Study plan

Name of study plan: Program Budovy a prostředí, obor B, zaměření Konstrukce budov

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Buildings and Environment
Type of study: Follow-up master full-time
Required credits: 90
Elective courses credits: 0
Sum of credits in the plan: 90
Note on the plan: tento studijní plán platí do nástupu do studia 2022/23

Name of the block: Compulsory courses
Minimal number of credits of the block: 28
The role of the block: Z

Code of the group: NB20170100
Name of the group: obor Budovy a prostředí, 1. semestr
Requirement credits in the group: In this group you have to gain at least 16 credits
Requirement courses in the group: In this group you have to complete at least 5 courses
Credits in the group: 16
Note on the group: doplněn 125SYB

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
101M04B	**Mathematics 4B** *Petr Kučera, Zdeněk Skalák, Michal Beneš, Iva Malechová, Ivana Pultarová **Petr Kučera** Petr Kučera (Gar.)*	Z,ZK	4	1P+2C	Z	z
102FYZB	**Thermomechanics** *Vítězslav Vydra **Vítězslav Vydra** Vítězslav Vydra (Gar.)*	Z	2	2P	Z	z
124DRS	**Timber Constructions** *Milan Peukert, Kamil Staněk, Richard Hlaváč, Jan Tywoniak, Jan Růžička, Lukáš Velebil, Vladimír Mózer **Jan Tywoniak** Kamil Staněk (Gar.)*	Z,ZK	3	2P+1C	L	z
124INB1	**Integrated Design of Buildings** *Antonín Lupíšek, Petr Hájek, Martin Volf, Tereza Pavlů **Tereza Pavlů** Petr Hájek (Gar.)*	Z,ZK	3	2P+1C	L	z
125SYB	**Building Systems** *Jan Tywoniak, Karel Kabele **Karel Kabele** Karel Kabele (Gar.)*	ZK	4	4P	Z	z

Characteristics of the courses of this group of Study Plan: Code=NB20170100 Name=obor Budovy a prostředí, 1. semestr

101M04B	Mathematics 4B	Z,ZK	4
https://mat.fsv.cvut.cz/kucera/			
102FYZB	Thermomechanics	Z	2
This course will concentrate on basic principles of transport of heat and mass (conduction, convection, radiation, heat pumps; transport of moist in building materials) with practical examples such as heat loss of a pipe, solar heating/cooling systems and heat loss thru a window (two plates of glass with a gas between). An excursion to a large solar-cooling installation with a solar-powered heat pump is a part of the course.			
124DRS	Timber Constructions	Z,ZK	3
Students will learn about the complex issues of designing modern wooden buildings. The introductory block of lectures is dedicated to the material base, structural systems, and mechanical properties of wood and wood-based materials. The principles of ensuring spatial rigidity of the light frame and mass-timber structural systems are presented. It follows a lecture block focused on the design of envelope constructions of wooden buildings, moisture safety, biological threats, and principles of wood protection. In the following two lectures, the structure of wood and the interaction of the wood substance with air humidity, which has a significant effect on all technical properties of wood, are described in more detail. The next lecture is devoted to passive measures to reduce the risk of summer overheating of wooden buildings. In the last lecture, construction technology is discussed and a comprehensive approach to the design of modern wooden buildings is emphasised.			
124INB1	Integrated Design of Buildings	Z,ZK	3
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.			

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.

Code of the group: NB20160200
Name of the group: obor Budovy a prostředí, 2. 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 4 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
124ST2B	**Thermal Engineering in Construction 2** *Zbyněk Svoboda, Pavel Kopecký **Zbyněk Svoboda** Zbyněk Svoboda (Gar.)*	Z	2	1P+1C	L	Z
125EAB1	**Energy audit 1** *Karel Kabele, Michal Kabrhel, Miroslav Urban **Karel Kabele** Karel Kabele (Gar.)*	KZ	3	2P+1C	L	Z
125MEBU	**Building energy performance modelling** *Karel Kabele, Miroslav Urban **Karel Kabele** Karel Kabele (Gar.)*	KZ	3	1P+2C	L	Z
125VKB	**Ventilation and Air conditioning of Buildings** *Daniel Adamovský **Daniel Adamovský** Daniel Adamovský (Gar.)*	Z,ZK	4	2P+1C	L	Z

Characteristics of the courses of this group of Study Plan: Code=NB20160200 Name=obor Budovy a prostředí, 2. semestr

124ST2B	Thermal Engineering in Construction 2	Z	2

Improvement of knowledge from the basic building physics course. Detailed analysis of boundary conditions for calculations, governing equations of heat and water vapor transfer (diffusion, convection), thermal transmittance of windows and curtain walling, CFD, ventilated double-skin constructions, energy performance of buildings in detail, thermal protection of historical buildings.

125EAB1	Energy audit 1	KZ	3

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.

125MEBU	Building energy performance modelling	KZ	3

The course is aimed at explaining the issues of modelling and simulation of energy behaviour of buildings. Students will be introduced to an overview of tools and methodologies for solving these problems and learn how to use the simulation software DesignBuilder. In addition, they will be introduced to climate data, materials, construction and other factors affecting building behaviour. The aim of the course is to provide students with basic knowledge and practical experience in modelling and simulating building energy behaviour.

125VKB	Ventilation and Air conditioning of Buildings	Z,ZK	4

An advanced course in ventilation and air conditioning focused on deepening the core topics in the field of ventilation of specific facilities, basics of fire and smoke ventilation, air-conditioning and cooling.

Name of the block: Povinné předměty zaměření
Minimal number of credits of the block: 26
The role of the block: PZ

Code of the group: NB20170202
Name of the group: obor B, zaměření Konstrukce budov, předměty zaměření
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: [1:14][2:12]

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
124MTIB	**Materials and Structures** *Pavel Kopecký, Jan Mukařovský **Pavel Kopecký** Pavel Kopecký (Gar.)*	Z,ZK	5	2P+2C	L	PZ
124SPB1	**Specialized Project Design 1** *Jan Tywoniak, Jan Růžička, Ctislav Fiala, Kateřina Mertenová **Kateřina Mertenová** Kateřina Mertenová (Gar.)*	KZ	4	3C	Z	PZ

125VPV	**Indoor environmental quality and space heating B** *Karel Kabele, Michal Kabrhel, Zuzana Veverková, Pavla Dvořáková, Hana Kabrhelová* ***Karel Kabele*** *Karel Kabele (Gar.)*	ZK	5	4P	Z	PZ
124AKDO	**Acoustics and daylighting - selected issues** *Jaroslav Vychytil, Jiří Nováček* ***Jiří Nováček*** *Jaroslav Vychytil (Gar.)*	Z,ZK	5	2P+2C	L	PZ
124SPB2	**Specialized Project Design 2** *Jan Tywoniak, Jan Růžička, Petr Hájek, Kateřina Mertenová, Milan Černý, David Šulc* ***Jan Tywoniak*** *Jan Tywoniak (Gar.)*	KZ	5	4C	L	PZ
143APE	**Applied Ecology** *Tomáš Dostál* ***Tomáš Dostál*** *Tomáš Dostál (Gar.)*	Z	2	2P	L	PZ

Characteristics of the courses of this group of Study Plan: Code=NB20170202 Name=obor B, zaměření Konstrukce budov, předměty zaměření

124MTIB	Materials and Structures	Z,ZK	5

The aim is to present 1) the principles of heat and moisture transfer in materials, building elements and buildings, and 2) the effects of non-force loads on building elements. Students study to apply basic physical principles at simple examples. The subject introduces a theoretical basis for practically oriented subjects, such as Construction Project or Timber Constructions. The aim of the course is to provide information for: 1) understanding of the effects of climatic loads on the building envelope, 2) understanding of the transport processes taking place in the building envelope (transfer of heat, moisture and air), 3) understanding of the design principles and requirements we impose on building components.

124SPB1	Specialized Project Design 1	KZ	4

The purpose of the course is to gain practical experience in particular tasks with the application of the basic principles of integrated design, the conceptual solution of the building and its optimization from the point of view of: - structural, technological and material (including environmental analysis) - thermal technical (system boundary, design of the building envelope, assessment of structural components) - creating a high-quality indoor microclimate (air exchange, acoustics, lighting, sunlight, overheating, elimination of thermal bridges) - technical systems (energy and resource management). Increased emphasis is placed on the assessment of the structural and physical properties of structures and internal environment. Students are motivated to acquire basic engineering skills when solving topics dealing with the issue of environmentally and energy-optimized buildings and ecological architecture, such as: - formulation of the problem - proposal of its solution in variants - evaluation of particular variants and selection of the optimal solution. This is an independent work in the studio: "Conceptual solution of a building or a set of buildings". The assignment is based on a completed architectural study.

125VPV	Indoor environmental quality and space heating B	ZK	5

A course on technical building facilities focusing on a comprehensive view of the quality of the indoor environment in terms of its impact on health, work productivity, energy performance and the environment. An in-depth section focusing on the analysis and design of building energy systems that provide for the generation, transformation and distribution of energy in buildings to ensure thermal comfort in winter and an optimal indoor environment with minimal environmental impact.

124AKDO	Acoustics and daylighting - selected issues	Z,ZK	5

Sunlight and methods of its evaluation in different spaces. Daylighting, its definition and possibilities of its determination. Analysis of computational methods. Influence of boundary conditions on the level and quality of daylight. Calculation of lighting in a room with transparent and translucent materials. Determining the daylight factor when using light guides. Determination of the value of the brightness factor of the shading obstacle and the terrain by calculation. Daylighting of specific spaces. Combined lighting. Noise limits, sound sources, sound isolation, sound propagation in free and diffuse fields, sound propagation over an obstacle, sound absorption, room acoustics, wave acoustics, geometrical acoustics, statistical acoustics, elastic mounting of machines, urban acoustics (stationary sources, traffic).

124SPB2	Specialized Project Design 2	KZ	5

The purpose of the course is to gain practical experience in particular tasks with the application of the basic principles of integrated design, the conceptual solution of the building and its optimization from the point of view of: - structural, technological and material (including environmental analysis) - thermal technical (system boundary, design of the building envelope, assessment of structural components) - creating a high-quality indoor microclimate (air exchange, acoustics, lighting, sunlight, overheating, elimination of thermal bridges) - technical systems (energy and resource management). The tasks solved here are mainly in the area of demanding changes (renovations, reconstructions) of buildings or solutions for buildings in different climatic and social conditions.

143APE	Applied Ecology	Z	2

Learning basic of ecological terminology, landscape ecology and ecological stability. Energy flow in the different ecosystems.

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 6
The role of the block: S

Code of the group: NB20160202_1
Name of the group: obor B, zaměření Konstrukce budov, povinně volitelné předměty
Requirement credits in the group: In this group you have to gain at least 6 credits
Requirement courses in the group: In this group you have to complete at least 2 courses
Credits in the group: 6
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**
124YBM1	**Building Information Modeling (BIM) for Building Structures 1** *Hana Kabrhelová, Pavel Chour, Renáta Hoďánková, Jakub Veselka, Petr Matějka, Petr Pánek, Stanislav Frolík, Kateřina Šenfeld* ***Jan Růžička*** *Jan Růžička (Gar.)*	Z	4	1P+3C	Z	S
124YHKB	**Complex Building Quality Evaluation** *Martin Vonka* ***Martin Vonka*** *Martin Vonka (Gar.)*	Z	2	2C	L	S
124YKSD	**Complex Structural Detail** *Jiří Pazderka, Radek Zigler* ***Jiří Pazderka*** *Jiří Pazderka (Gar.)*	Z	2	1P+1C	Z	S
124YMMS	**Matematical Modelling in Building Physics** *Pavel Kopecký* ***Pavel Kopecký*** *Pavel Kopecký (Gar.)*	Z	2	2C		S

124YMSD	**Modelling of Building Physics Processes** *Vladimír Žďára* ***Vladimír Žďára*** *Vladimír Žďára (Gar.)*	Z	2	2C	Z	S
124YNAS	**Numerical Analysis of Building Physics** *Vladimír Žďára* ***Vladimír Žďára*** *Vladimír Žďára (Gar.)*	Z	2	2C	L	S
124YPZB	**Fire Prevention and Healthy Buildings** *Vladimír Mózer, Marek Pokorný* ***Marek Pokorný*** *Vladimír Mózer (Gar.)*	Z	2	2P		S
127YUSS	**Urban structure of cities** *Jiří Kupka, Marek Janatka, Jan Mužík, Václav Jetel* ***Marek Janatka*** *Marek Janatka (Gar.)*	Z	2	1P+1C	Z,L	S
129YPR	**Industrial Heritage** *Tomáš Šenberger* ***Tomáš Šenberger*** *Tomáš Šenberger (Gar.)*	Z	2	2P	L	S

Characteristics of the courses of this group of Study Plan: Code=NB20160202_1 Name=obor B, zaměření Konstrukce budov, povinně volitelné předměty

124YBM1	Building Information Modeling (BIM) for Building Structures 1	Z	4
Building information model (BIM) - basic principles of creating a building information model in the field of civil engineering, specifics of BIM modeling. The subject uses the Autodesk Revit software base. Building information model in the life cycle of the building - information required during the design part, during construction and during use of the finished building.			
124YHKB	Complex Building Quality Evaluation	Z	2
The course aims to deepen the knowledge of sustainable construction and building certification.			
124YKSD	Complex Structural Detail	Z	2
The aim of the course is to extend the knowledge gained in previous courses - it is intended for students who have already reached advanced level of knowledge about structural problems in buildings. The content of the course is focused on the complex solution of construction details, following all legislative requirements and taking into account the maximum efficiency and durability of the chosen solution.			
124YMMS	Matematical Modelling in Building Physics	Z	2
Students learn how to establish computational models of dynamic systems in building physics (heat and moisture transfer in buildings and building components). The emphasis is on introducing the principles of numerical solutions, their application and critical evaluation of the calculated results.			
124YMSD	Modelling of Building Physics Processes	Z	2
The subject is focused on practical modeling of various technical problems, especially in the field of construction physics of buildings and optimization of structures. The goal is to learn how to define a problem, create a mathematical and physical model, design a solution algorithm and write this algorithm in Excel or VBA. Learn how to use Excel effectively and write applications that you can use years from now. I have been using Excel for work for 25 years and I would like to teach you how to use it effectively not only in building analysis models. Don't expect big science, but rather a practical approach to the problems you will encounter in practice.			
124YNAS	Numerical Analysis of Building Physics	Z	2
The subject is focused on practical modeling of various technical problems, especially in the field of construction physics of buildings and optimization of structures. The goal is to learn how to define a problem, create a mathematical and physical model, design a solution algorithm and write this algorithm in Excel or VBA. Learn how to use Excel effectively and write applications that you can use years from now. I have been using Excel for work for 25 years and I would like to teach you how to use it effectively not only in building analysis models. Don't expect big science, but rather a practical approach to the problems you will encounter in practice.			
124YPZB	Fire Prevention and Healthy Buildings	Z	2
The subject is focused on the presentation of the basic concepts and principles of fire safety of buildings and health safety of buildings. It is intended for students of non-fire disciplines and should enable them to consider aspects of fire safety and health safety from the initial stages of project preparation of buildings.			
127YUSS	Urban structure of cities	Z	2
The main goal of this course is explaining the students steric and functional structures of cities and their meaning in settlement structure. It includes the relation between city and landscape, general view of the city, urbanism values and conception.			
129YPR	Industrial Heritage	Z	2
An optional subject focused on deepening knowledge about industrial buildings. Industrial heritage is perceived as part of cultural heritage, the principles of its registration, mapping and protection are explained, mainly in the form of new use of original production facilities. Methods and ways to understandably use both abandoned production areas (brownfields) and production buildings are documented by examples from European countries and from home.			

Name of the block: Povinně volitelné předměty, doporučení S2
Minimal number of credits of the block: 30
The role of the block: S2

Code of the group: NB20160302
Name of the group: obor B, zaměření Konstrukce budov, diplomová práce
Requirement credits in the group: In this group you have to gain 30 credits
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 30
Note on the group:

Code	**Name of the course / Name of the group of courses** ***(in case of groups of courses the list of codes of their members)*** *Tutors,* ***authors*** *and guarantors (gar.)*	**Completion**	**Credits**	**Scope**	**Semester**	**Role**
124DPM	**Diploma Thesis** *Kateřina Mertenová, Jiří Pazderka, Marek Pokorný, Tomáš Vlach, Tomáš Čejka, Martin Jiránek* ***Jiří Pazderka*** *Jiří Pazderka (Gar.)*	Z	30	24C	Z	S2

Characteristics of the courses of this group of Study Plan: Code=NB20160302 Name=obor B, zaměření Konstrukce budov, diplomová práce

124DPM	Diploma Thesis	Z	30
The topics of diploma theses are based on the needs of practice or the scientific research activity of the department, the scope and difficulty corresponds to the student's knowledge acquired during the master's studies. The supervisor of the thesis can designate additional consultants to the student.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
101M04B	Mathematics 4B https://mat.fsv.cvut.cz/kucera/	Z,ZK	4
102FYZB	Thermomechanics	Z	2
	This course will concentrate on basic principles of transport of heat and mass (conduction, convection, radiation, heat pumps; transport of moist in building materials) with practical examples such as heat loss of a pipe, solar heating/cooling systems and heat loss thru a window (two plates of glass with a gas between). An excursion to a large solar-cooling installation with a solar-powered heat pump is a part of the course.		
124AKDO	Acoustics and daylighting - selected issues	Z,ZK	5
	Sunlight and methods of its evaluation in different spaces. Daylighting, its definition and possibilities of its determination. Analysis of computational methods. Influence of boundary conditions on the level and quality of daylight. Calculation of lighting in a room with transparent and translucent materials. Determining the daylight factor when using light guides. Determination of the value of the brightness factor of the shading obstacle and the terrain by calculation. Daylighting of specific spaces. Combined lighting. Noise limits, sound sources, sound isolation, sound propagation in free and diffuse fields, sound propagation over an obstacle, sound absorption, room acoustics, wave acoustics, geometrical acoustics, statistical acoustics, elastic mounting of machines, urban acoustics (stationary sources, traffic).		
124DPM	Diploma Thesis	Z	30
	The topics of diploma theses are based on the needs of practice or the scientific research activity of the department, the scope and difficulty corresponds to the student's knowledge acquired during the master's studies. The supervisor of the thesis can designate additional consultants to the student.		
124DRS	Timber Constructions	Z,ZK	3
	Students will learn about the complex issues of designing modern wooden buildings. The introductory block of lectures is dedicated to the material base, structural systems, and mechanical properties of wood and wood-based materials. The principles of ensuring spatial rigidity of the light frame and mass-timber structural systems are presented. It follows a lecture block focused on the design of envelope constructions of wooden buildings, moisture safety, biological threats, and principles of wood protection. In the following two lectures, the structure of wood and the interaction of the wood substance with air humidity, which has a significant effect on all technical properties of wood, are described in more detail. The next lecture is devoted to passive measures to reduce the risk of summer overheating of wooden buildings. In the last lecture, construction technology is discussed and a comprehensive approach to the design of modern wooden buildings is emphasised.		
124INB1	Integrated Design of Buildings	Z,ZK	3
	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.		
124MTIB	Materials and Structures	Z,ZK	5
	The aim is to present 1) the principles of heat and moisture transfer in materials, building elements and buildings, and 2) the effects of non-force loads on building elements. Students study to apply basic physical principles at simple examples. The subject introduces a theoretical basis for practically oriented subjects, such as Construction Project or Timber Constructions. The aim of the course is to provide information for: 1) understanding of the effects of climatic loads on the building envelope, 2) understanding of the transport processes taking place in the building envelope (transfer of heat, moisture and air), 3) understanding of the design principles and requirements we impose on building components.		
124SPB1	Specialized Project Design 1	KZ	4
	The purpose of the course is to gain practical experience in particular tasks with the application of the basic principles of integrated design, the conceptual solution of the building and its optimization from the point of view of: - structural, technological and material (including environmental analysis) - thermal technical (system boundary, design of the building envelope, assessment of structural components) - creating a high-quality indoor microclimate (air exchange, acoustics, lighting, sunlight, overheating, elimination of thermal bridges) - technical systems (energy and resource management). Increased emphasis is placed on the assessment of the structural and physical properties of structures and internal environment. Students are motivated to acquire basic engineering skills when solving topics dealing with the issue of environmentally and energy-optimized buildings and ecological architecture, such as: - formulation of the problem - proposal of its solution in variants - evaluation of particular variants and selection of the optimal solution. This is an independent work in the studio: "Conceptual solution of a building or a set of buildings". The assignment is based on a completed architectural study.		
124SPB2	Specialized Project Design 2	KZ	5
	The purpose of the course is to gain practical experience in particular tasks with the application of the basic principles of integrated design, the conceptual solution of the building and its optimization from the point of view of: - structural, technological and material (including environmental analysis) - thermal technical (system boundary, design of the building envelope, assessment of structural components) - creating a high-quality indoor microclimate (air exchange, acoustics, lighting, sunlight, overheating, elimination of thermal bridges) - technical systems (energy and resource management). The tasks solved here are mainly in the area of demanding changes (renovations, reconstructions) of buildings or solutions for buildings in different climatic and social conditions.		
124ST2B	Thermal Engineering in Construction 2	Z	2
	Improvement of knowledge from the basic building physics course. Detailed analysis of boundary conditions for calculations, governing equations of heat and water vapor transfer (diffusion, convection), thermal transmittance of windows and curtain walling, CFD, ventilated double-skin constructions, energy performance of buildings in detail, thermal protection of historical buildings.		
124YBM1	Building Information Modeling (BIM) for Building Structures 1	Z	4
	Building information model (BIM) - basic principles of creating a building information model in the field of civil engineering, specifics of BIM modeling. The subject uses the Autodesk Revit software base. Building information model in the life cycle of the building - information required during the design part, during construction and during use of the finished building.		
124YHKB	Complex Building Quality Evaluation	Z	2
	The course aims to deepen the knowledge of sustainable construction and building certification.		
124YKSD	Complex Structural Detail	Z	2
	The aim of the course is to extend the knowledge gained in previous courses - it is intended for students who have already reached advanced level of knowledge about structural problems in buildings. The content of the course is focused on the complex solution of construction details, following all legislative requirements and taking into account the maximum efficiency and durability of the chosen solution.		
124YMMS	Matematical Modelling in Building Physics	Z	2
	Students learn how to establish computational models of dynamic systems in building physics (heat and moisture transfer in buildings and building components). The emphasis is on introducing the principles of numerical solutions, their application and critical evaluation of the calculated results.		
124YMSD	Modelling of Building Physics Processes	Z	2
	The subject is focused on practical modeling of various technical problems, especially in the field of construction physics of buildings and optimization of structures. The goal is to learn how to define a problem, create a mathematical and physical model, design a solution algorithm and write this algorithm in Excel or VBA. Learn how to use Excel effectively and write		

	applications that you can use years from now. I have been using Excel for work for 25 years and I would like to teach you how to use it effectively not only in building analysis models. Don't expect big science, but rather a practical approach to the problems you will encounter in practice.		
124YNAS	Numerical Analysis of Building Physics	Z	2
	The subject is focused on practical modeling of various technical problems, especially in the field of construction physics of buildings and optimization of structures. The goal is to learn how to define a problem, create a mathematical and physical model, design a solution algorithm and write this algorithm in Excel or VBA. Learn how to use Excel effectively and write applications that you can use years from now. I have been using Excel for work for 25 years and I would like to teach you how to use it effectively not only in building analysis models. Don't expect big science, but rather a practical approach to the problems you will encounter in practice.		
124YPZB	Fire Prevention and Healthy Buildings	Z	2
	The subject is focused on the presentation of the basic concepts and principles of fire safety of buildings and health safety of buildings. It is intended for students of non-fire disciplines and should enable them to consider aspects of fire safety and health safety from the initial stages of project preparation of buildings.		
125EAB1	Energy audit 1	KZ	3
	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.		
125MEBU	Building energy performance modelling	KZ	3
	The course is aimed at explaining the issues of modelling and simulation of energy behaviour of buildings. Students will be introduced to an overview of tools and methodologies for solving these problems and learn how to use the simulation software DesignBuilder. In addition, they will be introduced to climate data, materials, construction and other factors affecting building behaviour. The aim of the course is to provide students with basic knowledge and practical experience in modelling and simulating building energy behaviour.		
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.		
125VKB	Ventilation and Air conditioning of Buildings	Z,ZK	4
	An advanced course in ventilation and air conditioning focused on deepening the core topics in the field of ventilation of specific facilities, basics of fire and smoke ventilation, air-conditioning and cooling.		
125VPV	Indoor environmental quality and space heating B	ZK	5
	A course on technical building facilities focusing on a comprehensive view of the quality of the indoor environment in terms of its impact on health, work productivity, energy performance and the environment. An in-depth section focusing on the analysis and design of building energy systems that provide for the generation, transformation and distribution of energy in buildings to ensure thermal comfort in winter and an optimal indoor environment with minimal environmental impact.		
127YUSS	Urban structure of cities	Z	2
	The main goal of this course is explaining the students steric and functional structures of cities and their meaning in settlement structure. It includes the relation between city and landscape, general view of the city, urbanism values and conception.		
129YPR	Industrial Heritage	Z	2
	An optional subject focused on deepening knowledge about industrial buildings. Industrial heritage is perceived as part of cultural heritage, the principles of its registration, mapping and protection are explained, mainly in the form of new use of original production facilities. Methods and ways to understandably use both abandoned production areas (brownfields) and production buildings are documented by examples from European countries and from home.		
143APE	Applied Ecology	Z	2
	Learning basic of ecological terminology, landscape ecology and ecological stability. Energy flow in the different ecosystems.		

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