M

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:

5 1						
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
2363022	History of exploring the universe Jan Hošek, Ji í áp Jan Hošek Jan Hošek (Gar.)	Z	2	1P+1C	*	PV
2383062	Budget and Project Economic Assessment František Freiberg, Miroslav Žilka František Freiberg František Freiberg (Gar.)	Z	2	1P+2C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12NS*4Q-PRT-HEM Name=2012 NSTI 4.sem 1povvol PRT H+E+M

2363022	History of exploring the universe	Z	2		
The course introduces students to the history of the universe and exploring the evolution of technology used for astronomical observations from prehistoric times to the present. The					
course also deals with the development of people's knowledge about the universe and the impact of this knowledge on humanity and his understanding of planet Earth.					
2383062	Budget and Project Economic Assessment	Z	2		
The goal of the course i	s to improve the knowledge gained within the basic bachelor's degree course Management and Economics of the Enterprise	. The course focu	ses primarily on		
deepening of basic know	vledge and skills in the creation and evaluation of the operational budget, proper preparation and evaluation of costing mode	I for manufacture	d products and		
the economic evaluatior	n of an investment project, as it corresponds to contemporary knowledge and the development of management methods and	techniques. Stud	ents specify a		
simple fictional industria	I or engineering company or its sub-section (preferably inspired by their practical experience, internships or training program in	real company). T	he first student's		
task is to prepare a detailed plan and budget of a project (e.g. new product development, product or process innovation, etc.) focused on improvement of profitability, competitiveness					
or effectiveness of the company. The second task is cost calculation for chosen calculation unit. Last task within this course is the evaluation of economical effectiveness of the project					
described within the first task. The dynamic methods like Net Present Value (NPV), Internal Rate of Return (IRR) or Discounted Payback Period (DPP) are used for this evaluation.					
The quality of realization and presentation of the task's outputs together with the results of the test decides on granting / denial of credit.					

Code of the group: 12NS*4Q-PRT

Name of the group: 2012 NSTI 4.sem 2povvol PRT

Requirement credits in the group: In this group you have to gain 8 credits

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

Credits in the group: 8

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
2141519	Electrical Measurement and Diagnostics	Z,ZK	4	2P+0C+1L	*	PV
2361006	Design of optomechanical instruments Šárka N mcová Šárka N mcová Šárka N mcová (Gar.)	Z,ZK	4	2P+1C	*	PV
2141055	Controlled Electrical Drives Jaroslav Novák Jaroslav Novák Jaroslav Novák (Gar.)	Z,ZK	4	2P+0C+2L	*	PV

Characteristics of the courses of this group of Study Plan: Code=12NS*4Q-PRT Name=2012 NSTI 4.sem 2povvol PRT

2141519	Electrical Measurement and Diagnostics	Z,ZK	4		
The transmission of signals in measure systems. Electromagnetic compatibility. Electronics measurements circuits and a conversion of signal for the transmission.					
2361006	Design of optomechanical instruments	Z,ZK	4		
The course acquaints s	udents with optomechanical devices of various types, their optical principles and mechanical construction. It shows practica	applications of th	ese devices in		
industry and medicine. Excursions are part of the lessons.					
2141055	Controlled Electrical Drives	Z,ZK	4		
Equation of motion and mechanical properties of electrical drive, losses and dimensioning of electrical drive, general properties and control of DC drives, general properties and control					
of drives with asynchron	nous and synchronous motors, using of semiconductor converters in electrical drives, choppers, inverters, frequency convert	ers, thyristor recti	fiers, feedback		
control of electrical driv	e, EMC of electrical drive				

List of courses of this pass:

Code	Name of the course	Completion	Credits		
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 tim	e and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement	of professional lar	guage.		
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 which a student meets either at school					
or in his/her free	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.				

			1
2041083	French - Master Exam / FME	ZK	1
Mapped to the level	l of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a	student meets eith	er 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	nt of professional la	anguage.
2041084	Spanish - 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	er 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	nt of professional la	anguage.
20/1085	Pussian - Master Evam / EME	71	1
Z041000	Russian - Master Lann, Print	∠r∖ atudant maata aith	I I
wapped to the level	tor common surpear namework or keleteine ka ann. Onderstanding cleany spoken anguage about every day situations which a	student meets enn	
	ame and speaking about mem. Writing in a simple way about raminal topics, reading and comprehension of simple texts, improvement		anguage.
2041086	Czech- Master Exam	ZK	1
2043081	English - 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. European level A1 - A2	2.	
2043082	German - Lower Intermediate Course	7	2
Mapped to the level	of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a	student meets eith	er 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	nt of professional la	anquade
2042092		7	2.194490.
2043003	FIEICII - FIEPalatory Course / Fine	∠ M/riting in a simple	
Aim: Understandin	g cleany what is spoken about everyoay situations which a student meets at school of in mismer nee time and speaking about them.	whiting in a simple	e way about
	familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	_	
2043084	Spanish - 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	e way about
	familiar topics. Reading and comprehension of simple texts. Improvement of professional language.		
2043085	Russian - 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.	0 1	
20/3086	Czech - Proparatory Course	7	2
Aim: Understandin	a closely what is spaken shout even day situations which a student mosts at school or in his/hor free time and speaking about them	∣ <u>∠</u> Writing in a simple	
	g cleany what is spoken about every as studious which a student meets at school of in his net need and speaking about them.	winning in a simple	e way about
	laminar topics. Reading and completentiston of simple texts. Improvement of proessionar language.		
2141055	Controlled Electrical Drives	Z,ZK	4
Equation of motion	and mechanical properties of electrical drive, losses and dimensioning of electrical drive, general properties and control of DC drives,	general properties	and control
of drives with asyr	ichronous and synchronous motors, using of semiconductor converters in electrical drives, choppers, inverters, frequency converters	s, thyristor rectifiers	s, feedback
	control of electrical drive, EMC of electrical drive		
2141073	Embedded Systems	Z,ZK	4
2141519	Electrical Measurement and Diagnostics	7 7K	4
2111010			
The trans	mission of signals in measure systems. Electromagnetic compatibility, Electronics measurements circuits and a conversion of signal	for the transmissio	
The trans	mission of signals in measure systems. Electromagnetic compatibility. Electronics measurements circuits and a conversion of signal	for the transmissio	in.
The trans 2142008	mission of signals in measure systems. Electromagnetic compatibility. Electronics measurements circuits and a conversion of signal Microelectronics	for the transmissio	in. 2
The trans 2142008 Basic characteristic	mission of signals in measure systems. Electromagnetic compatibility. Electronics measurements circuits and a conversion of signal Microelectronics cs of logic circuits and programmable logical systems, input and output circuits - voltage and current matching, D/A and A/D converte	for the transmissio KZ ers, coding, lines ar	n. 2 nd protocols
The trans 2142008 Basic characteristic	mission of signals in measure systems. Electromagnetic compatibility. Electronics measurements circuits and a conversion of signal Microelectronics so of logic circuits and programmable logical systems, input and output circuits - voltage and current matching, D/A and A/D converte of communications, electronic and optoelectronic parts for microelectronics, microprocessor system applications.	for the transmissio KZ rs, coding, lines ar	n. 2 nd protocols
The trans 2142008 Basic characteristic 2151026	mission of signals in measure systems. Electromagnetic compatibility. Electronics measurements circuits and a conversion of signal Microelectronics as of logic circuits and programmable logical systems, input and output circuits - voltage and current matching, D/A and A/D converte of communications, electronic and optoelectronic parts for microelectronics, microprocessor system applications. Energy Sources and Conversions	for the transmissio KZ srs, coding, lines ar Z,ZK	n. 2 nd protocols 6
The trans 2142008 Basic characteristic 2151026 2181136	mission of signals in measure systems. Electromagnetic compatibility. Electronics measurements circuits and a conversion of signal Microelectronics so of logic circuits and programmable logical systems, input and output circuits - voltage and current matching, D/A and A/D converte of communications, electronic and optoelectronic parts for microelectronics, microprocessor system applications. Energy Sources and Conversions Processing Equipments Design	for the transmissio KZ irs, coding, lines ar Z,ZK Z,ZK	n. 2 nd protocols 6 6
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The trans 2142008 Basic characteristic 2151026 2181136 PEs classification, t anticorrosion prev shafts etc.). Practice	mission of signals in measure systems. Electromagnetic compatibility. Electronics measurements circuits and a conversion of signal Microelectronics so of logic circuits and programmable logical systems, input and output circuits - voltage and current matching, D/A and A/D converte of communications, electronic and optoelectronic parts for microelectronics, microprocessor system applications. Energy Sources and Conversions Processing Equipments Design their parameters and criteria of their rating. Ways of PEs design according their purpose and utilization. Materials used for PEs, weldin ention. Dimension of shafts, beams, supports, pipes, heat exchangers and pressure vessels. Sealing and packing of fix parts (flange al examples of proper and improper designs of apparatuses. Example of heat exchanger design (heat transfer area calculation, its arrar	for the transmissio KZ rrs, coding, lines ar Z,ZK Z,ZK ng, corrosion mech s) and moving par igement, head loss	n. 2 nd protocols 6 6 hanisms and ts (rotating calculation,
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2371509	Means of Automatic Control	Z,ZK	4
Various categori	es of means for automatic control according to the different criterions. Main features in each category. Air and hydraulic fluid as a med	lium for information	transfer.
Symbols and descr	iptions in pneumatic and hydraulic diagrams. Pneumatic control systems design. Pneumatic actuators, valves, special pneumatic, elec	ctropneumatic devic	ces. Control
valves, categories,	dimensioning, design, applications. Inteligent pneumatics as an integration of pneumatic, electronic and control components and system	ns. Valve islands an	d terminals,
	standard, with industrial buses communication, programmable. Pneumatic positioning systems.	· · · · · · · · · · · · · · · · · · ·	
2371519	Means of Automatic Control I.	Z,ZK	6
Various categori	es of means for automatic control according to the different criterions. Main features in each category. Air and hydraulic fluid as a med	lium for information	transfer.
Symbols and descr	iptions in pneumatic and hydraulic diagrams. Pneumatic control systems design. Pneumatic actuators, valves, special pneumatic, elec	ctropneumatic devic	ces. Control
valves, categories,	dimensioning, design, applications. Inteligent pneumatics as an integration of pneumatic, electronic and control components and system	ns. Valve islands an	d terminals,
	standard, with industrial buses communication, programmable. Pneumatic positioning systems.		
2371526	Algorithms for Engineering Informatics	Z,ZK	4
Basic concepts: a	algorithm, parallel algorithms, reentrance. Difference between program and process. Structuring of data, 4GL, visual programming aid	ds. Structured prog	ramming:
structured statemer	nts, structured data types. Language Pascal (Delphi): block and its properties, program, declaration of function and procedures, parame	ters (incl. functiona	I). Standard
procedures and f	unctions. Abstract data types: table, stack, LIFO, list, tree. Binary tree, AVL tree. Abstract operations: search, sort, interpolation, iterat	ion, recursion, bac	ktracking.
2371711	Computer Models	Z,ZK	4
The course provide	is a basic knowledge on formulation and computer implementation of dynamical system models. It starts from theoretical issues of La	aplace and Z transf	orm in their
application to dese	pribing the continuous and discrete linear systems respectively. A particular emphasis is given on the skills in describing the dynamic	processes in the s	tate space
	approach in both linear and non-linear systems.		
2372086	Simulation programming, Matlab	KZ	3
The subject is focu	sed on methods for developing mathematical models of engineering applications and on the use of mathematical software Matlab, S	imulink for advance	ed calculus
	and extensive computations, including visualization of the results.		
0070111	Drojact	_	
23/3111	Project I	Ζ	5
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2373111 Projection train 2373112	ing; Use of the PLM (Process Life Management) type projection software "COMOS". Preparation of the part of the project for technol Project II	Logical process pro Z	5 jecting. 5
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For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 2025-07-12, time 05:14.