Study plan

Name of study plan: Inteligentní budovy

Faculty/Institute/Others: Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Intelligent Buildings
Type of study: Follow-up master full-time
Required credits: 120
Elective courses credits: 0
Sum of credits in the plan: 120
Note on the plan: Studijní plán programu Inteligentní budovy od akademického roku 2025/2026

Name of the block: Compulsory courses Minimal number of credits of the block: 88 The role of the block: Z

Code of the group: NX202501 Name of the group: Inteligentní budovy, 1. semestr Requirement credits in the group: In this group you have to gain at least 18 credits Requirement courses in the group: In this group you have to complete at least 4 courses Credits in the group: 18 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
B5M14ESIB	Electrical Systems of Intelligent Buildings Miroslav Chomát, Pavel Mindl, Ji í Lettl Miroslav Chomát (Gar.)	ZK	5	2P+2L		Z
124INBB	Integrated Design of Buildings Jan R ži ka, Petr Hájek, Antonín Lupíšek Antonín Lupíšek Petr Hájek (Gar.)	Z,ZK	4	2P+1C	Z	Z
124ST1	Thermal Engineering in Construction Jan Tywoniak Jan Tywoniak Jan Tywoniak (Gar.)	ZK	5	2P	Z	Z
125OZEB	Renewable Energy Sources Michal Kabrhel Michal Kabrhel Michal Kabrhel (Gar.)	ZK	4	2P	Z	Z

Characteristics of the courses of this group of Study Plan: Code=NX202501 Name=Inteligentní budovy, 1. semestr

B5M14ESIB	Electrical Systems of Intelligent Buildings	ZK	5				
124INBB	Integrated Design of Buildings	Z,ZK	4				
The main objective of th	The main objective of the subject Integrated Building Design is to get an complex overview of the principles of integrated buildings design, life cycle assessment of buildings, evaluation						
of building performance	of building performance, green/sustainable certification systems and understand environmental, social and economic aspects of the built environment.						
124ST1	124ST1 Thermal Engineering in Construction ZK 5						
The subject discusses t	he basic chapters of building physics - part hygrothermal performance of buildings in an overview manner with the aim of prov	, iding basic inform	ation to students				
coming from non-constr	ruction bachelor's fields and at the same time supplementing knowledge and linking it with contexts for students coming from	civil engineering.					
125OZEB	Renewable Energy Sources	ZK	4				
The course deals with r	The course deals with renewable energy sources and building energy systems. The different types of energy-solar, wind, biomass, geothermal and hydro-are discussed in detail. The						
characteristics of the er	haracteristics of the energies and the most appropriate methods of use are described. Attention is paid to understanding the correct way to design facilities and systems that use						
renewable energy source	ces.						

Code of the group: NX202502 Name of the group: Inteligentní budovy, 2. semestr

Requirement credits in the group: In this group you have to gain at least 26 credits Requirement courses in the group: In this group you have to complete at least 6 courses Credits in the group: 26 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
B5M38SZS1	Sensors and Networks Pavel Mlejnek, Pavel Ripka, Antonín Platil Antonín Platil (Gar.)	Z,ZK	5	2P+2C	L	Z
125EABU	Energy Audit of Building Michal Kabrhel, Karel Kabele, Miroslav Urban Karel Kabele Karel Kabele (Gar.)	КZ	4	2P+1C	L	Z
125ESB	Buildings Ecology Systems Stanislav Frolík Stanislav Frolík (Gar.)	KZ	4	2P	L	Z
125P1IB	Project IB I Michal Kabrhel Michal Kabrhel Michal Kabrhel (Gar.)	Z	5	4C	L	Z
2161079	Air-Conditioning Vladimír Zmrhal, Petr Zelenský Vladimír Zmrhal Vladimír Zmrhal (Gar.)	Z,ZK	4	2P+1C	*	Z
2161109	Automatic control in environmental engineering of building Ji í Bašta, Jind ich Bohá Ji í Bašta Ji í Bašta (Gar.)	Z,ZK	4	2P+1C	*	Z

Characteristics of the courses of this group of Study Plan: Code=NX202502 Name=Inteligentní budovy, 2. semestr

B5M38SZS1	Sensors and Networks	Z,ZK	5
125EABU	Energy Audit of Building	KZ	4
Advanced course fo	r introduction into energy auditing. Lectures topics: Energy audit and energy performance of buildings, legislation. EPDB - energy	, performance direc	tive for buildings
Methodology of calc	ulating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial conc	lition, description o	of initial condition
object survey and s	arvey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy	gy consumption - I	ouilding, heating
lighting, ventilating s	systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical eva	aluation, evaluation	from the aspec
of environment prote	ection. Evaluation - emission Individual object survey. Energy audit of industrial objects. Methods of buildings evaluation. Seminar	is focused on the r	ealistic building
resulting to presenti	ng case study report about energy audit of existing building.		
125ESB	Buildings Ecology Systems	KZ	4
Principles of enviror	mentally friendly water management. Disposal of sewage water and use of rain water. Measurement of water consumption, syste	em design, pumpir	ig devices, wate
saving and special i	nstallations.		
125P1IB	Project IB I	Z	5
2161079	Air-Conditioning	Z,ZK	4
Extend knowledge f	or design, control and evaluation of single-zone and multi-zone air conditioning systems.		
2161109	Automatic control in environmental engineering of building	Z,ZK	4
Application of basic	approaches to automatic control of HVAC systems and equipments. Automatic control sequences of air conditioning and source	s of heat	

Code of the group: NX202503

Name of the group: Inteligentní budovy, 3. semestr

Requirement credits in the group: In this group you have to gain at least 18 credits Requirement courses in the group: In this group you have to complete at least 4 courses Credits in the group: 18

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
B5M38TPUR	Technology for Sustainable Development	Z,ZK	5	2P+2C	Z	Z
125P2IB	Project IB II Michal Kabrhel	Z	5	4C	Z	Z
125SYB	Building Systems Jan Tywoniak, Karel Kabele Karel Kabele Karel Kabele (Gar.)	ZK	4	4P	Z	Z
2161102	Radiant and Industrial Heating Ji í Bašta, Roman Vav i ka Ji í Bašta Ji í Bašta (Gar.)	Z,ZK	4	2P+1C	*	Z

Characteristics of the courses of this group of Study Plan: Code=NX202503 Name=Inteligentní budovy, 3. semestr

B5M38TPUR	Technology for Sustainable Development	Z,ZK	5					
125P2IB	Project IB II	Z	5					
125SYB	Building Systems	ZK	4					
Multi-criteria analysis of	lulti-criteria analysis of the requirements for the indoor environment and the function of the systems in different types of buildings and plants and optimization criteria for the design of							
energy and ecological b	uilding systems. Relationships between building technical equipment and the building. Integrated view of conceptual solutions	in different buildin	ng types in terms					
of indoor systems and b	puilding design. E.g. office buildings, residential buildings, halls, shopping centres, cultural centres, industrial buildings, sports	buildings, family	houses, passive					
etc. The audience will be	e introduced to the requirements for the indoor environment, the characteristic elements of energy and environmental building s	systems in relation	to the structural					
design for the building t	ype.							
2161102	61102 Radiant and Industrial Heating Z,ZK 4							
Student will be informed	about the basics of radiant and other industrial heating systems							

Code of the group: NX202504 Name of the group: Inteligentní budovy, diplomová práce Requirement credits in the group: In this group you have to gain at least 26 credits

Requirement courses in the group: In this group you have to complete at least 1 course Credits in the group: 26 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
125DPIB	Diploma Thesis Michal Kabrhel Michal Kabrhel (Gar.)	Z	26	20C	L	Z

Characteristics of the courses of this group of Study Plan: Code=NX202504 Name=Inteligentní budovy, diplomová práce

 125DPIB
 Diploma Thesis
 Z
 26

 Thesis of students studying the Master's degree programme Intelligent Buildings. Independent final thesis usually in the form of a complex project, theoretical work or a combination of the previous forms.
 Z
 26

Name of the block: Compulsory elective courses Minimal number of credits of the block: 32 The role of the block: S

Code of the group: NX202501PV

Name of the group: Inteligentní budovy, povinn volitelné p edm ty, 1. semestr Requirement credits in the group: In this group you have to gain at least 12 credits Requirement courses in the group: In this group you have to complete at least 3 courses Credits in the group: 12 Note on the group:

Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their Code Completion Credits Scope Semester Role members) Tutors, authors and guarantors (gar.) **Electrical Light 1** A5M15ES1 ΚZ 4 2P+1S Ζ s Petr Žák, Petr Žák **Petr Žák** Petr Žák (Gar.) Measurements in the Buildings 2P+2L Ζ B5M38MEB1 ΚZ 5 S Pavel Mlejnek, Petr Kašpar Pavel Mlejnek (Gar.) **Building Structures** Ζ 124KPKP ΖK 4 3P s Ctislav Fiala Ctislav Fiala Ctislav Fiala (Gar.) Acoustics and Lighting 1240SIB 4 Ζ ΚZ 2P s Jaroslav Vychytil, Lenka Maierová Jaroslav Vychytil Jaroslav Vychytil (Gar.) logical and Intelligent Building Systems 125LISB 4 2P Ζ ΚZ s Michal Kabrhel, Bohumír Garlík Michal Kabrhel Michal Kabrhel (Gar.) **Transport Phenomena** 2161108 Z,ZK 4 2P+1C s Martin Barták Martin Barták Martin Barták (Gar.) Ventilation 2162077 ΚZ 4 2P+2C+0L s Vladimír Zmrhal Heating 2162113 K7 4 2P+2C 1 S Jind ich Bohá, Roman Vav i ka Ji í Bašta Ji í Bašta (Gar.) Ji í Bašta,

Characteristics of the courses of this group of Study Plan: Code=NX202501PV Name=Inteligentní budovy, povinn volitelné p edm ty, 1. semestr

A5M15ES1	Electrical Light 1	KZ	4
B5M38MEB1	Measurements in the Buildings	KZ	5
124KPKP	Building Structures	ZK	4
Basics of building st	tructures. Functional requirements, structural systems, spatial effect of the structural system. Vertical load-bearing structur	res, floor structures, overhar	nging structures
Envelopes of building	ngs, windows, partitions, floors, suspended ceilings. Stairs, roof construction timber roof trusses, roof envelopes. Found	ation structures, structural s	olution of the
substructure, water	proofing of the substructure. Structural systems of single and multi-storey buildings, structural systems of long-span structural	uctures.	
124OSIB	Acoustics and Lighting	KZ	4
The course introduc	ces students to the basics of building lighting technology and building acoustics and deepens further knowledge.	· ·	
125LISB	logical and Intelligent Building Systems	KZ	4
2161108	Transport Phenomena	Z,ZK	4
Basics of transport	phenomena for the study programme Intelligent Buildings. Momentum, heat and mass transport in built environment.	1 . 1	
2162077	Ventilation	KZ	4
2162113	Heating	KZ	4
Knowledge improve	emen' from the field of heating of residential and industrial buildings. Designing of convective and radiant heating system	ns	

Code of the group: NX202502PV

Name of the group: Inteligentní budovy, povinn volitelné p edm ty, 2. semestr Requirement credits in the group: In this group you have to gain at least 4 credits Requirement courses in the group: In this group you have to complete at least 1 course

Credits in the group: 4 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
A5M13FVS	Photovoltaic Systems Pavel Hrzina, Ladislava erná, Vít zslav Benda Ladislava erná Pavel Hrzina (Gar.)	КZ	4	2P+2L	L	S
A5M34ELE	Electronics Alexandr Laposa, Adam Bou a Alexandr Laposa Alexandr Laposa (Gar.)	KZ	4	3P+1L	L	S
A5M38SBD	Collection and Data Transfer Pavel Mlejnek Pavel Mlejnek (Gar.)	KZ	4	2P+1L	L	S
125MBST	Building and HVAC Systems Modelling Karel Kabele Karel Kabele Karel Kabele (Gar.)	KZ	4	1P+1C	L	S
125PBZB	Fire Services Ilona Koubková, Bohumír Garlík, Daniel Adamovský, Pavla Hofbauer Pechová Ilona Koubková Ilona Koubková (Gar.)	КZ	4	2P	L	S
2162064	Noise and Vibration Control Miroslav Ku era, Richard Nový Miroslav Ku era Miroslav Ku era (Gar.)	KZ	4	2P+1C	*	S
2162078	Alternative Energy Sources	KZ	5	2P+2C+0L	-	S

Characteristics of the courses of this group of Study Plan: Code=NX202502PV Name=Inteligentní budovy, povinn volitelné p edm ty, 2. semestr

A5M13FVS	Photovoltaic Systems	KZ	4
Solar energy and its	s exploitation using photovoltaic systems. Photovoltaic phenomena, solar cells and their characteristics, sola	r modules (construction, technology, pa	arameters).
Photovoltaic system	ns (including energy conservation). Photovoltaic system applications, optimisation of operating conditions. Ba	sic economical and ecological aspects,	present trend
A5M34ELE	Electronics	KZ	4
A5M38SBD	Collection and Data Transfer	KZ	4
125MBST	Building and HVAC Systems Modelling	KZ	4
125PBZB	Fire Services	KZ	4
	systems, fire pipe, fire station. Fixed fire-fighting water with water mist, foam, and halon. Special fire-fighting eq	uipment.Protecting buildings against fir	e spread from
technological equip	ment.Electric fire alarm. Fire control equipment. Backup power source.		
2162064	Noise and Vibration Control	KZ	4
Student will be infor	rmed about the basic acoustic dimensions, which are important for evaluation of noise.		
2162078	Alternative Energy Sources	KZ	5

Code of the group: NX202503PV

Name of the group: Inteligentní budovy, povinn volitelné p edm ty, 3. semestr Requirement credits in the group: In this group you have to gain at least 12 credits Requirement courses in the group: In this group you have to complete at least 3 courses Credits in the group: 12

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
A5M13NZZ	Independent sources Pavel Hrzina, Václav Papež Pavel Hrzina Pavel Hrzina (Gar.)	KZ	4	3P+1L	Z	S
A5M16EUE	Economics of Energy Use Ji í Beranovský, Július Bernš Ji í Beranovský Július Bernš (Gar.)	KZ	4	3P+1C	Z	S
A5M34EZS	Electronic security systems Miroslav Husák, Jan Novák, Tomáš Teplý, Václav Prajzler Václav Prajzler Václav Prajzler (Gar.)	КZ	4	3P+1L	Z	S
125TECE	Technological Units Hana Kabrhelová, Ilona Koubková Ilona Koubková (Gar.)	KZ	4	2P	Z	S
2162079	Cooling in Environmental Engineering of Buldings	KZ	4	3P+1C+0L	-	S
2162081	District Heating	KZ	5	2P+2C+0L	-	S
2162700	Experimental Methods 1 Miroslav Ku era Miroslav Ku era (Gar.)	KZ	4	0P+4L	*	S

Characteristics of the courses of this group of Study Plan: Code=NX202503PV Name=Inteligentní budovy, povinn volitelné p edm ty, 3. semestr

A5M13NZZ	Independent sources	KZ	4		
Electrochemical sources	Electrochemical sources of the electric power - overview. Electrochemical sources (accumulators), applications. Uninteruptible power sources in IB. Other sources of the electrical				
energy. Perspective sources of electrical enegy, storage of energy.					
A5M16EUE	Economics of Energy Use	KZ	4		
Organization and energy management of company, buildings or energy systems. Energy need and consumption, energy balance. Energy characterization of aggregate, secondary					
energy sources. Energy audit and feasibility study, optimization of energy management of energy systems. Prices and tariffs, economy and financial analysis.					
A5M34EZS	Electronic security systems	KZ	4		

125TECE	Technological Units	KZ	4
Saunas, fireplaces, kitchen technology, elevators, heat pumps, technology, swimming pools, heat source and technological systems.			
2162079	Cooling in Environmental Engineering of Buldings	KZ	4
2162081	District Heating	KZ	5
2162700	Experimental Methods 1	KZ	4
Introduction study of experimental technique in environmental engineering			

Code of the group: NX202504PV

Name of the group: Inteligentní budovy, povinn volitelné p edm ty, 4. semestr Requirement credits in the group: In this group you have to gain at least 4 credits Requirement courses in the group: In this group you have to complete at least 1 course Credits in the group: 4

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
A5M16FIP	Corporate finance Old ich Starý, Ji í Vaší ek, Blanka Ku erková Ji í Vaší ek Old ich Starý (Gar.)	KZ	4	3P+1C	L	S

Characteristics of the courses of this group of Study Plan: Code=NX202504PV Name=Inteligentní budovy, povinn volitelné p edm ty, 4. semestr

A5M16FIP	Corporate finance	KZ	4		
Principles of finance, pr	Principles of finance, present value and alternative cost of capital, financial calculus, long-term finance, valuation of bonds and stocks, investment decision and net present value, IRR,				
comparison time period, annual equivalent value, inflation and return, capital asset pricing model, portfolio, sensitivity analysis and risk, short term finance, cash flow management. Dividend					
policy.					

List of courses of this pass:

	Name of the course	Completion	Credits
124INBB	Integrated Design of Buildings	Z,ZK	4
The main objective	of the subject Integrated Building Design is to get an complex overview of the principles of integrated buildings design, life cycle asse	ssment of buildings	s, evaluation
of I	puilding performance, green/sustainable certification systems and understand environmental, social and economic aspects of the bui	lt environment.	
124KPKP	Building Structures	ZK	4
•	tructures. Functional requirements, structural systems, spatial effect of the structural system. Vertical load-bearing structures, floor stru-		0
	dings, windows, partitions, floors, suspended ceilings. Stairs, roof construction timber roof trusses, roof envelopes. Foundation structu		ution of the
	substructure, waterproofing of the substructure. Structural systems of single and multi-storey buildings, structural systems of long-spa		
124OSIB	Acoustics and Lighting	KZ	4
	The course introduces students to the basics of building lighting technology and building acoustics and deepens further knowledge		
124ST1	Thermal Engineering in Construction	ZK	5
•	ses the basic chapters of building physics - part hygrothermal performance of buildings in an overview manner with the aim of providin	•	
	m non-construction bachelor's fields and at the same time supplementing knowledge and linking it with contexts for students coming	from civil engineer	-
125DPIB	Diploma Thesis	Z	26
Thesis of students	studying the Master's degree programme Intelligent Buildings. Independent final thesis usually in the form of a complex project, the	oretical work or a c	ombination
	of the previous forms.		
125EABU	Energy Audit of Building	KZ	4
	or introduction into energy auditing. Lectures topics: Energy audit and energy performance of buildings, legislation. EPDB - energy performance of buildings, legislation. EPDB - energy performance of buildings, legislation.		•
Methodology of cal	culating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition	n, description of init	ial condition
Methodology of cal object survey and s	culating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy c	n, description of init onsumption - buildi	ial condition
Methodology of call object survey and s lighting, ventilating	culating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy c systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluat	n, description of init onsumption - buildi ion, evaluation fron	ial condition ing, heating n the aspec
Methodology of call object survey and s lighting, ventilating	culating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy c systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluat tection. Evaluation - emission Individual object survey. Energy audit of industrial objects.Methods of buildings evaluation. Seminar is fo	n, description of init onsumption - buildi ion, evaluation fron	ial condition ing, heating n the aspec
Methodology of cal object survey and s lighting, ventilating of environment pro	culating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy c systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluat tection. Evaluation - emission Individual object survey. Energy audit of industrial objects. Methods of buildings evaluation. Seminar is fo resulting to presenting case study report about energy audit of existing building.	n, description of init onsumption - buildi ion, evaluation fron cused on the realis	ial condition ing, heating n the aspec stic buildings
Methodology of cal object survey and s lighting, ventilating of environment pro 125ESB	Iculating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy c systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluat tection. Evaluation - emission Individual object survey. Energy audit of industrial objects. Methods of buildings evaluation. Seminar is fo resulting to presenting case study report about energy audit of existing building. Buildings Ecology Systems	n, description of init onsumption - buildi ion, evaluation fron cused on the realis KZ	ial condition ing, heating n the aspec stic buildings
Methodology of cal object survey and s lighting, ventilating of environment pro 125ESB	Iculating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy c systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluat tection. Evaluation - emission Individual object survey. Energy audit of industrial objects. Methods of buildings evaluation. Seminar is fo resulting to presenting case study report about energy audit of existing building. Buildings Ecology Systems Inmentally friendly water management. Disposal of sewage water and use of rain water. Measurement of water consumption, system of	n, description of init onsumption - buildi ion, evaluation fron cused on the realis KZ	ial condition ing, heating n the aspect tic buildings
Methodology of cal object survey and s lighting, ventilating of environment pro 125ESB Principles of enviro	Iculating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy c systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluat tection. Evaluation - emission Individual object survey. Energy audit of industrial objects. Methods of buildings evaluation. Seminar is fo resulting to presenting case study report about energy audit of existing building. Buildings Ecology Systems nmentally friendly water management. Disposal of sewage water and use of rain water. Measurement of water consumption, system or saving and special installations.	n, description of init onsumption - buildi ion, evaluation fron cused on the realis KZ lesign, pumping de	ial condition ing, heating n the aspec stic buildings 4 vvices, wate
Methodology of cal object survey and s lighting, ventilating of environment pro 125ESB Principles of enviro 125LISB	Iculating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy consistents, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluat tection. Evaluation - emission Individual object survey. Energy audit of industrial objects. Methods of buildings evaluation. Seminar is for resulting to presenting case study report about energy audit of existing building. Buildings Ecology Systems inmentally friendly water management. Disposal of sewage water and use of rain water. Measurement of water consumption, system or saving and special installations.	n, description of init onsumption - buildi ion, evaluation fron cused on the realis KZ lesign, pumping de	ial condition ing, heating n the aspec stic buildings 4 vvices, wate
Methodology of cal object survey and s lighting, ventilating of environment pro 125ESB Principles of enviro	Iculating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy c systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluat tection. Evaluation - emission Individual object survey. Energy audit of industrial objects. Methods of buildings evaluation. Seminar is fo resulting to presenting case study report about energy audit of existing building. Buildings Ecology Systems nmentally friendly water management. Disposal of sewage water and use of rain water. Measurement of water consumption, system or saving and special installations.	n, description of init onsumption - buildi ion, evaluation fron cused on the realis KZ lesign, pumping de KZ KZ	ial condition ing, heating n the aspec stic buildings 4 vvices, wate
Methodology of cal object survey and s lighting, ventilating of environment pro 125ESB Principles of enviro 125LISB 125MBST 125OZEB	Iculating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy c systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluat tection. Evaluation - emission Individual object survey. Energy audit of industrial objects. Methods of buildings evaluation. Seminar is for resulting to presenting case study report about energy audit of existing building. Buildings Ecology Systems Inmentally friendly water management. Disposal of sewage water and use of rain water. Measurement of water consumption, system c saving and special installations. Building and Intelligent Building Systems Building and HVAC Systems Modelling Renewable Energy Sources	n, description of init onsumption - buildi ion, evaluation fron cused on the realis KZ lesign, pumping de KZ KZ	ial condition ing, heating n the aspec stic buildings 4 wices, water 4 4 4 4
Methodology of cal object survey and s lighting, ventilating of environment pro- 125ESB Principles of enviro 125LISB 125MBST 125OZEB The course deals	Inculating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy c systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluat tection. Evaluation - emission Individual object survey. Energy audit of industrial objects. Methods of buildings evaluation. Seminar is for resulting to presenting case study report about energy audit of existing building. Buildings Ecology Systems Inmentally friendly water management. Disposal of sewage water and use of rain water. Measurement of water consumption, system or saving and special installations. Iogical and Intelligent Building Systems Building and HVAC Systems Modelling Renewable Energy Sources with renewable energy sources and building energy systems. The different types of energy-solar, wind, biomass, geothermal and hyd	n, description of init onsumption - buildi ion, evaluation fron cused on the realis KZ lesign, pumping de KZ KZ ZK ro-are discussed ir	ial condition ing, heating n the aspect tic buildings 4 wrices, water 4 4 4 4 n detail. The
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125PBZB	Fire Services	KZ	4
Fire water, hydrant	systems, fire pipe, fire station. Fixed fire-fighting water with water mist, foam, and halon. Special fire-fighting equipment. Protecting bu	Idings against fire	spread from
	technological equipment. Electric fire alarm. Fire control equipment. Backup power source.		
125SYB	Building Systems	ZK	4
Multi-criteria analys	sis of the requirements for the indoor environment and the function of the systems in different types of buildings and plants and optim	ization criteria for t	he design of
energy and ecologi	cal building systems. Relationships between building technical equipment and the building. Integrated view of conceptual solutions in	different building ty	pes in terms
=	and building design. E.g. office buildings, residential buildings, halls, shopping centres, cultural centres, industrial buildings, sports b		-
etc. The audience w	vill be introduced to the requirements for the indoor environment, the characteristic elements of energy and environmental building sys	tems in relation to t	he structural
	design for the building type.		1
125TECE	Technological Units	KZ	4
	Saunas, fireplaces, kitchen technology, elevators, heat pumps, technology, swimming pools, heat source and technological sy		1
2161079	Air-Conditioning	Z,ZK	4
	Extend knowledge for design, control and evaluation of single-zone and multi-zone air conditioning systems.		T
2161102	Radiant and Industrial Heating	Z,ZK	4
	Student will be informed about the basics of radiant and other industrial heating systems		
2161108	Transport Phenomena	Z,ZK	4
	Basics of transport phenomena for the study programme Intelligent Buildings. Momentum, heat and mass transport in built envir		·
2161109	Automatic control in environmental engineering of building	Z,ZK	4
Applica	ation of basic approaches to automatic control of HVAC systems and equipments. Automatic control sequences of air conditioning a	nd sources of heat.	
2162064	Noise and Vibration Control	KZ	4
	Student will be informed about the basic acoustic dimensions, which are important for evaluation of noise.		·
2162077	Ventilation	KZ	4
2162078	Alternative Energy Sources	KZ	5
2162079	Cooling in Environmental Engineering of Buldings	KZ	4
2162081	District Heating	KZ	5
2162113	Heating	KZ	4
2102115	Knowledge improvement from the field of heating of residential and industrial buildings. Designing of convective and radiant heating		
2162700	Experimental Methods 1	KZ	4
2102700	Introduction study of experimental technique in environmental engineering		
A5M13FVS	Photovoltaic Systems	KZ	4
	t its exploitation using photovoltaic systems. Photovoltaic phenomena, solar cells and their characteristics, solar modules (construct	1	1 -
	ns (including energy conservation). Photovoltaic system applications, optimisation of operating conditions. Basic economical and eco		-
A5M13NZZ	Independent sources	KZ	4
	sources of the electric power - overview. Electrochemical sources (accumulators), applications. Uninteruptible power sources in IB. C	1	-
	energy. Perspective sources of electrical energy, storage of energy.		
A5M15ES1	Electrical Light 1	KZ	4
A5M16EUE	Economics of Energy Use	KZ	4
	energy management of company, buildings or energy systems. Energy need and consumption, energy balance. Energy characteriz		1 .
-	sources. Energy audit and feasibility study, optimization of energy management of energy systems. Prices and tariffs, economy and		
A5M16FIP	Corporate finance	KZ	4
	e, present value and alternative cost of capital, financial calculus, long-term finance, valuation of bonds and stocks, investment decis		
	riod, annual equivalent value, inflation and return, capital asset pricing model, portfolio, sensitivity analysis and risk, short term finance, o		
	policy.		
A5M34ELE	Electronics	KZ	4
A5M34EZS	Electronic security systems	KZ	4
A5M38SBD	Collection and Data Transfer	KZ	4
B5M14ESIB	Electrical Systems of Intelligent Buildings	ZK	5
		KZ	
B5M38MEB1	Measurements in the Buildings		5
B5M38SZS1	Sensors and Networks	Z,ZK	5
B5M38TPUR	Technology for Sustainable Development	Z,ZK	5

For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 2025-08-09, time 22:58.