# 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

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

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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. | | | |

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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** ***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.

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|---|---|---|---|
| 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.

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|---|---|---|---|
| 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.

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|---|---|---|---|
| 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.

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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.

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| 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** *Pavel Hrzina, Ladislava Černá, Vítězslav Benda **Ladislava Černá** Pavel Hrzina (Gar.)* | KZ | 4 | 2P+2L | L | S |
| A5M34ELE | **Electronics** *Alexandr Laposa, Adam Bouřa **Alexandr Laposa** Alexandr Laposa (Gar.)* | KZ | 4 | 3P+1L | L | S |
| A5M38SBD | **Collection and Data Transfer** *Pavel Mlejnek **Pavel Mlejnek** Pavel Mlejnek (Gar.)* | 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 |

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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. | | | |

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|---|---|---|---|
| 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** *Oldřich Starý, Jiří Vašíček, Blanka Kučerková* ***Jiří Vašíček*** *Oldřich Starý (Gar.)* | 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 |

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