Study plan

Name of study plan: 10 121 NSTI VSZ 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: 137
Elective courses credits: -6
Sum of credits in the plan: 131
Note on the plan:

Name of the block: Compulsory courses in the program
Minimal number of credits of the block: 128
The role of the block: P

Code of the group: 12NS*1P-VSZ
Name of the group: 2012 NSTI 1.sem povinné VSZ
Requirement credits in the group: In this group you have to gain 34 credits
Requirement courses in the group: In this group you have to complete 8 courses
Credits in the group: 34
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
2351158	**Hydraulic and Pneumatic Systems** *Antonín Bubák, Tomáš Krannich* ***Antonín Bubák*** *Antonín Bubák (Gar.)*	Z,ZK	4	2P+0C+2L	*	P
2311075	**Mechanics of Mechanisms** *Václav Bauma, Petr Beneš, Zdeněk Neusser, Jan Pelikán, 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
2353111	**Project 1.** *Josef Kekula, Petr Kolář, Matěj Sulitka, Vladimír Andrlík* ***Vladimír Andrlík*** *Vladimír Andrlík (Gar.)*	Z	5	0P+5C+0L	*	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
2351054	**Production Machines and Equipment** ***Tomáš Krannich***	Z,ZK	5	3P+0C+1L	*	P

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

2351158	Hydraulic and Pneumatic Systems	Z,ZK	4
Classification, principle and structure of hydraulic and pneumatic mechanisms (HPM). Transmission and conversion of energy. Design and function of hydraulic and pneumatic elements. Function of typical HPM. Proportional elements and their applications. Servomechanisms. Hydraulic and pneumatic drives. Assembly, operation and maintenance.			
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.			
2353111	Project 1.	Z	5
Practicing of the design of machine parts with an emphasis on understanding geometric and dimensional tolerances and surface roughness.			
2312017	Controlled mechanical systems I.	KZ	3
2351054	Production Machines and Equipment	Z,ZK	5
Manufacturing machines and equipment contains three basic parts. These are forming machines, machine tools and industrial robots and manipulators. Characteristics of machines and equipment for realization of discrete technological processes will be explained, technical parameters, basics of construction of production machines and equipment, construction of machine tools, TS design, automation of production machines and equipment, industrial manipulators and robots, their applications, single-purpose and modular machines, production lines. Examples of application of production machines and equipment.			

Code of the group: 12NS*2P-VSZ

Name of the group: 2012 NSTI 2.sem povinné VSZ
Requirement credits in the group: In this group you have to gain 33 credits
Requirement courses in the group: In this group you have to complete 7 courses
Credits in the group: 33
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
2311074	**Vibrations of Mechanical Systems** ***Václav Bauma***	ZK	4	3P+0C	*	P
2351084	**Numerical Control of Production Machines and Equipment Control** ***Petr Vavruška***	Z,ZK	4	2P+0C+2L	*	P
2351121	**Drives of Production Machines - Servomechanisms I** ***Vojtěch Matyska***	Z,ZK	4	3P+0C+1L	*	P
2353112	**Project II** *Tomáš Krannich* ***Tomáš Krannich*** *Tomáš Krannich (Gar.)*	Z	5	0P+5C+0L	*	P

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

2311074	Vibrations of Mechanical Systems	ZK	4
2351084	Numerical Control of Production Machines and Equipment Control	Z,ZK	4
Numerical controled cutting machines, means of programming, coordinate systems, ISO code. NC program, its creating using CAD/CAM layers, postprocessors. CNC inner structure, interaction of its parts, control system modes. Real-time operating systems.			
2351121	Drives of Production Machines - Servomechanisms I	Z,ZK	4
Mathematical apparatus for signal processing in drives of NC machines and robots, sampling, Fourier and Laplace transforms, Laplace images of typical functions and transfer functions of drive components. Sensors of quantities in drives, auxiliary el. circuits, filters. Vibration suppression in NC machines. Pulse excitation.			
2353112	Project II	Z	5
The course is focused on the design of forming machines and on the design of the whole automated workplace. The design and design of the drives is designed with respect to a wide range of selected machine types. Depending on the product, the machine is designed first and then the entire workplace. The project has the character of a study and takes place in teams. The thesis is finally defended by all members			

Code of the group: 12NS*3P-VSZ
Name of the group: 2012 NSTI 3.sem povinné VSZ
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 6 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
2351122	**Servomechanisms of Production Machines** *Vojtěch Matyska, Jan Moravec* ***Vojtěch Matyska*** *Vojtěch Matyska (Gar.)*	Z,ZK	4	3P+0C+1L	*	P
2353113	**Project III** ***Petr Kolář***	Z	10	0P+10C+0L	*	P

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

2351122	Servomechanisms of Production Machines	Z,ZK	4
Actuator in servomechanisms (hydraulic motors and electric motors), control equipment. Transmission mechanisms of production machines feed drives. Increasing of feed drive axes dynamics, special kinematics arrangement. Dynamic model of feed drive axis. Vibration suppression in feed drive axes.			
2353113	Project III	Z	10

Code of the group: 12NS*4P-VSZ
Name of the group: 2012 NSTI 4.sem povinné VSZ
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 7 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
2353998	**Diploma Project** *Tomáš Krannich, Petr Kolář, Vladimír Andrlík, Michal Fürbacher, Petr Vavruška, Jan Brajer, Michal Stejskal, Eduard Stach* ***Vladimír Andrlík*** *Vladimír Andrlík (Gar.)*	Z	10	0P+10C+0L	*	P
2351123	**Drives of Production Machines - Servomechanisms III.** ***Jiří Švéda***	Z,ZK	4	3P+0C+1L	*	P
2353890	**Project IV.** ***Vladimír Andrlík***	Z	4	0P+10C+0L	*	P
2351087	**Industrial Robots and Manipulators** *Tomáš Krannich, Petr Kolář, Vladimír Andrlík, Jiří Švéda* ***Petr Kolář*** *Petr Kolář (Gar.)*	Z,ZK	3	2P+0C+1L	*	P
2383062	**Budget and Project Economic Assessment**	Z	2	1P+2C	*	P

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

2353998	Diploma Project	Z	10

The course focuses on processing the final thesis within the scope of the assigned topic of the bachelor thesis. The student is acquainted with the general principles of the final thesis and during regular weekly consultations with the supervisor proceeds in the professional solution of the assigned problem and at the same time works on the actual text of the final thesis. In the course of the solution, the student completes a small oral presentation where the work in progress is presented.

2351123	Drives of Production Machines - Servomechanisms III.	Z,ZK	4
2353890	Project IV.	Z	4

Constructional and computational processing of real tasks of motion nodes and systems. A high level of creative thinking and innovative designs and practices are required. The tasks have a direct link to industrial practice and its needs. The second part is focused on the design of machine tool construction nodes (eg cradle, milling head, quill). The aim is to create a real construction node of a machine tool with all design calculations and drawing documentation in the form of a design drawing according to the entered parameters.

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.

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*	Z	2	0P+2C	*	PV
2043086	**Czech - Preparatory Course** *Petr Laurich, Hana Volejníková*	Z	2	0P+2C	*	PV
2043083	**French - Preparatory Course / FME** *Dušana Jirovská* ***Michaela Schusová*** *Dušana Jirovská (Gar.)*	Z	2	0P+2C	*	PV
2043082	**German - Lower Intermediate Course** *Petr Laurich, Jaroslava Kommová, Eliška Vítková* ***Jaroslava Kommová*** *Jaroslava Kommová (Gar.)*	Z	2	0P+2C	*	PV
2043085	**Russian - Preparatory Course / FME** *Hana Volejníková, Dušana Jirovská* ***Eliška Vítková***	Z	2	0P+2C	*	PV
2043084	**Spanish - Preparatory Course / FME** *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, Hana Volejníková, Ilona Šimice, Michaela Schusová, Michele Le Blanc Ilona Šimice (Gar.)*	ZK	1	0P+0C	*	PV
2041086	**Czech- Master Exam** *Petr Laurich, Hana Volejníková*	ZK	1	0P+0C	*	PV
2041083	**French - Master Exam / FME** *Dušana Jirovská* ***Dušana Jirovská*** *Dušana Jirovská (Gar.)*	ZK	1	0P+0C	*	PV
2041082	**German - Master Exam / FME** *Petr Laurich, Jaroslava Kommová, Eliška Vítková* ***Jaroslava Kommová*** *Jaroslava Kommová (Gar.)*	ZK	1	0P+0C	*	PV
2041085	**Russian - Master Exam / FME** *Hana Volejníková, Dušana Jirovská* ***Eliška Vítková***	ZK	1	0P+0C	*	PV
2041084	**Spanish - Master Exam / FME** *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.			

Name of the block: Elective courses
Minimal number of credits of the block: 6
The role of the block: V

Code of the group: 12NS*1V-VSZ
Name of the group: 2012 NSTI 1.sem volitelné VSZ doporučené
Requirement credits in the group: In this group you have to gain 3 credits
Requirement courses in the group: In this group you have to complete 1 course
Credits in the group: 3

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
2356024	**CAD in Production Machine Design** ***Jaroslav Červenka***	Z	3	0P+3C+0L	*	V

Characteristics of the courses of this group of Study Plan: Code=12NS*1V-VSZ Name=2012 NSTI 1.sem volitelné VSZ doporučené

2356024	CAD in Production Machine Design	Z	3

Basics of modeling in Siemens NX. Sketching of basic 2D geometry and creation of 3D models. Creating rotating and non-rotating parts and generating 2D drawings (views, sections, dimensions, geometric tolerances). Creating assemblies and subassemblies and creating assembly drawings with positions, generating parts lists. Creating weldments and machined welds. Creating parametric models, using "Synchronous technology" and other special functions.

Code of the group: 12NS*2V-VSZ
Name of the group: 2012 NSTI 2.sem volitelné VSZ doporučené
Requirement credits in the group: In this group you have to gain 3 credits
Requirement courses in the group: In this group you have to complete 1 course
Credits in the group: 3
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
2356025	**Simulation Production Machine** ***Antonín Bubák***	Z	3	0P+0C+3L	*	V

Characteristics of the courses of this group of Study Plan: Code=12NS*2V-VSZ Name=2012 NSTI 2.sem volitelné VSZ doporučené

2356025	Simulation Production Machine	Z	3

Learning outcomes of the course unit The subject is aimed at gaining information about fundamentals of modeling of parts and whole machines by finite element method, preparation of geometry for FEM model, creation of free and mapped mesh, definition of boundary conditions, calculations of properties of single bodies.

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 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.			
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.			
2311074	Vibrations of Mechanical Systems	ZK	4
2311075	Mechanics of Mechanisms	ZK	4
2312017	Controlled mechanical systems I.	KZ	3
2351054	Production Machines and Equipment	Z,ZK	5
Manufacturing machines and equipment contains three basic parts. These are forming machines, machine tools and industrial robots and manipulators. Characteristics of machines and equipment for realization of discrete technological processes will be explained, technical parameters, basics of construction of production machines and equipment, construction of machine tools, TS design, automation of production machines and equipment, industrial manipulators and robots, their applications, single-purpose and modular machines, production lines. Examples of application of production machines and equipment.			
2351084	Numerical Control of Production Machines and Equipment Control	Z,ZK	4
Numerical controled cutting machines, means of programming, coordinate systems, ISO code. NC program, its creating using CAD/CAM layers, postprocessors. CNC inner structure, interaction of its parts, control system modes. Real-time operating systems.			
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.			
2351121	Drives of Production Machines - Servomechanisms I	Z,ZK	4
Mathematical apparatus for signal processing in drives of NC machines and robots, sampling, Fourier and Laplace transforms, Laplace images of typical functions and transfer functions of drive components. Sensors of quantities in drives, auxiliary el. circuits, filters. Vibration suppression in NC machines. Pulse excitation.			
2351122	Servomechanisms of Production Machines	Z,ZK	4
Actuator in servomechanisms (hydraulic motors and electric motors), control equipment. Transmission mechanisms of production machines feed drives. Increasing of feed drive axes dynamics, special kinematics arrangement. Dynamic model of feed drive axis. Vibration suppression in feed drive axes.			
2351123	Drives of Production Machines - Servomechanisms III.	Z,ZK	4
2351158	Hydraulic and Pneumatic Systems	Z,ZK	4
Classification, principle and structure of hydraulic and pneumatic mechanisms (HPM). Transmission and conversion of energy. Design and function of hydraulic and pneumatic elements. Function of typical HPM. Proportional elements and their applications. Servomechanisms. Hydraulic and pneumatic drives. Assembly, operation and maintenance.			
2353111	Project 1.	Z	5
Practicing of the design of machine parts with an emphasis on understanding geometric and dimensional tolerances and surface roughness.			
2353112	Project II	Z	5
The course is focused on the design of forming machines and on the design of the whole automated workplace. The design and design of the drives is designed with respect to a wide range of selected machine types. Depending on the product, the machine is designed first and then the entire workplace. The project has the character of a study and takes place in teams. The thesis is finally defended by all members			
2353113	Project III	Z	10
2353890	Project IV.	Z	4
Constructional and computational processing of real tasks of motion nodes and systems. A high level of creative thinking and innovative designs and practices are required. The tasks have a direct link to industrial practice and its needs. The second part is focused on the design of machine tool construction nodes (eg cradle, milling head, quill). The aim is to create a real construction node of a machine tool with all design calculations and drawing documentation in the form of a design drawing according to the entered parameters.			
2353998	Diploma Project	Z	10
The course focuses on processing the final thesis within the scope of the assigned topic of the bachelor thesis. The student is acquainted with the general principles of the final thesis and during regular weekly consultations with the supervisor proceeds in the professional solution of the assigned problem and at the same time works on the actual text of the final thesis. In the course of the solution, the student completes a small oral presentation where the work in progress is presented.			
2356024	CAD in Production Machine Design	Z	3
Basics of modeling in Siemens NX. Sketching of basic 2D geometry and creation of 3D models. Creating rotating and non-rotating parts and generating 2D drawings (views, sections, dimensions, geometric tolerances). Creating assemblies and subassemblies and creating assembly drawings with positions, generating parts lists. Creating weldments and machined welds. Creating parametric models, using "Synchronous technology" and other special functions.			
2356025	Simulation Production Machine	Z	3
Learning outcomes of the course unit The subject is aimed at gaining information about fundamentals of modeling of parts and whole machines by finite element method, preparation of geometry for FEM model, creation of free and mapped mesh, definition of boundary conditions, calculations of properties of single bodies.			
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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