Study plan

Name of study plan: 02 098 NSTI ENE 2012 základ

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Mechanical Engineering

Type of study: Follow-up master

Required credits: 114 Elective courses credits: 5 Sum of credits in the plan: 119

Note on the plan:

Name of the block: Compulsory courses in the program

Minimal number of credits of the block: 54

The role of the block: P

Code of the group: 12NS*1P-ENE

Name of the group: 2012 NSTI 1.sem povinné ENE

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
2153051	Project I. Pavel Skopec	Z	5	0P+5C	*	Р
2371519	Means of Automatic Control I.	Z,ZK	6	3P+0C+2L	*	Р
2161004	Environmental engineering	Z,ZK	6	3P+2C	*	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-ENE Name=2012 NSTI 1.sem povinné ENE

2153051	Project i.		5
2371519	Means of Automatic Control I.	Z,ZK	6
Various categories	of means for automatic control according to the different criterions. Main features in each category.Air and hydraulic fluid as a me	edium for informat	ion transfer.
Symbols and desc	iptions in pneumatic and hydraulic diagrams. Pneumatic control systems design. Pneumatic actuators, valves, special pneumatic,	electropneumatic	devices. Contro
valves, categories,	dimensioning, design, applications. Inteligent pneumatics as an integration of pneumatic, electronic and control components and sy	stems. Valve island	ds and terminals
standard, with indu	strial buses communication, programmable. Pneumatic positioning systems.		
2161004	Environmental engineering	Z,ZK	6
Application of a the	ory in environmental engineering		•
2181136	Processing Equipments Design	Z,ZK	6
PEs classification,	heir parameters and criteria of their rating. Ways of PEs design according their purpose and utilization. Materials used for PEs, w	elding, corrosion r	mechanisms and
anticorrosion preve	ntion. Dimension of shafts, beams, supports, pipes, heat exchangers and pressure vessels. Sealing and packing of fix parts (flar	iges) and moving	parts (rotating
shafts etc.) Practic	al examples of proper and improper designs of apparatuses. Example of heat exchanger design (heat transfer area calculation, its a	arrangement head	loss calculation

thermal dilatation, strength calculation, low cycle fatigue (thermal dilatation)).

2151026 **Energy Sources and Conversions** Z,ZK 6

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

Name of the group: 2012 NSTI 2.sem povinné ENE

Requirement credits in the group: In this group you have to gain 5 credits

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

Credits in the group: 5 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2153052	Project II. Pavel Skopec	Z	5	0P+5C	*	Р
2151079	Thermal Cycles in Power Generation	Z,ZK	5	3P+1C	*	Р

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

2153052	Project II.	Z	5
2151079	Thermal Cycles in Power Generation	Z,ZK	5

The lectures are focused on developing the knowledge required to analyse energy cycles performance (e.g. efficiency, power output, work and heat input) from cycle data. Steam Power (Rankine) Cycle: beginning with a simple cycle and adding more refinements (feedheating, economiser etc.). Application to electrical power generation where the heat source is supplied by: i) fossil fuel and ii) nuclear fuel. Gas Turbine (Brayton) Cycle: simple, then add intercooler, heat exchanger and reheater. The use of gas turbines for gas turbines to electrical power generation. Latest developments with concentrated solar energy as a heat source. Cooling towers. Hybrid systems: CHP, steam turbine with gas turbine. Exergy analysis of the energy cycles.

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

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

Requirement credits in the group: In this group you have to gain 10 credits Requirement courses in the group: In this group you have to complete 1 course

Credits in the group: 10 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role	
2153053	Project III. Zden k Funda, Ond ej Bartoš, Jakub Maš uch, Michal Kolovratník, Jan Hrdli ka, Václav Novotný, Jan Havlík, Václav Dostál, Pavel Skopec, Jan Havlík	Z	10	0P+10C	*	Р	

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

2153053 Project III. Z 10

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

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

Requirement credits in the group: In this group you have to gain 10 credits Requirement courses in the group: In this group you have to complete 1 course

Credits in the group: 10 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
2153998	Diploma Thesis Michal Kolovratník	Z	10	0P+10C	*	Р

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

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2153998 Diploma Thesis			Z	10

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 60

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 Eliška Vítková, Ilona Šimice, Michaela Schusová, Veronika Kratochvílová, Hana Volejníková, Nina Procházková Ayyub 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 Michaela Schusová (Gar.)	Z	2	0P+2C	*	PV
2043082	German - Lower Intermediate Course Eliška Vítková, Michaela Schusová, Petr Laurich, Jaroslava Kommová Jaroslava Kommová	Z	2	0P+2C	*	PV
2043085	Russian - Preparatory Course / FME Eliška Vítková, Michaela Schusová, Hana Volejníková, Dušana Jirovská Eliška Vítková	Z	2	0P+2C	*	PV
2043084	Spanish - Preparatory Course / FME Eliška Vítková, Michaela Schusová, Jaime Andrés Villagómez Eliška Vítková	Z	2	0P+2C	*	PV

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

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

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

2041081	English - Master Exam	ZK	1			
Mapped to the level of Common European Framework of Reference: A2. Aim: Understanding clearly what is spoken about everyday situations which a student meets at school or in						
his/her free time and speaking about them. Writing in a simple way about familiar topics. Reading and comprehension of simple texts. Improvement of 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 a	nd speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improveme	nt of professional	language.				
2041082	German - Master Exam / FME	ZK	1				
Mapped to the level of	Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic	h a student meets	s either at school				
or in his/her free time a	nd speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improveme	nt of professional	language.				
2041085	Russian - Master Exam / FME	ZK	1				
Mapped to the level of	Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations whic	h a student meets	s either at school				
or in his/her free time a	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 a	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*2Q-ENE

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

Requirement credits in the group: In this group you have to gain at least 19 credits (at most 20)

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

Credits in the group: 19 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
2151094	Biomass and Renewable Energy Sources Jan Hrdli ka	Z,ZK	5	2P+2C	*	PV
2121041	Pumping Technology	Z,ZK	5	3P+1C	*	PV
2151095	Nuclear Energy Pavel Zácha Pavel Zácha	Z,ZK	4	2P+2C	*	PV
2151089	Industrial power engineering	Z,ZK	5	2P+1C	*	PV
2151010	Combustion and Boilers Jan Hrdli ka	Z,ZK	5	3P+1C	*	PV
2151170	Gaseous Fuids Compression and Delivery	Z,ZK	5	3P+1C	*	PV
2151157	Principles of Refrigerating Technology and Heat Pumps	Z,ZK	5	2P+2C	*	PV
2151144	Introductory Cryogenics and Vacuum Technology	Z,ZK	5	3P+1C	*	PV

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

2151094	Biomass and Renewable Energy Sources	Z,ZK	5			
	ses from 1/3 of general survey of various renewable energy sources (wind , hydro, solar and geothermal power) and the other 2/	1 ' 1	_			
properties and energy coversion technologies of biomass.						
2121041 Pumping Technology Z,ZK						
The course is consi	dered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students	will gain knowledg	e on basic types			
of hydrostatic and h	ydrodynamic pumps, their construction and operational characteristics. Students will also get knowledge on the fundamentals o	f operation of pump	ps in hydraulic			
systems and more	complex overview in selecting of type, construction and operation of pumps that are used in hydraulic systems.					
2151095	Nuclear Energy	Z,ZK	4			
2151089	Industrial power engineering	Z,ZK	5			
2151010	Combustion and Boilers	Z,ZK	5			
2151170	Gaseous Fuids Compression and Delivery	Z,ZK	5			
Theory of compress	sion processes. Constructions, calculation, capacity control of compressors, operation with various gases. Refrigerating compres	sors. Accessories	of a compresso			
stations and plants.	Compressed air technology. Economical and ecological problems of a compressed air production and distribution.					
2151157	Principles of Refrigerating Technology and Heat Pumps	Z,ZK	5			
2151144	Introductory Cryogenics and Vacuum Technology	Z,ZK	5			

Code of the group: 12NS*3Q-ENE

Name of the group: 2012 NSTI 3.sem 4povvol ENE

Requirement credits in the group: In this group you have to gain at least 16 credits (at most 20)

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

Credits in the group: 16

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
2151164	Refrigeration Technique and Heat Pumps	Z,ZK	4	2P+1C	*	PV
2121042	Hydrostatic Pumps and Transmission	Z,ZK	4	2P+1C	Z	PV

2151006	Nuclear Reactors and Steam Generators	Z,ZK	5	3P+1C	*	PV
2151171	Compressors - selected Parts Michal Kolovratník	Z,ZK	4	2P+1C	*	PV
2151037	Steam and Gas Turbines Ond ej Bartoš	Z,ZK	5	3P+1C	*	PV
2151115	Design and Economy of Power Facilities Michal Kolovratník	Z,ZK	5	3P+1C	*	PV
2151153	Design and Operation of Cooling Equipments	Z,ZK	5	2P+2C	*	PV
2152022	Social acpects of power engineering Jakub Maš uch	KZ	4	2P+1C	*	PV
2151084	Boiler Design Zden k Funda	Z,ZK	5	3P+1C	*	PV
2151021	District Heating Zden k Funda	Z,ZK	5	2P+2C	*	PV
2151108	Thermal Hydraulics of Nuclear Reactors	Z,ZK	5	2P+2C	*	PV

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

2151164	Refrigeration Technique and Heat Pumps	Z,ZK	4
2121042	Hydrostatic Pumps and Transmission	Z,ZK	4
The course is consi	sidered for the students in the master study programme of Mechanical Engineering-Pumps and machinery facil	lities. Students will gain knowledge or	basic types of
hydrostatic pumps,	s, construction and operation characteristics. The course will provide students with comprehensive overwiev in s	selecting type, construction and opera	tion of hydraulic
pumps. Students w	will also pass inroduction to the fundamentals of hydrostatic and hydrodynamic transmissions, their characterist	tics, construction and applications.	
2151006	Nuclear Reactors and Steam Generators	Z,ZK	5
Problems with achie	nevement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nucl	lear power reactors. Principal design	characteristics
of nuclear reactors,	s, reactor kinetics and reactor radiation. Advanced reactors and steam generators.		
2151171	Compressors - selected Parts	Z,ZK	4
Selected parts of th	the theory, design and operation of positive displacement compressors (include refrigerating compressors). Nor	n-ideal gas compression.	
2151037	Ota and and Oca Tarakina	7 71/	_
2151037	Steam and Gas Turbines	Z,ZK	5
	Steam and Gas Turbines pressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine st	1 , 1	-
Condensing, backp		tage with a short (one-dimensional ap	oproach) and
Condensing, backplong (three-dimensi	pressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine st	tage with a short (one-dimensional ap	oproach) and
Condensing, backplong (three-dimensi	pressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine st sional effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and do	tage with a short (one-dimensional ap	oproach) and
Condensing, backp long (three-dimensi control of a steam a	pressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine st sional effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and do and gas turbines. Off-design operation conditions of a steam and gas turbines.	tage with a short (one-dimensional aplesign of a multi-stage steam and gas	oproach) and turbines. Power
Condensing, backp long (three-dimensi control of a steam a 2151115	pressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine st sional effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and deand gas turbines. Off-design operation conditions of a steam and gas turbines. Design and Economy of Power Facilities	tage with a short (one-dimensional at lesign of a multi-stage steam and gas	oproach) and turbines. Power
Condensing, backplong (three-dimensicontrol of a steam a 2151115 2151153	pressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage and effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and defects and gas turbines. Off-design operation conditions of a steam and gas turbines. Design and Economy of Power Facilities Design and Operation of Cooling Equipments	tage with a short (one-dimensional appears of a multi-stage steam and gas Z,ZK Z,ZK	oproach) and turbines. Power 5
Condensing, backplong (three-dimensicontrol of a steam a 2151115 2151153 2152022 2151084	pressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage and effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and defects and gas turbines. Off-design operation conditions of a steam and gas turbines. Design and Economy of Power Facilities Design and Operation of Cooling Equipments Social acpects of power engineering	tage with a short (one-dimensional appliesign of a multi-stage steam and gas Z,ZK	oproach) and turbines. Power 5 5 4 5
Condensing, backplong (three-dimensicontrol of a steam at 2151115 2151153 2152022 2151084 Basic types of boile	pressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage and effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and deand gas turbines. Off-design operation conditions of a steam and gas turbines. Design and Economy of Power Facilities Design and Operation of Cooling Equipments Social acpects of power engineering Boiler Design	tage with a short (one-dimensional applications) and the sign of a multi-stage steam and gas Z,ZK Z,ZK KZ Z,ZK KZ Z,ZK Influence of steam parameters and fue	pproach) and turbines. Power 5 5 4 5 I properties on
Condensing, backplong (three-dimensicontrol of a steam at 2151115 2151153 2152022 2151084 Basic types of boile boiler design - influence of the steam at 2152022 2151084 Basic types of boile boiler design - influence of the steam at 2152022 2151084 Basic types of boile boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 About - influence of the steam at 2152022 2151084 About - influence of the steam at 215202 2151084 About - influe	pressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage and effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and defects and gas turbines. Off-design operation conditions of a steam and gas turbines. Design and Economy of Power Facilities Design and Operation of Cooling Equipments Social acpects of power engineering Boiler Design Boson design variants. Fuel preparation before combustion - grinding and drying of solid fuels, energy balance. In	tage with a short (one-dimensional applications) and the sign of a multi-stage steam and gas Z,ZK Z,ZK KZ Z,ZK KI Alguments and fue or steam parameters and fue or design. Power plant boilers - sub alguments and sub alguments are sub alguments.	poproach) and turbines. Power 5 5 5 4 5 I properties on and supercritical,
Condensing, backplong (three-dimensicontrol of a steam at 2151115 2151153 2152022 2151084 Basic types of boile boiler design - influence of the steam at 2152022 2151084 Basic types of boile boiler design - influence of the steam at 2152022 2151084 Basic types of boile boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 Basic types of boiler design - influence of the steam at 2152022 2151084 About - influence of the steam at 2152022 2151084 About - influence of the steam at 215202 2151084 About - influe	pressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage is sional effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and defeats and gas turbines. Off-design operation conditions of a steam and gas turbines. Design and Economy of Power Facilities Design and Operation of Cooling Equipments Social acpects of power engineering Boiler Design lers, design variants. Fuel preparation before combustion - grinding and drying of solid fuels, energy balance. In usence of calorific value, influence of water, ash, volatile chlorine and nitrogen content. Methodology of new boile	tage with a short (one-dimensional applications) and the sign of a multi-stage steam and gas Z,ZK Z,ZK KZ Z,ZK KI Alguments and fue or steam parameters and fue or design. Power plant boilers - sub alguments and sub alguments are sub alguments.	poproach) and turbines. Power 5 5 5 4 5 I properties on and supercritical,

Code of the group: 12NS*4Q-ENE-238

Name of the group: 2012 NSTI 4.sem 1povvol ENE

Requirement credits in the group: In this group you have to gain at least 2 credits (at most 3)

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

Credits in the group: 2 Note on the group:

11010 011 1110	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
2383062	Budget and Project Economic Assessment	Z	2	1P+2C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12NS*4Q-ENE-238 Name=2012 NSTI 4.sem 1povvol ENE

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 proper feet to the course industrial or paging company of the paging company of the course focuses primarily on deepening of basic knowledge and skills in the creation 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 proper feet paging program in section (professely industrial or paging program in section program in section (professely industrial or paging program in section program in section (professely industrial or paging program in section program in section

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.

7----7

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

Name of the group: 2012 NSTI 4.sem 5povvol ENE

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 4 courses

Credits in the group: 20

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
2152045	Ecological Waste Treatment Jan Opat il	KZ	4	2P+1C	*	PV
2151137	Environmenatal Aspects of Energy Systems Pavel Skopec	Z,ZK	4	2P+1C	*	PV
2152029	Energy Audit Michal Kolovratník	KZ	4	2P+0C	*	PV
2122041	Micro-hydro water turbines	KZ	2	2P+1C	*	PV
2152064	Measurement in the Branch	KZ	4	0P+2L	*	PV
2151059	Advanced Power Generation Systems Michal Kolovratník	Z,ZK	4	2P+1C	*	PV
2151082	Operation of Power Devices Zden k Funda	Z,ZK	4	2P+1C	*	PV
2151080	Control and Automation Engineering in Power Industry Ond ej Bartoš	Z,ZK	4	2P+1C	*	PV
2151177	Thermal Insulation Martin Neužil	Z,ZK	4	1P+1C	*	PV
2152062	Turbocompressors and Fans	KZ	4	2P+1C	*	PV
2122022	Special Parts of Pumping Technology	KZ	4	2P+1C	*	PV

Characteristics of the courses of this group of Study Plan: Code=12NS*4Q-ENE Name=2012 NSTI 4.sem 5povvol ENE

2152045	Ecological Waste Treatment	KZ	4
2151137	Environmenatal Aspects of Energy Systems	Z,ZK	4
2152029	Energy Audit	KZ	4
2122041	Micro-hydro water turbines	KZ	2

The course is considered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will get knowledge on basic types of water turbines, their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selecting type, construction and operation of micro-hydro water turbines.

2152064	Measurement in the Branch	KZ	4
2151059	Advanced Power Generation Systems	Z,ZK	4

Current state and development of modern power generation technologies. Modern coal power plants. Prediction of the inlet steam parameters (sub-or super-critical). Gas turbines in power generation. Combined steam and gas cycles in electricity and heat production. Modern steam boilers with supercritical steam parameters. Atmospheric fluidized bed combustion of coal. Pressurized combustion and gasification of coal. Modern technologies of coal utilisation. Advanced nuclear power reactors.

2151082	Operation of Power Devices	Z,ZK	4
2151080	Control and Automation Engineering in Power Industry	Z.ZK	4

Fundamental terms of automatic control system in the power engineering. Means of automation control in the power engineering. Fundamental properties of control loops. Fundaments of the dynamic system theory. Structure of the power unit control system - safety appliance of the unit, automatic control of the power unit production. Dynamics of the steam-boilers, steam turbines and the power system. Stability control systems. The controlling of the performance and supplying of steam-boiler. Control of steam turbines. Control of power units and power systems.

2151177	Thermal Insulation	Z,ZK	4
2152062	Turbocompressors and Fans	KZ	4
2122022	Special Parts of Pumping Technology	KZ	4

The course is considered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. The content of the course assumes the knowledge of the previous course dealing with pumping technology. Students will get more detailed knowledge on pumps and pumping technology, in particular in the field of design and operation of the contemporary pumping facilities.

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 I of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a	ZK	1
	e time and speaking about them. Writing in a simple way about familiar topics, reading and comprehesion of simple texts. Improvemen		
2041085	Russian - Master Exam / FME	ZK	1
	l of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a		
	e time and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvemen		
2041086	Czech- Master Exam	ZK	1
2043081	English - Preparatory Course / FME	Z	2
	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 abo
	familiar topics. Reading and comprehension of simple texts. Improvement of professional language. European level A1 - A2	<u>.</u>	
2043082	German - Lower Intermediate Course	Z	2
	of Common European Framework of Reference A2 Aim: Understanding clearly spoken language about everyday situations which a		
	e time and speaking about them. Writing in a simple way about familiar topics. reading and comprehesion of simple texts. Improvemen	•	
2043083	French - Preparatory Course / FME	Z	2
Aim: Understandin	g clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them.	Writing in a simple	e way abo
0040004	familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	Z	
2043084	Spanish - Preparatory Course / FME g clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them.	_	2
iiii. Onderstandin	familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	writing in a simple	e way abo
2043085	Russian - Preparatory Course / FME	Z	2
	g clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them.	_	_
	familiar topics. Reading and comprehension of simple texts. Improvement of professional language.	g a oipi	, abo
2043086	Czech - Preparatory Course	Z	2
	g clearly what is spoken about everyday situations which a student meets at school or in his/her free time and speaking about them.	_	
	familiar topics. Reading and comprehension of simple texts. Improvement of professional language.		-
2121041	Pumping Technology	Z,ZK	5
ne course is cons	idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will g	gain knowledge or	n basic typ
of hydrostatic and	hydrodynamic pumps, their construction and operational characteristics. Students will also get knowledge on the fundamentals of op	eration of pumps	in hydraul
	systems and more complex overview in selecting of type, construction and operation of pumps that are used in hydraulic systems		
2121042	Hydrostatic Pumps and Transmission	Z,ZK	4
	sidered for the students in the master study programme of Mechanical Engineering-Pumps and machinery facilities. Students will gair	ŭ	• • •
	construction and operation characteristics. The course will provide students with comprehensive overwiev in selecting type, construct		-
	tudents will also pass inroduction to the fundamentals of hydrostatic and hydrodynamic transmissions, their characteristics, construct		
2122022	Special Parts of Pumping Technology	KZ	4
	nsidered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. The conten	t of the course as	cumps the
knowledge of the p	previous course dealing with pumping technology. Students will get more detailed knowledge on pumps and pumping technology, in p		
	and operation of the contemporary pumping facilities.	articular in the fie	eld of desig
2122041	and operation of the contemporary pumping facilities. Micro-hydro water turbines	earticular in the fie	eld of desig
2122041 The course is cons	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will	earticular in the fie	eld of design
2122041 the course is cons	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selec	earticular in the fie	eld of design
2122041 he course is cons of water turbines,	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines.	KZ get knowledge or ecting type, consti	2 n basic typruction and
2122041 he course is cons of water turbines, 2151006	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selec	KZ get knowledge or ecting type, constr	2 n basic typruction and
2122041 he course is cons of water turbines, 2151006	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines. Nuclear Reactors and Steam Generators	KZ get knowledge or ecting type, constr	2 n basic typruction and
2122041 he course is cons of water turbines, 2151006 Problems with ach	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines. Nuclear Reactors and Steam Generators ievement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nuclear power reactors. Programme of turbines in the master study programme of turbines in the master study programme of the students with comprehensive overview in selections.	KZ get knowledge or ecting type, constr Z,ZK rincipal design ch	2 n basic typruction and
2122041 he course is cons of water turbines, 2151006 Problems with ach	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines. Nuclear Reactors and Steam Generators ievement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nuclear power reactors. Profunction of nuclear reactors, reactor kinetics and reactor radiation. Advanced reactors and steam generators. Combustion and Boilers	KZ get knowledge or ecting type, constr Z,ZK rincipal design ch	eld of designated by the second secon
2122041 he course is cons of water turbines, 2151006 Problems with ach 2151010 2151021	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in sele operation of micro-hydro water turbines. Nuclear Reactors and Steam Generators ievement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nuclear power reactors. Profound in the control of	KZ get knowledge or ecting type, constr Z,ZK rincipal design cha	2 n basic typ ruction and 5 aracteristic 5
2122041 he course is cons of water turbines, 2151006 Problems with ach 2151010 2151021 2151026	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines. Nuclear Reactors and Steam Generators ievement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nuclear power reactors. Profounded reactors, reactor kinetics and reactor radiation. Advanced reactors and steam generators. Combustion and Boilers District Heating Energy Sources and Conversions	KZ get knowledge or ecting type, constr Z,ZK rincipal design cha	2 n basic typruction an 5 aracteristi 5 6
2122041 he course is cons of water turbines, 2151006 Problems with ach 2151010 2151021 2151026 2151037	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines. Nuclear Reactors and Steam Generators ievement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nuclear power reactors. Proform nuclear reactors, reactor kinetics and reactor radiation. Advanced reactors and steam generators. Combustion and Boilers District Heating Energy Sources and Conversions Steam and Gas Turbines	KZ get knowledge or ecting type, constr Z,ZK rincipal design cha Z,ZK Z,ZK Z,ZK Z,ZK Z,ZK	2 n basic typruction and 5 aracteristic 5 5 6 5 5
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2122041 he course is cons of water turbines, 2151006 Problems with ach 2151010 2151021 2151026 2151037 Condensing, backing (three-dimensions)	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines. Nuclear Reactors and Steam Generators ievement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nuclear power reactors. Proform nuclear reactors, reactor kinetics and reactor radiation. Advanced reactors and steam generators. Combustion and Boilers District Heating Energy Sources and Conversions Steam and Gas Turbines corressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage with a short (one ional effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and design of a multi-stage stage.	KZ get knowledge or ecting type, constr Z,ZK rincipal design cha Z,ZK	2 n basic typruction and 5 aracteristic 5 5 6 5 oroach) an bines. Pov
2122041 he course is cons of water turbines, 2151006 Problems with ach 2151010 2151021 2151026 2151037 Condensing, backing (three-dimensional constraints) 2151059 Current state and	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines. Nuclear Reactors and Steam Generators ievement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nuclear power reactors. Proform nuclear reactors, reactor kinetics and reactor radiation. Advanced reactors and steam generators. Combustion and Boilers District Heating Energy Sources and Conversions Steam and Gas Turbines corressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage with a short (one ional effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and design of a multi-stage scontrol of a steam and gas turbines. Off-design operation conditions of a steam and gas turbines. Advanced Power Generation Systems	KZ get knowledge or ecting type, constr Z,ZK rincipal design cha Z,ZK Z,ZK Z,ZK Z,ZK Z,ZK Z,ZK Z,ZK Z,	2 n basic typruction and 5 aracteristic 5 5 6 coroach) an bines. Pow
2122041 he course is cons of water turbines, 2151006 Problems with ach 2151010 2151021 2151026 2151037 Condensing, backing (three-dimensions) 2151059 Current state and	and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines. Nuclear Reactors and Steam Generators ievement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nuclear power reactors. Proform nuclear reactors, reactor kinetics and reactor radiation. Advanced reactors and steam generators. Combustion and Boilers District Heating Energy Sources and Conversions Steam and Gas Turbines spressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage with a short (one ional effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and design of a multi-stage scontrol of a steam and gas turbines. Off-design operation conditions of a steam and gas turbines. Advanced Power Generation Systems development of modern power generation technologies. Modern coal power plants. Prediction of the inlet steam parameters (sub-or steam).	KZ get knowledge or ecting type, constr Z,ZK rincipal design cha Z,ZK Z,ZK Z,ZK Z,ZK Z,ZK Z,ZK Z,ZK Z,	2 n basic typruction and 5 aracteristic 5 5 6 coroach) an bines. Pow
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2122041 he course is cons of water turbines, 2151006 Problems with ach 2151010 2151021 2151026 2151037 Condensing, backing (three-dimensions) 2151059 Current state and ower generation. Constant of the course of t	Advanced Power Generation Systems and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines. Nuclear Reactors and Steam Generators ievement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nuclear power reactors. Profined in the power reactors, reactor kinetics and reactor radiation. Advanced reactors and steam generators. Combustion and Boilers District Heating Energy Sources and Conversions Steam and Gas Turbines Steam and Gas Turbines spressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage with a short (one ional effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and design of a multi-stage scontrol of a steam and gas turbines. Off-design operation conditions of a steam and gas turbines. Advanced Power Generation Systems development of modern power generation technologies. Modern coal power plants. Prediction of the inlet steam parameters (sub-or scombined steam and gas cycles in electricity and heat production. Modern steam boilers with supercritical steam parameters. Atmosp of coal. Pressurized combustion and gasification of coal. Modern technologies of coal utilisation. Advanced nuclear power reactors and structural materials for nuclear power reactors. Thermal Cycles in Power Generation focused on developing the knowledge required to analyse energy cycles performance (e.g. efficiency, power output, work and heat in	KZ get knowledge or ecting type, construction type,	2 n basic typruction and 5 aracteristic 5 5 6 coroach) and bines. Power 4 s turbines d combustic 5 ata. Steam
2122041 he course is cons of water turbines, 2151006 Problems with ach 2151010 2151021 2151026 2151037 Condensing, backing (three-dimensional total course are power (Rankine) Corporations of the course are power (and operation of the contemporary pumping facilities. Micro-hydro water turbines idered for the students in the master study programme of Mechanical Engineering, branch of study Power Engineering. Students will their operational characteristics, construction and applications. The course will provide students with comprehensive overview in selection of micro-hydro water turbines. Nuclear Reactors and Steam Generators ievement of reactor criticality, principles of reactivity control. Fuels, moderators and structural materials for nuclear power reactors. Profinuclear reactors, reactor kinetics and reactor radiation. Advanced reactors and steam generators. Combustion and Boilers District Heating Energy Sources and Conversions Steam and Gas Turbines spressure and extraction steam turbines. Basic principals of energy transformations in a turbine stage. Turbine stage with a short (one ional effects) blade. Energy losses, polytropic and isentropic turbine efficiency. Thermodynamic analysis and design of a multi-stage stage control of a steam and gas turbines. Off-design operation conditions of a steam and gas turbines. Advanced Power Generation Systems development of modern power generation technologies. Modern coal power plants. Prediction of the inlet steam parameters (sub-or steam and gas cycles in electricity and heat production. Modern steam boilers with supercritical steam parameters. Atmosphof coal. Pressurized combustion and gasification of coal. Modern technologies of coal utilisation. Advanced nuclear power reactors are proved to analyse energy cycles performance (e.g. efficiency, power output, work and heat in cycle: beginning with a simple cycle and adding more refinements (feedheating, economiser etc.). Application to electrical power generation	KZ get knowledge or ecting type, construction type,	eld of designed of designed of designed of designed of designed of the designe
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2151089	Industrial power engineering	Z,ZK	5
2151094	Biomass and Renewable Energy Sources	Z.ZK	5
	rises from 1/3 of general survey of various renewable energy sources (wind, hydro, solar and geothermal power) and the other 2/3 a	,	-
	properties and energy coversion technologies of biomass.		0 / 11
2151095	Nuclear Energy	Z,ZK	4
2151108	Thermal Hydraulics of Nuclear Reactors	Z,ZK	5
2151115	Design and Economy of Power Facilities	Z,ZK	5
2151137	Environmenatal Aspects of Energy Systems	Z,ZK	4
2151144	Introductory Cryogenics and Vacuum Technology	Z,ZK	5
2151153	Design and Operation of Cooling Equipments	Z,ZK	5
2151157	Principles of Refrigerating Technology and Heat Pumps	Z,ZK	5
2151164	Refrigeration Technique and Heat Pumps	Z,ZK	4
2151170	Gaseous Fuids Compression and Delivery	Z,ZK	5
	sion processes. Constructions, calculation, capacity control of compressors, operation with various gases. Refrigerating compressors	,	1
	stations and plants. Compressed air technology. Economical and ecological problems of a compressed air production and distrib	ution.	
2151171	Compressors - selected Parts	Z,ZK	4
Selec	cted parts of the theory, design and operation of positive displacement compressors (include refrigerating compressors). Non-ideal ga	as compression.	
2151177	Thermal Insulation	Z,ZK	4
2152022	Social acpects of power engineering	KZ	4
2152029	Energy Audit	KZ	4
2152045	Ecological Waste Treatment	KZ	4
2152062	Turbocompressors and Fans	KZ	4
2152064	Measurement in the Branch	KZ	4
2153051	Project I.	Z	5
2153052	Project II.	Z	5
2153053	Project III.	Z	10
2153998	Diploma Thesis	Z	10
2161004	Environmental engineering	Z,ZK	6
	Application of a theory in environmental engineering	,	
2181136	Processing Equipments Design	Z,ZK	6
PEs classification,	their parameters and criteria of their rating. Ways of PEs design according their purpose and utilization. Materials used for PEs, weldir	ıg, corrosion mecl	hanisms and
anticorrosion prev	ention. Dimension of shafts, beams, supports, pipes, heat exchangers and pressure vessels. Sealing and packing of fix parts (flange	s) and moving par	rts (rotating
shafts etc.). Practic	al examples of proper and improper designs of apparatuses. Example of heat exchanger design (heat transfer area calculation, its arran	gement, head loss	s calculation,
	thermal dilatation, strength calculation, low cycle fatigue (thermal dilatation)).		1 -
2371519	Means of Automatic Control I.	Z,ZK	6
ŭ	es of means for automatic control according to the different criterions. Main features in each category.Air and hydraulic fluid as a med iptions in pneumatic and hydraulic diagrams. Pneumatic control systems design. Pneumatic actuators, valves, special pneumatic, elec		
•	dimensioning, design, applications. Inteligent pneumatics as an integration of pneumatic, electronic and control components and system	•	
varvoo, catogorioo,	standard, with industrial buses communication, programmable. Pneumatic positioning systems.	io. vaivo iolarido di	ria torriiriaio,
2383062	Budget and Project Economic Assessment	Z	2
	rise is to improve the knowledge gained within the basic bachelor's degree course Management and Economics of the Enterprise. The	_	_
_	c knowledge and skills in the creation and evaluation of the operational budget, proper preparation and evaluation of costing model for		
	luation of an investment project, as it corresponds to contemporary knowledge and the development of management methods and te	-	
simple fictional indu	istrial or engineering company or its sub-section (preferably inspired by their practical experience, internships or training program in rea	al company). The f	irst student's
	detailed plan and budget of a project (e.g. new product development, product or process innovation, etc.) focused on improvement of		-
or effectiveness of	the company. The second task is cost calculation for chosen calculation unit. Last task within this course is the evaluation of economic	cal effectiveness of	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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