Study plan

Name of study plan: 15 141 NSTI MCH 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: 124
Elective courses credits: 0
Sum of credits in the plan: 124
Note on the plan:

Name of the block: Compulsory courses in the program
Minimal number of credits of the block: 121
The role of the block: P

Code of the group: 12NS*1P-MCH
Name of the group: 2012 NSTI 1.sem povinné MCH
Requirement credits in the group: In this group you have to gain 31 credits
Requirement courses in the group: In this group you have to complete 8 courses
Credits in the group: 31
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
2013054	**Mathematics for Mechanics**	Z	4	3P+1C	*	P
2311075	**Mechanics of Mechanisms** *Jan Pelikán, Václav Bauma, Petr Beneš, Zdeněk Neusser, Zbyněk Šika, Michael Valášek, Jan Zavřel* ***Zbyněk Šika*** *Zbyněk Šika (Gar.)*	ZK	4	3P+0C	*	P
2141093	**Microelectronics** *Lukáš Novák, Stanislava Papežová* ***Stanislava Papežová*** *Lukáš Novák (Gar.)*	Z,ZK	3	2P+0C+1L	*	P
2121043	**Computational Fluid Mechanics** ***Tomáš Hyhlík***	ZK	4	3P+0C	*	P
2313111	**Project I.** *Václav Bauma, Zdeněk Neusser, Zbyněk Šika, Michael Valášek, Jan Zavřel* ***Zbyněk Šika*** *Zbyněk Šika (Gar.)*	Z	5	0P+5C	*	P
2312017	**Controlled mechanical systems I.** *Václav Bauma, Zdeněk Neusser, Zbyněk Šika, Michael Valášek, Ivo Bukovský, Pavel Steinbauer* ***Michael Valášek*** *Michael Valášek (Gar.)*	KZ	3	3P+0C	*	P
2361035	**Theory and Construction of Instruments** *Jan Hošek* ***Jan Hošek*** *Jan Hošek (Gar.)*	Z,ZK	3	2P+1C	*	P

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

2013054	Mathematics for Mechanics	Z	4
Summary: Tensor calculus. Introduction to functional analysis. Calculus of variations. Orthogonal transformation of coordinate systems. Afinne orthogonal tensors and tensor operations. Tensor as linear operator and bilinear form. Metrics and metric spaces. Convergence. Completness. Linear normed space. Banach space. Linear space with scalar product (unitary space). Hilbert space. Contractive operators and Banach fixed point theorem. Function spaces in examples. Operators and functionals. Linear, continuous and bounded operator/functional. Derivative of a functional in the given direction. Gateaux differential and derivative. Necessary and sufficient conditions for extremes of a functional. Convex set and convex functional. Minimum of convex functional. Extremes of functional of different types. Euler equation. Necessary and sufficient conditions for extrema. Discrete methods for approximation of the minima of an functional. Ritz method.			
2311075	Mechanics of Mechanisms	ZK	4
2141093	Microelectronics	Z,ZK	3
Basic characteristics of logic circuits and programmable logical systems, input and output circuits - voltage and current matching, D/A and A/D converters, coding, lines and protocols of communications, electronic and optoelectronic parts for microelectronics, microprocessor system applications.			
2121043	Computational Fluid Mechanics	ZK	4
This course extends the knowledge gained in the course of Fluid Mechanics about the knowledge of computational fluid dynamics. Emphasis is placed on understanding the basic principles of computational fluid dynamics based on using commercial codes. Selected problems of internal and external aerodynamics are solved.			
2313111	Project I.	Z	5
2312017	Controlled mechanical systems I.	KZ	3

2361035	Theory and Construction of Instruments	Z,ZK	3

Subject gives knowledge about basics of instruments design in order student would be able to design different kinds of mechanical instruments.

Code of the group: 12NS*2P-MCH
Name of the group: 2012 NSTI 2.sem povinné MCH
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 9 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
2142028	**Electrical Engineering for Mechatronics** *Jan Chyský **Jan Chyský** Jan Chyský (Gar.)*	KZ	3	2P+0C+1L	*	P
2311074	**Vibrations of Mechanical Systems** *Václav Bauma, Zbyněk Šika, Michael Valášek, Jan Zavřel **Václav Bauma** Václav Bauma (Gar.)*	ZK	4	3P+0C	*	P
2313023	**Mechatronics** *Václav Bauma, Zbyněk Šika, Michael Valášek, Jan Zavřel, Pavel Steinbauer **Michael Valášek** Michael Valášek (Gar.)*	Z	2	2P+0C	*	P
2111035	**Finite Element Method II.** *Miroslav Španiel **Miroslav Španiel** Miroslav Španiel (Gar.)*	ZK	3	2P+0C	*	P
2313112	**Project II.** *Jan Pelikán, Václav Bauma, Zbyněk Šika, Michael Valášek, Jan Zavřel, Pavel Steinbauer, Ctirad Novotný **Zbyněk Šika** Zbyněk Šika (Gar.)*	Z	5	0P+5C	*	P
2312027	**Controlled Mechanical Systems II.** *Václav Bauma, Zbyněk Šika, Michael Valášek, Jan Zavřel, Pavel Steinbauer **Michael Valášek** Michael Valášek (Gar.)*	KZ	2	2P+0C	*	P
2311076	**Simulation of Mechatronic Systems** *Jan Pelikán, Václav Bauma, Zbyněk Šika, Michael Valášek, Jan Zavřel **Zbyněk Šika** Zbyněk Šika (Gar.)*	ZK	3	2P+0C	*	P
2121055	**Thermodynamics** *Tomáš Hyhlík Tomáš Hyhlík (Gar.)*	ZK	4	3P+0C	*	P

Characteristics of the courses of this group of Study Plan: Code=12NS*2P-MCH Name=2012 NSTI 2.sem povinné MCH

2142028	Electrical Engineering for Mechatronics	KZ	3

The purpose of the course is to give the student knowledge about different types of electrical drives for mechatronic systems and their practical use. Method for electromagnetic field approximative solution. The theory of linear and rotating drivers. Electromagnets supplied by AC and DC power. Static and dynamics parameters of electromagnets. Drives for rotating motion. DC motors. Mathematical description of their static and dynamic properties. Principle and function of stepper motor. AC induction motors. Mathematical description of their static and dynamic properties. Using MATLAB for drivers behaviour modelling.

2311074	Vibrations of Mechanical Systems	ZK	4
2313023	Mechatronics	Z	2
2111035	Finite Element Method II.	ZK	3
2313112	Project II.	Z	5
2312027	Controlled Mechanical Systems II.	KZ	2
2311076	Simulation of Mechatronic Systems	ZK	3
2121055	Thermodynamics	ZK	4

The aim of the course is to expand the students' knowledge gained from the previous course Thermomechanics Alfa in the areas of the real gas thermodynamics, irreversible process thermodynamics, multiphase- and multicomponent system characteristics and thermodynamics cycles of the real heat engines and machines also.

Code of the group: 12NS*3P-MCH
Name of the group: 2012 NSTI 3.sem povinné MCH
Requirement credits in the group: In this group you have to gain 28 credits
Requirement courses in the group: In this group you have to complete 8 courses
Credits in the group: 28
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
2111083	**Continuum Mechanics** *Jiří Plešek **Jiří Plešek** Jiří Plešek (Gar.)*	ZK	4	3P+0C	*	P
2313113	**Project III.** *Jan Pelikán, Václav Bauma, Petr Beneš, Zdeněk Neusser, Zbyněk Šika, Michael Valášek, Jan Zavřel, Ivo Bukovský, Pavel Steinbauer, ... **Zbyněk Šika** Zbyněk Šika (Gar.)*	Z	10	0P+10C	*	P

2312021	**Controlled Active Structures** *Václav Bauma, Zbyněk Šika, Michael Valášek, Jan Zavřel* ***Zbyněk Šika*** *Zbyněk Šika (Gar.)*	KZ	2	2P+0C	*	P
2313005	**Signal Processing and Processors** *Jan Pelikán, Václav Bauma, Zbyněk Šika, Michael Valášek, Ivo Bukovský* ***Ivo Bukovský*** *Ivo Bukovský (Gar.)*	Z	1	1P+0C	*	P
2311079	**Statistical Mechanics** *Václav Bauma, Zbyněk Šika, Michael Valášek, Ivo Bukovský* ***Ivo Bukovský*** *Ivo Bukovský (Gar.)*	ZK	4	3P+0C	*	P
2313027	**Antificial Intelligence** *Jan Pelikán, Václav Bauma, Zdeněk Neusser, Zbyněk Šika, Michael Valášek, Jan Zavřel, Ivo Bukovský, Pavel Steinbauer* ***Ivo Bukovský*** *Ivo Bukovský (Gar.)*	Z	1	1P+0C	*	P

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

2111083	Continuum Mechanics	ZK	4
2313113	Project III.	Z	10
Individual asignment			
2312021	Controlled Active Structures	KZ	2
2313005	Signal Processing and Processors	Z	1
2311079	Statistical Mechanics	ZK	4
2313027	Antificial Intelligence	Z	1

Code of the group: 12NS*4P-MCH
Name of the group: 2012 NSTI 4.sem povinné MCH
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 9 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**
2313998	**Diploma project** *Jan Pelikán, Václav Bauma, Petr Beneš, Zdeněk Neusser, Zbyněk Šika, Michael Valášek, Jan Zavřel, Ivo Bukovský, Pavel Steinbauer, ...* ***Michael Valášek*** *Michael Valášek (Gar.)*	Z	10	0P+10C+0L	*	P
2311091	**System Identification** *Václav Bauma, Zdeněk Neusser, Zbyněk Šika, Michael Valášek, Jan Zavřel* ***Zbyněk Šika*** *Zbyněk Šika (Gar.)*	ZK	3	2P+0C	*	P
2351087	**Industrial Robots and Manipulators** *Tomáš Krannich, Vladimír Andrlík, Jiří Švéda* ***Vladimír Andrlík*** *Vladimír Andrlík (Gar.)*	Z,ZK	3	2P+0C+1L	*	P
2383062	**Budget and Project Economic Assessment** *František Freiberg, Miroslav Žilka* ***František Freiberg*** *František Freiberg (Gar.)*	Z	2	1P+2C	*	P
2311081	**Software Engineering** *Jan Pelikán, Václav Bauma, Zdeněk Neusser, Zbyněk Šika, Michael Valášek, Jan Zavřel, Ivo Bukovský, Pavel Steinbauer* ***Ivo Bukovský*** *Ivo Bukovský (Gar.)*	ZK	3	2P+0C	*	P
2311019	**Synthesis and Optimization of Mechanical Systems** *Václav Bauma, Petr Beneš, Zbyněk Šika, Michael Valášek, Jan Zavřel* ***Zbyněk Šika*** *Zbyněk Šika (Gar.)*	ZK	3	2P+0C	*	P
2313031	**Real Time Systems and Processors** *Václav Bauma, Zbyněk Šika, Michael Valášek, Jan Zavřel, Ivo Bukovský, Martin Nečas, Pavel Bastl* ***Ivo Bukovský*** *Ivo Bukovský (Gar.)*	Z	2	2P+0C	*	P
2311084	**Advanced Dynamics** *Václav Bauma, Zbyněk Šika, Michael Valášek, Jan Zavřel, Tomáš Vampola* ***Tomáš Vampola*** *Tomáš Vampola (Gar.)*	ZK	3	2P+0C	*	P
2113017	**Basic of Engineering Experimentals** *Pavel Steinbauer, Karel Doubrava, Václav Uruba* ***Karel Doubrava*** *Karel Doubrava (Gar.)*	Z	3	2P+1C	*	P

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

2313998	Diploma project	Z	10
individual assignment			
2311091	System Identification	ZK	3
2351087	Industrial Robots and Manipulators	Z,ZK	3
Construction of industrial robots and manipulators, kinematic structures, various types of driving units, moving units, end effectors.			

2383062	Budget and Project Economic Assessment	Z	2
The goal of the course is to improve the knowledge gained within the basic bachelor's degree course Management and Economics of the Enterprise. The course focuses primarily on deepening of basic knowledge and skills in the creation and evaluation of the operational budget, proper preparation and evaluation of costing model for manufactured products and the economic evaluation of an investment project, as it corresponds to contemporary knowledge and the development of management methods and techniques. Students specify a simple fictional industrial or engineering company or its sub-section (preferably inspired by their practical experience, internships or training program in real company). The 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.			
2311081	Software Engineering	ZK	3
2311019	Synthesis and Optimization of Mechanical Systems	ZK	3
2313031	Real Time Systems and Processors	Z	2
2311084	Advanced Dynamics	ZK	3
2113017	Basic of Engineering Experimentals	Z	3

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 3
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=12N3Q--JV Name=2012 N 3.sem povinná jazyková výuka**

2043081	English - Preparatory Course / FME	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language. European level A1 - A2.			
2043086	Czech - Preparatory Course	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2043083	French - Preparatory Course / FME	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2043082	German - Lower Intermediate Course	Z	2
Mapped to the level of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a student meets either in the company 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.			
2043085	Russian - Preparatory Course / FME	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2043084	Spanish - Preparatory Course / FME	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			

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=12N3Q--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 professional language.			
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 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.			
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 time and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvement 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 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.			
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.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
2013054	Mathematics for Mechanics	Z	4
Summary: Tensor calculus. Introduction to functional analysis. Calculus of variations. Orthogonal transformation of coordinate systems. Afinne orthogonal tensors and tensor operations. Tensor as linear operator and bilinear form. Metrics and metric spaces. Convergence. Completness. Linear normed space. Banach space. Linear space with scalar product (unitary space). Hilbert space. Contractive operators and Banach fixed point theorem. Function spaces in examples. Operators and functionals. Linear, continuous and bounded operator/functional. Derivative of a functional in the given direction. Gateaux differential and derivative. Necessary and sufficient conditions for extremes of a functional. Convex set and convex functional. Minimum of convex functional. Extremes of functional of different types. Euler equation. Necessary and sufficient conditions for extrema. Discrete methods for approximation of the minima of an functional. Ritz method.			
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.			
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 time and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvement of professional language.			
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 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.			
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.			

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 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.			
2041086	Czech- Master Exam	ZK	1
2043081	English - Preparatory Course / FME	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language. European level A1 - A2.			
2043082	German - Lower Intermediate Course	Z	2
Mapped to the level of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a student meets either in the company 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.			
2043083	French - Preparatory Course / FME	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2043084	Spanish - Preparatory Course / FME	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2043085	Russian - Preparatory Course / FME	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2043086	Czech - Preparatory Course	Z	2
Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of professional language.			
2111035	Finite Element Method II.	ZK	3
2111083	Continuum Mechanics	ZK	4
2113017	Basic of Engineering Experimentals	Z	3
2121043	Computational Fluid Mechanics	ZK	4
This course extends the knowledge gained in the course of Fluid Mechanics about the knowledge of computational fluid dynamics. Emphasis is placed on understanding the basic principles of computational fluid dynamics based on using commercial codes. Selected problems of internal and external aerodynamics are solved.			
2121055	Thermodynamics	ZK	4
The aim of the course is to expand the students' knowledge gained from the previous course Thermomechanics Alfa in the areas of the real gas thermodynamics, irreversible process thermodynamics, multiphase- and multicomponent system characteristics and thermodynamics cycles of the real heat engines and machines also.			
2141093	Microelectronics	Z,ZK	3
Basic characteristics of logic circuits and programmable logical systems, input and output circuits - voltage and current matching, D/A and A/D converters, coding, lines and protocols of communications, electronic and optoelectronic parts for microelectronics, microprocessor system applications.			
2142028	Electrical Engineering for Mechatronics	KZ	3
The purpose of the course is to give the student knowledge about different types of electrical drives for mechatronic systems and their practical use. Method for electromagnetic field approximative solution. The theory of linear and rotating drivers. Electromagnets supplied by AC and DC power. Static and dynamics parameters of electromagnets. Drives for rotating motion. DC motors. Mathematical description of their static and dynamic properties. Principle and function of stepper motor. AC induction motors. Mathematical description of their static and dynamic properties. Using MATLAB for drivers behaviour modelling.			
2311019	Synthesis and Optimization of Mechanical Systems	ZK	3
2311074	Vibrations of Mechanical Systems	ZK	4
2311075	Mechanics of Mechanisms	ZK	4
2311076	Simulation of Mechatronic Systems	ZK	3
2311079	Statistical Mechanics	ZK	4
2311081	Software Engineering	ZK	3
2311084	Advanced Dynamics	ZK	3
2311091	System Identification	ZK	3
2312017	Controlled mechanical systems I.	KZ	3
2312021	Controlled Active Structures	KZ	2
2312027	Controlled Mechanical Systems II.	KZ	2
2313005	Signal Processing and Processors	Z	1
2313023	Mechatronics	Z	2
2313027	Antificial Intelligence	Z	1
2313031	Real Time Systems and Processors	Z	2
2313111	Project I.	Z	5
2313112	Project II.	Z	5
2313113	Project III.	Z	10
Individual asignment			
2313998	Diploma project	Z	10
individual assignment			
2351087	Industrial Robots and Manipulators	Z,ZK	3
Construction of industrial robots and manipulators, kinematic structures, various types of driving units, moving units, end effectors.			
2361035	Theory and Construction of Instruments	Z,ZK	3
Subject gives knowledge about basics of instruments design in order student would be able to design different kinds of mechanical instruments.			
2383062	Budget and Project Economic Assessment	Z	2
The goal of the course is to improve the knowledge gained within the basic bachelor's degree course Management and Economics of the Enterprise. The course focuses primarily on deepening of basic knowledge and skills in the creation and evaluation of the operational budget, proper preparation and evaluation of costing model for manufactured products and the economic evaluation of an investment project, as it corresponds to contemporary knowledge and the development of management methods and techniques. Students specify a			

simple fictional industrial or engineering company or its sub-section (preferably inspired by their practical experience, internships or training program in real company). The 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.

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