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:

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, Jiří Lettl Miroslav Chomát (Gar.)*	ZK	5	2P+2L		z
124INBB	**Integrated Design of Buildings** *Jan Pešta, Jan Růžička, Tereza Pavlů, Martin Volf, Petr Hájek* ***Petr Hájek*** *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 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, green/sustainable certification systems and understand environmental, social and economic aspects of the built environment.			
124ST1	Thermal Engineering in Construction	ZK	5
The subject discusses the basic chapters of building physics - part hygrothermal performance of buildings in an overview manner with the aim of providing basic information to students coming from non-construction 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 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 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 sources.			

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**	Z,ZK	5	2P+2C	L	z
125EABU	**Energy Audit of Building** ***Karel Kabele***	KZ	4	2P+1C	L	z
125ESB	**Buildings Ecology Systems** ***Stanislav Frolík***	KZ	4	2P	L	z
125P1IB	**Project IB I** ***Michal Kabrhel***	Z	5	4C	L	z
2161079	**Air-Conditioning** ***Vladimír Zmrhal***	Z,ZK	4	2P+1C	*	z
2161109	**Automatic control in environmental engineering of building** ***Jiří Bašta***	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 for introduction into energy auditing. Lectures topics: Energy audit and energy performance of buildings, legislation. EPDB - energy performance directive for buildings. Methodology of calculating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition, description of initial condition object survey and survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy consumption - building, heating, lighting, ventilating systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluation, evaluation from the aspect of environment protection. Evaluation - emission Individual object survey. Energy audit of industrial objects.Methods of buildings evaluation. Seminar is focused on the realistic buildings resulting to presenting case study report about energy audit of existing building.

125ESB	Buildings Ecology Systems	KZ	4

Principles of environmentally friendly water management. Disposal of sewage water and use of rain water. Measurement of water consumption, system design, pumping devices, water saving and special installations.

125P1IB	Project IB I	Z	5
2161079	Air-Conditioning	Z,ZK	4

Extend knowledge for 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 sources 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** *Lukáš Ferkl Lukáš Ferkl (Gar.)*	Z,ZK	5	2P+2C	Z	z
125P2IB	**Project IB II** *Michal Kabrhel* ***Michal Kabrhel*** *Michal Kabrhel (Gar.)*	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** *Roman Vavřička, Jiří Bašta* ***Jiří Bašta*** *Jiří 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 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 building systems. Relationships between building technical equipment and the building. Integrated view of conceptual solutions in different building types in terms of indoor systems and building design. E.g. office buildings, residential buildings, halls, shopping centres, cultural centres, industrial buildings, sports buildings, family houses, passive etc. The audience will be introduced to the requirements for the indoor environment, the characteristic elements of energy and environmental building systems in relation to the structural design for the building type.

2161102	Radiant and Industrial Heating	Z,ZK	4

Student will be informed about the basics of radiant and other industrial heating systems

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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***	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.			

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, povinně volitelné předměty, 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:

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
A5M15ES1	**Electrical Light 1** *Petr Žák, Petr Žák* ***Petr Žák*** *Petr Žák (Gar.)*	KZ	4	2P+1S	Z	s
B5M38MEB1	**Measurements in the Buildings** *Pavel Mlejnek, Petr Kašpar Pavel Mlejnek (Gar.)*	KZ	5	2P+2L	Z	s
124KPKP	**Building Structures** *Ctislav Fiala* ***Ctislav Fiala*** *Ctislav Fiala (Gar.)*	ZK	4	3P	Z	s
124OSIB	**Acoustics and Lighting** *Jaroslav Vychytil, Lenka Maierová* ***Jaroslav Vychytil*** *Jaroslav Vychytil (Gar.)*	KZ	4	2P	Z	s
125LISB	**logical and Intelligent Building Systems** *Michal Kabrhel, Bohumír Garlík* ***Michal Kabrhel*** *Michal Kabrhel (Gar.)*	KZ	4	2P	Z	s
2161108	**Transport Phenomena** *Martin Barták* ***Martin Barták*** *Martin Barták (Gar.)*	Z,ZK	4	2P+1C	*	s
2162077	**Ventilation** *Vladimír Zmrhal, Petr Zelenský* ***Vladimír Zmrhal*** *Vladimír Zmrhal (Gar.)*	KZ	4	2P+2C+0L		s
2162113	**Heating** *Roman Vavřička, Jiří Bašta* ***Jiří Bašta*** *Jiří Bašta (Gar.)*	KZ	4	2P+2C	1	s

Characteristics of the courses of this group of Study Plan: Code=NX202501PV Name=Inteligentní budovy, povinně volitelné předměty, 1. semestr

A5M15ES1	Electrical Light 1	KZ	4
B5M38MEB1	Measurements in the Buildings	KZ	5
124KPKP	Building Structures	ZK	4
Basics of building structures. Functional requirements, structural systems, spatial effect of the structural system. Vertical load-bearing structures, floor structures, overhanging structures. Envelopes of buildings, windows, partitions, floors, suspended ceilings. Stairs, roof construction timber roof trusses, roof envelopes. Foundation structures, structural solution of the substructure, waterproofing of the substructure. Structural systems of single and multi-storey buildings, structural systems of long-span structures.			
124OSIB	Acoustics and Lighting	KZ	4
The course introduces students to the basics of building lighting technology and building acoustics and deepens further knowledge.			
125LISB	logical and Intelligent Building Systems	KZ	4
The subject comprehensively addresses the issue of logical and intelligent control.			
2161108	Transport Phenomena	Z,ZK	4
Basics of transport phenomena for the study programme Intelligent Buildings. Momentum, heat and mass transport in built environment.			
2162077	Ventilation	KZ	4
2162113	Heating	KZ	4
Knowledge improvement from the field of heating of residential and industrial buildings. Designing of convective and radiant heating systems.			

Code of the group: NX202502PV
Name of the group: Inteligentní budovy, povinně volitelné předměty, 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**	KZ	4	2P+2L	L	S
A5M34ELE	**Electronics**	KZ	4	3P+1L	L	S
A5M38SBD	**Collection and Data Transfer** ***Pavel Mlejnek***	KZ	4	2P+1L	L	S
125MBST	**Building and HVAC Systems Modelling** ***Karel Kabele***	KZ	4	1P+1C	L	S
125PBZB	**Fire Services** ***Ilona Koubková***	KZ	4	2P	L	S
2162064	**Noise and Vibration Control** *Miroslav Kučera, Richard Nový* ***Miroslav Kučera*** *Miroslav Kučera (Gar.)*	KZ	4	2P+1C	*	S
2162078	**Alternative Energy Sources** *Tomáš Matuška* ***Tomáš Matuška*** *Tomáš Matuška (Gar.)*	KZ	5	2P+2C+0L		S

Characteristics of the courses of this group of Study Plan: Code=NX202502PV Name=Inteligentní budovy, povinně volitelné předměty, 2. semestr

A5M13FVS	Photovoltaic Systems	KZ	4
Solar energy and its exploitation using photovoltaic systems. Photovoltaic phenomena, solar cells and their characteristics, solar modules (construction, technology, parameters). Photovoltaic systems (including energy conservation). Photovoltaic system applications, optimisation of operating conditions. Basic economical and ecological aspects, present trends.			
A5M34ELE	Electronics	KZ	4
A5M38SBD	Collection and Data Transfer	KZ	4
125MBST	Building and HVAC Systems Modelling	KZ	4
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 buildings against fire spread from technological equipment.Electric fire alarm. Fire control equipment. Backup power source.			
2162064	Noise and Vibration Control	KZ	4
Student will be informed 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, povinně volitelné předměty, 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** *Jiří Beranovský, Július Bemš* ***Jiří Beranovský*** *Július Bemš (Gar.)*	KZ	4	3P+1C	Z	S
A5M34EZS	**Electronic security systems** *Miroslav Husák, Jan Novák, Tomáš Teplý, Václav Prajzler* ***Václav Prajzler*** *Václav Prajzler (Gar.)*	KZ	4	3P+1L	Z	S
125TECE	**Technological Units** *Ilona Koubková, Hana Kabrhelová* ***Ilona Koubková*** *Ilona Koubková (Gar.)*	KZ	4	2P	Z	S
2162079	**Cooling in Environmental Engineering of Buldings** *Vladimír Šulc* ***Vladimír Šulc*** *Vladimír Šulc (Gar.)*	KZ	4	3P+1C+0L		S
2162081	**District Heating** *Tomáš Matuška* ***Tomáš Matuška*** *Tomáš Matuška (Gar.)*	KZ	5	2P+2C+0L		S
2162700	**Experimental Methods 1** *Miroslav Kučera* ***Miroslav Kučera*** *Miroslav Kučera (Gar.)*	KZ	4	0P+4L	*	S

Characteristics of the courses of this group of Study Plan: Code=NX202503PV Name=Inteligentní budovy, povinně volitelné předměty, 3. semestr

A5M13NZZ	Independent sources	KZ	4
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, povinně volitelné předměty, 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**	KZ	4	3P+1C	L	s

Characteristics of the courses of this group of Study Plan: Code=NX202504PV Name=Inteligentní budovy, povinně volitelné předměty, 4. semestr

A5M16FIP	Corporate finance	KZ	4
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:

Code	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 assessment of buildings, evaluation of building performance, green/sustainable certification systems and understand environmental, social and economic aspects of the built environment.			
124KPKP	Building Structures	ZK	4
Basics of building structures. Functional requirements, structural systems, spatial effect of the structural system. Vertical load-bearing structures, floor structures, overhanging structures. Envelopes of buildings, windows, partitions, floors, suspended ceilings. Stairs, roof construction timber roof trusses, roof envelopes. Foundation structures, structural solution of the substructure, waterproofing of the substructure. Structural systems of single and multi-storey buildings, structural systems of long-span structures.			
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
The subject discusses the basic chapters of building physics - part hygrothermal performance of buildings in an overview manner with the aim of providing basic information to students coming from non-construction bachelor's fields and at the same time supplementing knowledge and linking it with contexts for students coming from civil engineering.			
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.			
125EABU	Energy Audit of Building	KZ	4
Advanced course for introduction into energy auditing. Lectures topics: Energy audit and energy performance of buildings, legislation. EPDB - energy performance directive for buildings. Methodology of calculating energy performance of buildings. Energy audit - procedure and parts. Sankey energy flow diagram. Analysis of initial condition, description of initial condition object survey and survey of project documentation. Determining source efficiency, distribution and emission of heat. Steps towards reduction of energy consumption - building, heating, lighting, ventilating systems, technologies. Application of measures on a specific object. Synergic impact of energy saving measures. Economical evaluation, evaluation from the aspect of environment protection. Evaluation - emission Individual object survey. Energy audit of industrial objects.Methods of buildings evaluation. Seminar is focused on the realistic buildings resulting to presenting case study report about energy audit of existing building.			
125ESB	Buildings Ecology Systems	KZ	4
Principles of environmentally friendly water management. Disposal of sewage water and use of rain water. Measurement of water consumption, system design, pumping devices, water saving and special installations.			
125LISB	logical and Intelligent Building Systems	KZ	4
The subject comprehensively addresses the issue of logical and intelligent control.			
125MBST	Building and HVAC Systems Modelling	KZ	4
125OZEB	Renewable Energy Sources	ZK	4
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 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 sources.			
125P1IB	Project IB I	Z	5
125P2IB	Project IB II	Z	5

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 buildings against fire spread from technological equipment.Electric fire alarm. Fire control equipment. Backup power source.			
125SYB	Building Systems	ZK	4
Multi-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 building systems. Relationships between building technical equipment and the building. Integrated view of conceptual solutions in different building types in terms of indoor systems and building design. E.g. office buildings, residential buildings, halls, shopping centres, cultural centres, industrial buildings, sports buildings, family houses, passive etc. The audience will be introduced to the requirements for the indoor environment, the characteristic elements of energy and environmental building systems in relation to the structural design for the building type.			
125TECE	Technological Units	KZ	4
Saunas, fireplaces, kitchen technology, elevators, heat pumps, technology, swimming pools, heat source and technological systems.			
2161079	Air-Conditioning	Z,ZK	4
Extend knowledge for design, control and evaluation of single-zone and multi-zone air conditioning systems.			
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 environment.			
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 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
Knowledge improvement from the field of heating of residential and industrial buildings. Designing of convective and radiant heating systems.			
2162700	Experimental Methods 1	KZ	4
Introduction study of experimental technique in environmental engineering			
A5M13FVS	Photovoltaic Systems	KZ	4
Solar energy and its exploitation using photovoltaic systems. Photovoltaic phenomena, solar cells and their characteristics, solar modules (construction, technology, parameters). Photovoltaic systems (including energy conservation). Photovoltaic system applications, optimisation of operating conditions. Basic economical and ecological aspects, present trends.			
A5M13NZZ	Independent sources	KZ	4
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.			
A5M15ES1	Electrical Light 1	KZ	4
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.			
A5M16FIP	Corporate finance	KZ	4
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.			
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
B5M38MEB1	Measurements in the Buildings	KZ	5
B5M38SZS1	Sensors and Networks	Z,ZK	5
B5M38TPUR	Technology for Sustainable Development	Z,ZK	5

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