Study plan

Name of study plan: Integrální bezpečnost staveb

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Integral Safety of Buildings
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 od akademického roku 2020/21

Name of the block: Compulsory courses
Minimal number of credits of the block: 58
The role of the block: Z

Code of the group: NQ20200100
Name of the group: program Integrální bezpečnost staveb, 1. semestr
Requirement credits in the group: In this group you have to gain at least 30 credits
Requirement courses in the group: In this group you have to complete at least 5 courses
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
124MDPV	**Modeling the Dynamics of Fire and Evacuation** *Vladimír Mózer, Petr Hejtmánek, Marek Pokorný, Hana Najmanová* ***Hana Najmanová*** *Vladimír Mózer (Gar.)*	Z,ZK	6	3P+3C	Z	z
124PRPO	**Law and Fire Protection** *Vladimír Mózer, Petr Hejtmánek, Marek Pokorný* ***Petr Hejtmánek*** *Marek Pokorný (Gar.)*	ZK	2	2P	Z	z
124SPP	**Specific Fire Operations** *Vladimír Mózer, Petr Hejtmánek, Marek Pokorný, Václav Kupilík, František Wald* ***Marek Pokorný*** *Vladimír Mózer (Gar.)*	Z,ZK	7	4P+2C	Z	z
132MPV	**Modelling of Structures under Fire and Explosions.** *Jaroslav Kruis, Zdeněk Sokol* ***Jaroslav Kruis*** *Jaroslav Kruis (Gar.)*	Z,ZK	6	3P+2C	Z	z
134NKPZ	**Structures exposed to fire** *Kamila Cábová, Martin Benýšek, Radek Štefan* ***Martin Benýšek*** *Kamila Cábová (Gar.)*	Z,ZK	9	5P+2C	Z	z

Characteristics of the courses of this group of Study Plan: Code=NQ20200100 Name=program Integrální bezpečnost staveb, 1. semestr

124MDPV	Modeling the Dynamics of Fire and Evacuation	Z,ZK	6

The course is focused on current topics of fire engineering (the so-called performance-based design) in the area of specific behavior of people during evacuation and fire dynamics in buildings. The content builds on the previous basic knowledge of the students in the prescriptive evaluation of fire safety of buildings using standard procedures, table values, or simplified mathematical relationships. The course is also focused on the advanced fire engineering approaches to fire safety design, the principles of fire dynamics and development in the closed space of the building in the form of analytical relationships and mathematical simulations (zone fire models), including modeling the behavior of people during evacuation.

124PRPO	Law and Fire Protection	ZK	2

The subject Law and fire protection is focused on the one hand on legislation in the field of design, implementation and operation of buildings from the point of view of fire safety and on the other hand on the issue of putting construction products on the market. The lectures are devoted to basic legal regulations (especially the Fire Protection Act), by-law implementing regulations, i.e. decrees and regulations of the government (e.g. decree on fire prevention, on technical conditions for fire protection of buildings and fire doors).

124SPP	Specific Fire Operations	Z,ZK	7

The subject deepens the basic knowledge of fire safety of non-industrial buildings from the bachelor's study with the topics of specific buildings types and operations. Attention is paid in particular to the general and design standards of the fire code, i.e. the Czech technical standards of the ČSN 73 08xx series. Students are introduced to the fire safety of the following buildings or operations: historical buildings, industrial facilities, garages, buildings for living and accommodation, assembly areas, changes to buildings, buildings of medical facilities and social care, warehouses, agricultural buildings, etc.

132MPV	Modelling of Structures under Fire and Explosions.	Z,ZK	6

V předmětu se studuje vedení tepla a rozložení teploty po konstrukci. Zdrojem tepla je požár. Změny teploty se projeví v mechanické odezvě konstrukce. V předmětu jsou podrobně studovány deformace a vnitřní síly způsobené změnami teploty. Na závěr je věnována pozornost výbuchům. Jejich účinky jsou aplikovány na soustavy s jedním stupněm volnosti.

134NKPZ	Structures exposed to fire	Z,ZK	9

In the subject, students will learn about advanced models for designing steel, concrete, steel-concrete and wooden structures exposed to fire. The teaching is focused on advanced modeling combining fluid dynamics with thermal and mechanical analysis using the finite element method.

Code of the group: NQ20200200
Name of the group: program Integrální bezpečnost staveb. 2. semestr
Requirement credits in the group: In this group you have to gain at least 28 credits (at most 29)
Requirement courses in the group: In this group you have to complete at least 5 courses
Credits in the group: 28
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
124SEM	**Seminar Thesis** *Vladimír Mózer, Petr Hejtmánek, Marek Pokorný, Ilona Koubková, Pavla Hofbauer Pechová **Petr Hejtmánek** Marek Pokorný (Gar.)*	KZ	6	6C	L	z
124PRO	**Project** *Petr Hejtmánek, Jan Růžička **Petr Hejtmánek** Petr Hejtmánek (Gar.)*	KZ	5	4C	Z	z
125TZP	**Fire Equipment Protection** *Ilona Koubková, Daniel Adamovský, Bohumír Garlík **Ilona Koubková** Ilona Koubková (Gar.)*	Z,ZK	6	3P+2C	L	z
126MRIP	**Risk, Capital Investment and Insurance Management** *Zita Prostějovská, Jakub Šejna **Zita Prostějovská** Zita Prostějovská (Gar.)*	Z,ZK	7	4P+2C	L	z
144HZIP	**Accidents and the environment** *Václav Kratochvíl, Bronislava Rohanová, Kateřina Slavíčková **Bronislava Rohanová** Kateřina Slavíčková (Gar.)*	Z,ZK	4	2P+1C	L	z

Characteristics of the courses of this group of Study Plan: Code=NQ20200200 Name=program Integrální bezpečnost staveb. 2. semestr

124SEM	Seminar Thesis	KZ	6

The scourse serves as preparation for the diploma thesis on the master's study program Q - Integral safety of buildings. The fire engineering topics from the participating departments (K124, K125, K133 and K134) are offered for elaboration. The student chooses a topic and consults it individually with the relevant supervisor and prepares the seminar work. The seminar work is divided into 2 parts, namely literature research of the current state of art and a "solved example", where the student specifically applies the acquired knowledge. Emphasis is placed on the study of relevant Czech and foreign literature and its correct citation. During the semester, 3 group seminars are organized in which the student presents the chosen topic, discusses his work, findings, results and conclusions. In addition to the actual seminar work, another output is a research article and a poster presenting the imporance of the topic and the achieved results in a concise form. Every year, a collection of seminar papers is created from the individual professional articles, published at the student scientific conference "Zapálení" at the Faculty of Civil Engineering of the Czech Technical University.

124PRO	Project	KZ	5

The task of the project is a comprehensive design of the building (factory or storage hall) and its fire relations. The 3- or 4 member will solve the building in two different construction variants. The output of the project will be the following 4 sub-separately classified parts, namely (A) architectural design, (B) fire safety design including an example of a performance-based design, (C) structural design and (D) technical equipment of the building.

125TZP	Fire Equipment Protection	Z,ZK	6

The basic subject for student of master´s degree. The expansion of knowledge in the field of fire safety of buildings and structures. The course deals with fire protection of electrical wiring. In the second part of the semester problems fixed firefighting systems for different media types, fire alarm, fire ventilation.

126MRIP	Risk, Capital Investment and Insurance Management	Z,ZK	7

The subject presents a comprehensive view of risk management processes at companies and systems. The student will master the methods used in the identification of risks, their analysis and evaluation, will be able to simulate the possible impacts of the risk realization using available SW and subsequently evaluate the effects, further propose and calculate the costs of appropriate measures acting on the causes and impacts of the addressed risks. The student will acquire basic knowledge about the insurance industry and actuarial mathematics, investment activities of the company and decision-making about investments, possible sources of financing and financial activities of the company.

144HZIP	Accidents and the environment	Z,ZK	4

The subject Accidents and the environment is focused on the prevention and resolution of accidents with the release of hazardous substances into individual components of the environment. It familiarizes students with this issue and the procedures of the IZS components destined for interventions in hazardous substance accidents.

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 2
The role of the block: PV

Code of the group: NQ20200200_1
Name of the group: program Integrální bezpečnost staveb, povinně volitelný předmět
Requirement credits in the group: In this group you have to gain at least 2 credits
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 2
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
124YMPE	**Advanced fire and evacuation modeling** *Vladimír Mózer, Hana Najmanová, Kamila Cábová **Vladimír Mózer** Vladimír Mózer (Gar.)*	KZ	2	2C	L	PV

126YEKP	**Construction Business Management** *Vladimíra Nováková* ***Vladimíra Nováková***	Z,ZK	2	1P+1C	L	PV
134YNSK	**Design of Glass Structures** *Martina Eliášová* ***Martina Eliášová*** *Martina Eliášová (Gar.)*	Z,ZK	2	1P+1C	L	PV
144YLHN	**Mitigation of hazardous substances incidents** *Václav Kratochvíl, Bronislava Rohanová, Kateřina Slavíčková* ***Bronislava Rohanová*** *Kateřina Slavíčková (Gar.)*	Z,ZK	2	1P+1C	L	PV

Characteristics of the courses of this group of Study Plan: Code=NQ20200200_1 Name=program Integrální bezpečnost staveb, povinně volitelný předmět

124YMPE	Advanced fire and evacuation modeling	KZ	2
126YEKP	Construction Business Management	Z,ZK	2
The subject is focused on the issue of doing business in the Czech Republic. Students will learn how to build a business, how to manage and lead it. They will understand how the business works from an economic point of view. It focuses on business mistakes, which are the cause of high mortality of companies. Students will acquire the knowledge needed to establish various forms of business entities, the knowledge needed for orientation in tax matters, insurance premium payments and labor-legal relations.			
134YNSK	Design of Glass Structures	Z,ZK	2
The subject is intended for students of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134YNKS. Extension of theoretical knowledge in the field of stability of glass beams, columns and walls. Principles of designing structural elements made of glass according to normative documents, experimental verification of material properties of glass, safety glass, use of software support for designing.			
144YLHN	Mitigation of hazardous substances incidents	Z,ZK	2
Subject 144YLHN Mitigation of hazardous substances incidents deals with the causes of emergency events and prevention, analysis and evaluation. Examples of serious accidents in the past, ways of disposal and impact on humans and the environment are listed. Subject Mitigation of hazardous substances incidents is focused on the pollution of the environment by hazardous substances as a result of accidents and the leakage of these substances into individual components of the environment. It acquaints students with the issue of emergency events and crisis situations involving the release of dangerous substances, emergency planning, analysis and risk management.			

Name of the block: Povinně volitelné předměty, doporučení S1
Minimal number of credits of the block: 30
The role of the block: S1

Code of the group: NQ20200300_1
Name of the group: program Integrální bezpečnost staveb, 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** *Marek Pokorný, Kateřina Mertenová, Jiří Pazderka, Tomáš Vlach, Tomáš Čejka, Martin Jiránek* ***Jiří Pazderka*** *Jiří Pazderka (Gar.)*	Z	30	24C	Z	S1
125DPM	**Diploma Thesis** ***Stanislav Frolík*** *Stanislav Frolík (Gar.)*	Z	30	24C	Z	S1
133DPM	**Diploma Thesis** ***Martin Tipka***	Z	30	24C	Z	S1
134DPM	**Diploma Thesis** *Jakub Dolejš* ***Jakub Dolejš*** *Jakub Dolejš (Gar.)*	Z	30	24C	Z	S1

Characteristics of the courses of this group of Study Plan: Code=NQ20200300_1 Name=program Integrální bezpečnost staveb, 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.			
125DPM	Diploma Thesis	Z	30
Diploma thesis is an independent project of a student at the end of Master degree study programme at the Faculty of Civil Engineering. Diploma thesis consists of two sections, a diploma thesis seminar and the actual thesis. In the diploma seminar section, the student works with the data and backround information relating to the topic of the thesis. The student consults the supervisor.			
133DPM	Diploma Thesis	Z	30
In accordance with a thesis proposal.			
134DPM	Diploma Thesis	Z	30
Design of steel / timber load bearing building structure according to external requirements in relation to interaction of load bearing and final completion structural elements. A study focused on research of load bearing structures may be also the topic of the the project. The project is assigned by a final project superisor individually.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
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.			
124MDPV	Modeling the Dynamics of Fire and Evacuation	Z,ZK	6
The course is focused on current topics of fire engineering (the so-called performance-based design) in the area of specific behavior of people during evacuation and fire dynamics in buildings. The content builds on the previous basic knowledge of the students in the prescriptive evaluation of fire safety of buildings using standard procedures, table values, or simplified mathematical relationships. The course is also focused on the advanced fire engineering approaches to fire safety design, the principles of fire dynamics and development in the closed space of the building in the form of analytical relationships and mathematical simulations (zone fire models), including modeling the behavior of people during evacuation.			
124PRO	Project	KZ	5
The task of the project is a comprehensive design of the building (factory or storage hall) and its fire relations. The 3- or 4 member will solve the building in two different construction variants. The output of the project will be the following 4 sub-separately classified parts, namely (A) architectural design, (B) fire safety design including an example of a performance-based design, (C) structural design and (D) technical equipment of the building.			
124PRPO	Law and Fire Protection	ZK	2
The subject Law and fire protection is focused on the one hand on legislation in the field of design, implementation and operation of buildings from the point of view of fire safety and on the other hand on the issue of putting construction products on the market. The lectures are devoted to basic legal regulations (especially the Fire Protection Act), by-law implementing regulations, i.e. decrees and regulations of the government (e.g. decree on fire prevention, on technical conditions for fire protection of buildings and fire doors).			
124SEM	Seminar Thesis	KZ	6
The scourse serves as preparation for the diploma thesis on the master's study program Q - Integral safety of buildings. The fire engineering topics from the participating departments (K124, K125, K133 and K134) are offered for elaboration. The student chooses a topic and consults it individually with the relevant supervisor and prepares the seminar work. The seminar work is divided into 2 parts, namely literature research of the current state of art and a "solved example", where the student specifically applies the acquired knowledge. Emphasis is placed on the study of relevant Czech and foreign literature and its correct citation. During the semester, 3 group seminars are organized in which the student presents the chosen topic, discusses his work, findings, results and conclusions. In addition to the actual seminar work, another output is a research article and a poster presenting the imporance of the topic and the achieved results in a concise form. Every year, a collection of seminar papers is created from the individual professional articles, published at the student scientific conference "Zapálení" at the Faculty of Civil Engineering of the Czech Technical University.			
124SPP	Specific Fire Operations	Z,ZK	7
The subject deepens the basic knowledge of fire safety of non-industrial buildings from the bachelor's study with the topics of specific buildings types and operations. Attention is paid in particular to the general and design standards of the fire code, i.e. the Czech technical standards of the ČSN 73 08xx series. Students are introduced to the fire safety of the following buildings or operations: historical buildings, industrial facilities, garages, buildings for living and accommodation, assembly areas, changes to buildings, buildings of medical facilities and social care, warehouses, agricultural buildings, etc.			
124YMPE	Advanced fire and evacuation modeling	KZ	2
125DPM	Diploma Thesis	Z	30
Diploma thesis is an independent project of a student at the end of Master degree study programme at the Faculty of Civil Engineering. Diploma thesis consists of two sections, a diploma thesis seminar and the actual thesis. In the diploma seminar section, the student works with the data and backround information relating to the topic of the thesis. The student consults the supervisor.			
125TZP	Fire Equipment Protection	Z,ZK	6
The basic subject for student of master´s degree. The expansion of knowledge in the field of fire safety of buildings and structures. The course deals with fire protection of electrical wiring. In the second part of the semester problems fixed firefighting systems for different media types, fire alarm, fire ventilation.			
126MRIP	Risk, Capital Investment and Insurance Management	Z,ZK	7
The subject presents a comprehensive view of risk management processes at companies and systems. The student will master the methods used in the identification of risks, their analysis and evaluation, will be able to simulate the possible impacts of the risk realization using available SW and subsequently evaluate the effects, further propose and calculate the costs of appropriate measures acting on the causes and impacts of the addressed risks. The student will acquire basic knowledge about the insurance industry and actuarial mathematics, investment activities of the company and decision-making about investments, possible sources of financing and financial activities of the company.			
126YEKP	Construction Business Management	Z,ZK	2
The subject is focused on the issue of doing business in the Czech Republic. Students will learn how to build a business, how to manage and lead it. They will understand how the business works from an economic point of view. It focuses on business mistakes, which are the cause of high mortality of companies. Students will acquire the knowledge needed to establish various forms of business entities, the knowledge needed for orientation in tax matters, insurance premium payments and labor-legal relations.			
132MPV	Modelling of Structures under Fire and Explosions.	Z,ZK	6
V předmětu se studuje vedení tepla a rozložení teploty po konstrukci. Zdrojem tepla je požár. Změny teploty se projeví v mechanické odezvě konstrukce. V předmětu jsou podrobně studovány deformace a vnitřní síly způsobené změnami teploty. Na závěr je věnována pozornost výbuchům. Jejich účinky jsou aplikovány na soustavy s jedním stupněm volnosti.			
133DPM	Diploma Thesis	Z	30
In accordance with a thesis proposal.			
134DPM	Diploma Thesis	Z	30
Design of steel / timber load bearing building structure according to external requirements in relation to interaction of load bearing and final completion structural elements. A study focused on research of load bearing structures may be also the topic of the the project. The project is assigned by a final project superisor individually.			
134NKPZ	Structures exposed to fire	Z,ZK	9
In the subject, students will learn about advanced models for designing steel, concrete, steel-concrete and wooden structures exposed to fire. The teaching is focused on advanced modeling combining fluid dynamics with thermal and mechanical analysis using the finite element method.			
134YNSK	Design of Glass Structures	Z,ZK	2
The subject is intended for students of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134YNKS. Extension of theoretical knowledge in the field of stability of glass beams, columns and walls. Principles of designing structural elements made of glass according to normative documents, experimental verification of material properties of glass, safety glass, use of software support for designing.			
144HZIP	Accidents and the environment	Z,ZK	4
The subject Accidents and the environment is focused on the prevention and resolution of accidents with the release of hazardous substances into individual components of the environment. It familiarizes students with this issue and the procedures of the IZS components destined for interventions in hazardous substance accidents.			

144YLHN	Mitigation of hazardous substances incidents	Z,ZK	2

Subject 144YLHN Mitigation of hazardous substances incidents deals with the causes of emergency events and prevention, analysis and evaluation. Examples of serious accidents in the past, ways of disposal and impact on humans and the environment are listed. Subject Mitigation of hazardous substances incidents is focused on the pollution of the environment by hazardous substances as a result of accidents and the leakage of these substances into individual components of the environment. It acquaints students with the issue of emergency events and crisis situations involving the release of dangerous substances, emergency planning, analysis and risk management.

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