Study plan

Name of study plan: Stavební inženýrství, specializace Materiálové inženýrství

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Civil Engineering
Type of study: Bachelor full-time
Required credits: 240
Elective courses credits: 0
Sum of credits in the plan: 240
Note on the plan: tento studijní plán platí od akademického roku 2024/2025

Name of the block: Compulsory courses Minimal number of credits of the block: 117 The role of the block: Z

Code of the group: BJ20190100 Name of the group: Stavební inženýrství, varianta J, 1. semestr Requirement credits in the group: In this group you have to gain at least 29 credits Requirement courses in the group: In this group you have to complete at least 6 courses Credits in the group: 29 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
101KG01	Constructive Geometry Iva K ivková, Iva Malechová, Michal Zdražil, Iva Slámová, Hana Lakomá, Petra Vacková, Jana ápová, Jozef Bobok Iva K ivková Iva K ivková (Gar.)	Z,ZK	5	2P+2C	Z,L	Z
101MA01	Mathematics 1 Iva Malechová, Iva Slámová, Petra Vacková, Jana ápová, Jozef Bobok, Michal Beneš, Ivana Pultarová, Ond ej Zindulka, Jan Chleboun, Aleš Nekvinda Aleš Nekvinda (Gar.)	Z,ZK	6	2P+3C	Z,L	Z
105SVAI	Social Sciences and Architecture Josef Záruba Pfeffermann, Bo ivoj Marek, Rudolf Pošva, Dana ímanová, Jana Hrbková Josef Záruba Pfeffermann Josef Záruba Pfeffermann (Gar.)	Z,ZK	5	4P+1C	L	Z
123CHE	Chemistry Jana Náb Iková, Martin Keppert, Milena Pavlíková Milena Pavlíková Milena Pavlíková (Gar.)	Z,ZK	4	3P+1C	L	Z
132SM01	Structural Mechanics 1 Michal Polák, Daniel Rypl, Mat j Lepš, Jan Sýkora, Tomáš Koudelka, Aleš Pali ka, Karel Pohl, Tomáš Plachý, Martin Válek, Michal Polák Michal Polák (Gar.)	Z,ZK	6	2P+2C	Z,L	Z
135GM01	Geomechanics 1 Kate ina Ková ová, Jan Jelínek, Svatoslav Chamra, Richard Malát Kate ina Ková ová Kate ina Ková ová (Gar.)	Z	3	2P+1C	L	Z

Characteristics of the courses of this group of Study Plan: Code=BJ20190100 Name=Stavební inženýrství, varianta J, 1. semestr

101KG01 **Constructive Geometry** Z,ZK Projections and projective methods. Axonometry. Oblique projection. Orthogonal axonometry. Displaying prisms, cones, cylinders, pyramids, balls. Simple problems in axonometry. Basics of lighting of solids and groupes of solids. Perspective projection. Curves, parametrisation. Frenet's trihedron, torsion and curvature. Helical surfaces. Quadrics. Surfaces in building industry. 101MA01 Mathematics 1 Z,ZK 6 https://mat.fsv.cvut.cz/bubenik/mat1detail.htm 105SVAI Social Sciences and Architecture Z,ZK 5 The subject combines the teaching of several social sciences: economics and economic policies, political science, political philosophy and law, with an overview of the development of architecture. In the section devoted to economics, the basic categories of the market economy, the foundations of economic policy and the basic concepts of international economics are explained. Theoretical interpretation is effectively combined with practical examples from economic reality. In the lectures devoted to law, a brief overview of the development of Roman law and its institutions is supplemented by a well-founded interpretation of the constitution, human rights and the labor code. Great attention is paid to selected provisions of the Civil Code and the Construction Act. In the political science lectures, the political development in ancient times is described in an engaging way, the theory of the state, political systems, democracy and totalitarianism are clarified. The series of lectures on the history of architecture and construction provides a comprehensive interpretation of the history of architecture from antiquity to postmodernism and deconstruction.

123CHE	Chemistry	Z,ZK	4		
Introduction to general	bemistry - chemical bond, compounds, reactions, equilibrium. Chemistry of environment - water, atmosphere, pedosphere.	Chemistry of build	ing materials -		
inorganic binders, glass	s, ceramic, metals, natural polymers, wood, synthetic polymers on C and Si basis. Introduction to degradation of building mat	erials and to analy	/tical chemistry.		
132SM01	Structural Mechanics 1	Z,ZK	6		
Concurrent forces, force	systems acting on rigid bodies in space/plane, moment of a force about a point and line. Supports of a rigid body, reaction fo	orces. Compound	two-dimensional		
structures. Trusses. Rea	action forces applying the principle of virtual work.				
135GM01	Geomechanics 1	Z	3		
The course focuses on	he understanding of basic geological laws and principles in relation to architecture, civil engineering and urban planning. Em	phasis is placed o	on explaining the		
influence of geological processes, both endogenous and exogenous, on the rock environment and how the geological situation affects the design of structures and their interaction with					
the rock environment. At the same time, attention is paid to the technical properties of rocks with regard to their practical applications. The course also includes a brief introduction to					
the regional geology of	the Czech Republic.				

Code of the group: BJ20190200

Name of the group: Stavební inženýrství, varianta J, 2. semestr

Requirement credits in the group: In this group you have to gain at least 28 credits

Requirement courses in the group: In this group you have to complete at least 6 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
101MA02	Mathematics 2 Iva Malechová, Iva Slámová, Hana Lakomá, Petra Vacková, Jana ápová, Jozef Bobok, Michal Beneš, Ivana Pultarová, Ond ej Zindulka, Ivana Pultarová Ivana Pultarová (Gar.)	Z,ZK	6	2P+3C	L,Z	Z
102FYI	Physics Pavel Novák, Tomáš Zbíral, Ji í Konfršt, Petr Pokorný, Jan Trejbal, Pavel Demo, Ji í Novák Ji í Konfršt Pavel Novák (Gar.)	Z,ZK	4	3P+1C	L	Z
123SH01	Building Materials Alena Vimmrová, Eva Vejmelková, Miloš Jerman Eva Vejmelková Alena Vimmrová (Gar.)	Z,ZK	5	2P+2C	Z,L	Z
126BIM1	BIM Petr Mat jka, Josef Žák Josef Žák Josef Žák (Gar.)	Z	1	1P+1C	Z	Z
132SM02	Structural Mechanics 2 Michal Polák, Daniel Rypl, Mat j Lepš, Jan Sýkora, Tomáš Koudelka, Aleš Pali ka, Martin Válek, Jitka N me ková, Šimon Glanc, Michal Polák Michal Polák (Gar.)	Z,ZK	6	2P+2C	L,Z	Z
154SG01	Land Surveying in Civil Engineering Rudolf Urban, Martin Štroner Rudolf Urban Rudolf Urban (Gar.)	Z,ZK	6	2P+3C	Z,L	Z

Characteristics of the courses of this group of Study Plan: Code=BJ20190200 Name=Stavební inženýrství, varianta J, 2. semestr

40414400		7 71	0				
101MA02	Mathematics 2	Z,ZK	6				
https://mat.fsv.cvut.cz/v	yuka/bakalari/eng/ls/MT02/						
102FYI	Physics	Z,ZK	4				
This is a basic physics course for students of the study programmes Civil Engineering; Management and Economics in Construction. The course focuses on mechanics and basic							
thermodynamics. The fo	ollowing areas are covered in the course: Mechanics of material points (particles) and deformable bodies. Discrete and contin	uous model of m	atter. Kinematics				
and dynamics of a mate	erial point (particle). Mechanical force fields. Gravitational field. Mechanical vibrations. Material deformation. Elastic waves. Ac	oustics. Hydrome	chanics.				
Fundamentals of therm	odynamics. Heat transfer.						
123SH01	Building Materials	Z,ZK	5				
Building materials - bas	s course. Clasification of the materials. Structure of materials. Main properties of materials. Application of materials in buildin	g constructions. I	ntroduction to				
material testing.							
126BIM1	BIM	Z	1				
The course focuses on	teaching basic knowledge in the field of Building Information Management (BIM) in theoretical and practical areas, applicable	across different	specialisations				
and disciplines of the co	onstruction industry. Students will be introduced to data formats, data standards, intellectual property issues, working with digiti	zed documents,	raster and vector				
graphics, open data sou	rces in the Czech Republic, ICT and enterprise systems, information systems for the construction industry, but also the context	of BIM in the cur	rent construction				
industry in relation to th	e entire project life cycle and its specifics (delivery, expert focus, phases of construction projects, etc.) The theoretical knowle	dge is compleme	nted by practical				
exercises aimed at mas	tering and understanding the basic principles of object-oriented parametric modelling.						
132SM02	Structural Mechanics 2	Z,ZK	6				
Internal forces diagrams	s of simple statically determinate plane structures and compound two-dimensional structures. Multiaxially loaded cantilever. D	efinition of norma	al stress and				
prepositions of its distril	pution in a cross section. Equivalence of internal forces. Geometry of mass and areas, centre of gravity and moments of inerti	a.					
154SG01	Land Surveying in Civil Engineering	Z,ZK	6				
The shape and size of t	he Earth, substitutive surfaces, cartographic projections Horizontal and vertical control, coordinate calculations Quality contro	ol, deviations and	tolerations in				
build-up Angle and distance measurements Heighting measurements Other geodetic methods in build-up (GNSS, DPZ,) Photogrammetry and laser scanning Thematic mapping							
and present state docu	and present state documentation Geodetic works in build-up State map series of CR and thematic maps for build-up Geographic information systems and spatial planning Cadastre						
of real estates Laws an	d decrees for geodesy and build-up in Czech Republic						

Code of the group: BJ20190300

Name of the group: Stavební inženýrství, varianta J, 3. 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 6 courses

Credits in the group: 30

Note on the group	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		
101MA03	Mathematics 3 Iva Malechová, Jozef Bobok, Michal Beneš, Ond ej Zindulka, Petr Ku era, Zden k Skalák, Martin Hála, Martin Soukenka, Petr Mayer, Michal Beneš Michal Beneš (Gar.)	Z,ZK	6	3P+2C	Z,L	Z		
124PSI1	Building Structures 11 Ctislav Fiala, Jan R ži ka, Petr Hájek, Jaroslav Vychytil, B la Stib rková Jan R ži ka Petr Hájek (Gar.)	Z	4	2P+1C	z	Z		
132PRPE	Strength of Materials Petr Kabele, Michal Šejnoha, Milan Jirásek, Jan Vorel, Eva Novotná, Martin Došká, Martin Horák, Martin Lebeda, Barbora Hálková, Petr Kabele Petr Kabele (Gar.)	Z,ZK	6	3P+2C	Z,L	Z		
135GM2I	Geomechanics 2I Jan Salák, Ji í Koš ál, Martin Vaní ek, Ivan Vaní ek Ivan Vaní ek Jan Salák (Gar.)	Z,ZK	5	2P+1C	Z	Z		
141HYA	Hydraulics Michal Dohnal, Aleš Havlík, Tomáš Picek, Václav Matoušek, Petr Sklená, Martin Fencl, Anna Špa ková, Jakub Novotný, Vojt ch Bareš, Václav Matoušek Michal Dohnal (Gar.)	Z,ZK	5	2P+2C	Z,L	Z		
142VIZP	Water and Environmental Engineering Aleš Havlík, Martin Fencl, Michal Sn hota, Petr Nowak, Tomáš Dostál, Martin Do kal, Martin Šanda, Pavel Fošumpaur, Bohumil Šastný, Filip Horký Ladislav Satrapa (Gar.)	Z,ZK	4	3P+1C	Z,L	Z		

Characteristics of the courses of this group of Study Plan: Code=BJ20190300 Name=Stavební inženýrství, varianta J, 3. semestr

101MA03	Mathematics 3	Z,ZK	6				
https://mat.fsv.cvut.cz/vyuka/bakalari/eng/zs/							
124PSI1	Building Structures 1I	Z	4				
The concept of design o	f building structures with a comprehensive consideration of the functional requirements imposed on individual elements. Req	uirements for bui	Iding structures,				
structural system, intera	ction of elements, spatial effect of the structural system. Vertical load-bearing structures (functions, requirements, principles of	of the structural d	esign of walls,				
columns), floor structure	s (functions, requirements, principles of the structural design of vaults, wooden ceilings, reinforced concrete ceilings, ceramic	concrete ceilings	s, steel and steel				
concrete ceilings). Expa	nsion joints in load-bearing systems. Structural systems of single and multi-storey buildings, structural systems of long-span	structures.					
132PRPE	Strength of Materials	Z,ZK	6				
Fundamentals of the the	eory of elasticity: stress and strain of straight beams subjected to bending and free torsion, ultimate plastic capacity of a mem	ber in bending, c	ritical loads and				
buckling lengths of straig	ght compression members. Basic assumptions, quantities, and equations describing the stress and strain state in 3D continu	um, plates and w	alls.				
135GM2I	Geomechanics 2I	Z,ZK	5				
Formation of soils, basic	properties of soils, water in soil, strength and deformation properties of soils and their determination, improvement of soil pr	operties, applicat	tion tasks				
141HYA	Hydraulics	Z,ZK	5				
A course deals with issu	ies of hydrostatics and hydrodynamics with aiming at civil engineering applications. There are analysed tasks related to hydro	static and hydrod	dynamic loading				
of structures, pipeline flo	w, open channel flow and groundwater flow.						
142VIZP	Water and Environmental Engineering	Z,ZK	4				
During the teaching ser	nester, students are introduced to the fields of water engineering, water management and environmental engineering. In parti	cular, emphasis i	s placed on the				
practical aspects of wate	er and environmental engineering in close relation to other branches of civil engineering. The course is taught in the form of le	ectures and tutori	als. The lectures				
are divided thematically into 20 blocks according to the different branches of the discipline (13 times water engineering and 7 times environmental engineering). In the exercises,							
students work on basic problems in the field of hydrology, water supply and water structures, especially dams, hydropower and flood issues. All 4 "water" departments of K14x are							
involved in teaching the	course.						

Code of the group: BJ20190400

Name of the group: Stavební inženýrství, varianta J, 4. 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 6 courses Credits in the group: 30 Note on the group:

Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their Code Completion Credits Scope Semester Role members) Tutors, authors and guarantors (gar.) **Building Structures 2I** 124PSI2 Ctislav Fiala, Petr Hájek, Malila Noori, Veronika Ka ma íková, Jaroslav Vychytil, Tereza Pavl , Ji í Pazderka, Ji í Nová ek **Ji í Pazderka** Ji í Pazderka (Gar.) Z,ZK 4 2P+1C L Ζ **Economics and Management** Eduard Hromada, Martin ásenský, Božena Kade ábková, Petr Kal ev, Pavlína Píchová, Pavlína Píchová **Petr Kal ev** Eduard Hromada (Gar.) 7 4P+2C 126EKMN Z,ZK Ζ **Structural Mechanics 3** Tomáš Koudelka, Petr Kabele, Michal Šejnoha, Milan Jirásek, Jan Vorel, Eva Novotná, Martin Horák, Michal Šmejkal, Tomáš Krej í, Petr Kabele Z,ZK 132SM3 5 2P+2C L,Z Ζ Petr Kabele (Gar.)

133NNKB	Fundamentals of Structural Design - Concrete Martin Tipka, Radek Štefan, Jitka Vašková Martin Tipka Martin Tipka (Gar.)	Z,ZK	4	2P+1C	L,Z	Z
134NNKO	Design of Supporting StructuresI - Steel František Wald, Michal Jandera, Martina Eliášová Michal Jandera Martina Eliášová (Gar.)	Z,ZK	3	2P+1C	L	Z
136DSUZ	Transport Structures and Urban Planning Ludvík Vébr, František Pospíšil, Ond ej Bret František Pospíšil Ludvík Vébr (Gar.)	Z,ZK	7	5P+1C	L,Z	Z
Characteristics of the	courses of this group of Study Plan: Code=BJ20190400 Name	=Stavební in	ženýrstv	ví, variant	ta J, 4. sei	nestr
124PSI2 Bui Staircases, sloping ramps, lift conditions, types of foundatic systems. Structural expansio Paof trues outcome	ilding Structures 2I t shafts - requirements, structural and material solutions, basics of typology, design print ons, requirements, building plinth area (construction details). Basement - solution of bas n joints in buildings - principles of joints design in bearing structures, thermal expansio	ciples, construction ement walls, req n, compensation	on details, r uirements, of differenc	ailing. Buildin protection ag ces in settler	c,ZK ng foundation gainst water, nent, constru	4 s - foundation waterproofing ction details.
126EKMN Economics and Management Z,ZK 7 The aim of the course is to provide students with an introduction to economics and management in the construction industry and to familiarize them with basic economic terms and their practical applications. Students will be prepared to solve basic construction-management problems in the construction industry. They will acquire basic information about the method of pricing construction works and master the basic methods of managing a construction company. Emphasis is placed on understanding the principle of economic thinking in relation to the construction industry.						
132SM3 Structural Mechanics 3 Z,ZK 5 Deformation and force method for the solution of reactions and internal forces on statically indeterminate beams, frames, and truss structures. Calculation of displacements of beams, frames, and truss structures using the principle of virtual works.						
133NNKB Ful The content of the subject ar effects. The properties of cor reinforcement of concrete str this course. The course follow	133NNKB Fundamentals of Structural Design - Concrete Z,ZK 4 The content of the subject are the basics of load-bearing concrete structures design and the design methodology according to valid standards, including the determination of load effects. The properties of concrete, the production and testing of concrete, the properties of concrete structures for basic types of loading (bending, shear, pressure) are the main part of this course. An introduction to serviceability limit states is in the end of the subject are the integrate the integrate the integrate (Directory Machines, Directory Ma					
134NNKO De The basics of designing steel to the specific properties of in	sign of Supporting Structures - Steel I, steel-concrete and wooden load-bearing structures according to applicable standards ndividual materials.	, including the de	etermination	of load effe	Z,ZK cts, design di	3 fferences due
136DSUZ Tra The course 136DSUZ is com and the area of urban plannin Transport Structures - Roads Design categories of roads a drainage. Urban roads, divisi junctions and crossings. Tran Tram transport - history, princ Railway constructions - an int Planning (SP): Teaching spate Planning (SP): Teaching spate	nsport Structures and Urban Planning posed of 3 issues, which build on each other and complement each other. These are the ng and spatial planning (scope 2+0). Unlike the road construction and railroad construct s (R): Introduction to basic terminology in the part of roads, history. Road Act and relate and motorways, design speed, directional and elevation design of routes, cross-sections on and marking, definition of MK space, differences in design, operation and equipmer sport Structures - Rail transport (RT): Introduction to basic terminology, Issues of railwa ciples of tram track construction, interaction with the environment. Metro as a system o troduction to the design and construction of a railway track in the conditions of the Czeck tial planning and urban planning, spatial planning tools and procedures for their acquis	e area of transpo ction sections, the d legislative and al layout of roads nt. Carriageway, o y crossings from f urban rail transp n Republic, the ba tition.	ort structure e urban plan technical re and motor division, des the point of port. Basic p asic elemer	Z s (roads and nning section gulations, th ways, earthw sign principle view of sect principles an ts of the rail	Z,ZK rail transport n does not en neir impact or vork - dimens es. Safety equ urity, design a d parameters way superstru	7 t - scope 3+1) d with credit. n road design. ions, shapes, uipment, and operation. s, metro lines. ucture. Spatial

Name of the block: Compulsory courses in the program Minimal number of credits of the block: 98

The role of the block: P

Code of the group: BM20240500

Name of the group: Stavební inženýrství, specializace Materiálové inženýrství, 5. 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 7 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
123CHEM	Chemistry in Civil Engineering Milena Pavlíková, Martina Záleská Milena Pavlíková Milena Pavlíková (Gar.)	Z,ZK	5	2P+2C	Z	Р
123SSVM	Structural Analysis of Building Materials Martin Keppert Martin Keppert Martin Keppert (Gar.)	KZ	3	2P+1C	Z	Р
123ZAZK	Principles of Material Testing Alena Vimmrová Alena Vimmrová Alena Vimmrová (Gar.)	Z,ZK	5	2P+2C	Z	Р
124STAO	Building Acoustics and Daylighting Jaroslav Vychytil, Ji í Nová ek Ji í Nová ek Ji í Nová ek (Gar.)	Z	3	2P+1C	Z	Р
124STTT	Hygrothermal Performance of Buildings Ji í Novák, Zdenko Malík, Zbyn k Svoboda, Jakub Diviš Ji í Novák Zbyn k Svoboda (Gar.)	ZK	3	1P+1C	Z	Р
132ANKC	Analysis of Structures Aleš Jíra, Dagmar Jandeková, Petr Konvalinka, Jan Zatloukal Petr Konvalinka Petr Konvalinka (Gar.)	Z,ZK	5	2P+2C	Z	Р

133BK01 Concrete and Masonry Structures 1 Martin Tipka, Jitka Vašková, Petr Bílý Petr Bílý (Gar.) Z,Zł	ΪK	6	3P+2C	Z	Р
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Characteristics of the courses of this group of Study Plan: Code=BM20240500 Name=Stavební inženýrství, specializace Materiálové inženýrství, 5. semestr

123CHEM Chemistry in Civil Engineering	Z,ZK	5				
This course combines theoretical and practical skills in building chemistry, without chemical formulas and equations. It touches on issues related to the composition, preparation, and						
use of basic building materials. It extends the knowledge acquired in Chemistry.						
123SSVM Structural Analysis of Building Materials	KZ	3				
Students are supposed to get knowledge about relationships between structure of materials (chemical composition, microstructure) and their properties (mechanical, thermal, durability						
etc.). The methods of materials characterization both chemical and physical will be explained. Particular important relations will be illustrated by help	of examples from	the range (and				
not only) of building materials. Part of the lectures will be devoted individual groups of materials and their specific characterization techniques and provide the specific characterization t	operties.					
123ZAZK Principles of Material Testing	Z,ZK	5				
Testing and quality management. Building materials requirements. Pronciples of laboratory works - sampling, marking, documentation. Safety in laboratory works - sampling, marking, documentation.	ratories. Testing a	and evaluation				
of results. Statistical methods of evaluation.						
124STAO Building Acoustics and Daylighting	Z	3				
Lighting technology deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requir	rements and what	t are the options				
for verifying the time of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the	he assessment o	f daylight mainly				
in the interiors of buildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting openi	ng. In building acc	oustics, students				
are first introduced to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of	the course deals	with sound				
propagation in free and diffuse fields and sound propagation around barrier. Particular attention is paid to the sound insulation properties of partition	structures and so	ound absorbing				
structures.						
124STTT Hygrothermal Performance of Buildings	ZK	3				
132ANKC Analysis of Structures	Z,ZK	5				
Analyses of statically determinate and statically/deformable indeterminate structures, concerning live loads solution, stresses in thin-wall beams, and	lysis of walls and	plates, matrix				
formulation of deformation method, principles of FEM, models for a beam on elastic foundation and stability of structures.						
133BK01 Concrete and Masonry Structures 1	Z,ZK	6				
The subject is focused on the design of concrete elements and constructions of multi-storey buildings - it follows on from the subject Fundamentals of	of Structural Desig	n. The content				
of the course is the addition and generalization of procedures for verifying the load-bearing capacity of reinforced concrete structural elements for cases	s of bending, shea	r, a combination				
of biaxial bending and normal force, designing elements stressed by torsion, punching shear, assessment of slender compressed elements. Design	procedures are di	scussed for				
individual types of structures, including the choice of suitable calculation models and calculation methods and reinforcement principles.						

Code of the group: BM20200600

Name of the group: Stavební inženýrství, specializace Materiálové inženýrství, 6. 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 6 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
122TSC	Construction Technology C Rostislav Šulc, Mária Párová Rostislav Šulc Rostislav Šulc (Gar.)	Z,ZK	6	4P+2C	Z	Ρ
123MAOP	Materials for Monument Protection Zbyšek Pavlík Zbyšek Pavlík Zbyšek Pavlík (Gar.)	KZ	2	2P	L	Ρ
124P01C	Structural design project 1 Malila Noori, Lenka Hanzalová, Ji í Pazderka, Ji í Novák, Martin Jiránek, Kate ina Mertenová Ji í Pazderka Ji í Pazderka (Gar.)	KZ	6	4C	L	Р
125TBU	Building services systems 1 Karel Kabele, Ilona Koubková, Zuzana Veverková Ilona Koubková Ilona Koubková (Gar.)	Z,ZK	4	2P+2C	L	Р
133BK02	Concrete and Masonry Structures 2 Jitka Vašková, Iva Broukalová, Michal Drahorád, Marek Foglar Marek Foglar Marek Foglar (Gar.)	Z,ZK	7	4P+2C	L	Р
134ODKM	Steel and Timber Structures Anna Kuklíková, Michal Netušil Michal Netušil Anna Kuklíková (Gar.)	Z,ZK	5	2P+2C	Z,L	Р

Characteristics of the courses of this group of Study Plan: Code=BM20200600 Name=Stavební inženýrství, specializace Materiálové inženýrství, 6. semestr

122TSC	Construction Technology C	Z,ZK	6			
123MAOP	Materials for Monument Protection	KZ	2			
Building monuments consist from rather complicated collection of different materials and functions. It is important to obtain the information about the historical building technologies						
and materials with resp	ect to the monument protection principles. These information will be obtained during the course.					
124P01C Structural design project 1						
Converting an architect	ural study of a smaller or medium-sized building for housing, administration, education, culture or sports into a detailed desig	n of a building str	ucture based on			
static analysis, interacti	on of load-bearing and non-load-bearing elements and building physics. Focus on complex approach to practical design, analy	sis and optimaliza	tion of a building			
structures. Design of va	riants of the load-bearing system, preliminary static analysis (calculation of load-bearing elements - slabs, columns, walls, etc).	, calculation of fou	ndations, design			
of structures on the bui	of structures on the building envelope with respect to thermal protection of buildings, building physics, fire protection of buildings and protection against water and soil moisture.					
Elaboration of detailed drawings including floor plans, sections and details.						
125TBU	Building services systems 1	Z,ZK	4			
Basic course in building	services systems - water supply, drainage, gas supply, heating and ventilation systems.					

133BK02	Concrete and Masonry Structures 2	Z,ZK	7				
This course builds on the courses NNK and BK01 and widens the knowledge to the necessary minimum for the bachalor studium branches C and K. 13. Masonry structures - subjected							
to compression, bendin	to compression, bending, shear, reinforced masonry, strenghtening of masonry structures 4 6. Design of concrete structures to serviceability limit states: stress limitation, crack						
development and crack	width limitation, deflections, application on waterproof structures 78. Introduction to pre-stressed concrete: design of pre-str	essing, losses of	pre-stressing,				
technology 912. Pre-cast concrete structures 13. Bridges: nomenclature in bridges, cross-section arrangement, loading, construction methods, Introduction to engineering structures							
134ODKM	Steel and Timber Structures	Z,ZK	5				
Steel structures - pros and contras, material properties, fabrication, connections, industrial steel buildings, cables, high strength steel, buildings in terms of water engineering - load,							
protection utilization Ti	protection, utilization Timber, leadings, material propertie, limit states methodology, design, connections, bracings, protection of structural timber, timber, bridges						

Code of the group: BM20200700

Name of the group: Stavební inženýrství, specializace Materiálové inženýrství, 7. semestr Requirement credits in the group: In this group you have to gain at least 22 credits Requirement courses in the group: In this group you have to complete at least 5 courses Credits in the group: 22

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
123EPMA	Sustainable Building Materials Miloš Jerman Miloš Jerman Miloš Jerman (Gar.)	Z,ZK	4	2P+2C	Z	Ρ
123VPMA	Influence of Environment on Building Materials Ji í Mad ra, Václav Ko í Václav Ko í Václav Ko í (Gar.)	Z,ZK	7	2P+2C	Z	Ρ
12900P	Preservation and Restoration of Monuments Klára Kroftová, Mat j Bohá Klára Kroftová Klára Kroftová (Gar.)	Z,ZK	5	2P+2C	Z	Р
210DIMA	Diagnostics of materials Radoslav Sovják, Ji í Litoš, Michal Mára, Šárka Pešková, Petr Hála, Kristýna Carrera, Petr Konrád, P emysl Kheml Radoslav Sovják Petr Konvalinka (Gar.)	Z,ZK	6	2P+2C	Z	Ρ
1000DPR	Industrial Training (3 weeks) Jan R ži ka, Petr Hájek, Kate ina Sojková Michal Jandera Michal Jandera (Gar.)	z	0	6C	Z,L	Р

Characteristics of the courses of this group of Study Plan: Code=BM20200700 Name=Stavební inženýrství, specializace Materiálové inženýrství, 7. semestr

123EPMA	Sustainable Building Materials	Z,ZK	4			
The aim of the course is to introduce students to low-energy and environmentally oriented construction. Introductory classes will focus on legislation and energy performance of buildings.						
The course also looks a	The course also looks at specific materials with a low carbon footprint. The course will not explicitly focus only on biomaterials, from a sustainability perspective it is necessary to					
combine modern synthe	combine modern synthetic materials with purely eco-friendly ones. The aim of the course is for students to be able to appropriately combine modern materials with purely natural ones,					
to be able to minimise t	he negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micr	oclimate. Last but	i not least, to			
assess materials in terr	ns of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling.					
123VPMA	Influence of Environment on Building Materials	Z,ZK	7			
The main objetcive of the	e subject is to introduce advanced techniques that are increasingly exploited for an assessment effects and impacts of build	ng materials expo	osed to various			
environment. The succe	ssful passing the course is supposed to provide deeper knowledge and inside to the problem in a complex way which is neces	sary for understa	nding the mutual			
materials-environment i	nteractions. The students should be then able to solve particular problems independently using the most recent (advanced) n	nethods to reveal	possible risks of			
materials damage wher	n exposed to various effects of environment.					
12900P	Preservation and Restoration of Monuments	Z,ZK	5			
210DIMA	Diagnostics of materials	Z,ZK	6			
Review of tools for expe	rimental investigation of material, thermal and moisture properties of basic building materials, destructive and nondestructive	e tests of material	parameters,			
accredited tests.						
1000DPR	Industrial Training (3 weeks)	Z	0			
Professional practice is	an important part of academic education in undergraduate degree programmes. The student will gain a basic understanding	of duties and pro	fessional			
responsibilities. The pro	responsibilities. The professional practice evaluates the sum of all knowledge acquired through previous theoretical studies and is a proof of their acquisition.					

Code of the group: BM20200800

Name of the group: Stavební inženýrství, specializace Materiálové inženýrství, 8. 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 3 courses Credits in the group: 16

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
123TVSM	Production technology of building materials Eva Vejmelková, Dana Ko áková, Vojt ch Pommer, Martin Böhm Eva Vejmelková Eva Vejmelková (Gar.)	Z,ZK	5	2P+2C	L	Ρ

126STMN	Construction Management Dana M š anová, Renáta Schneiderová Heralová, Václav Tatýrek, Jaroslava Tománková, Zita Prost jovská Dana M š anová Zita Prost jovská (Gar.)	Z,ZK	6	3P+2C	Z,L	Р
210DIST	Diagnostics of Buildings Jan Zatloukal, Radoslav Sovják, Ji í Litoš, Šárka Pešková, Petr Konrád, P emysl Kheml, Jind ich Forn sek, Vladimír Šána Ji í Litoš Petr Konvalinka (Gar.)	Z,ZK	5	2P+2C	L	Ρ

Characteristics of the courses of this group of Study Plan: Code=BM20200800 Name=Stavební inženýrství, specializace Materiálové inženýrství, 8. semestr

123TVSM	Production technology of building materials	Z,ZK	5			
126STMN	Construction Management	Z,ZK	6			
Overview of selected concepts. Methods to support project management. Legal standards, SN and ISO standards. The essential aspects of Project Management. Construction as a						
project product. Objectiv	es, strategies, phases and surroundings of the construction project. Project manager role. Purchases and contracts in the pr	oject. Quality mai	nagement, risk			
management. Financial	management and project evaluation. Feasibility study. Cost and resource management. Change procedures. The Act on Spa	tial Planning and	Building			
Regulations, the Act on	the Awarding of Public Contracts, and the definition of terms. Business obligation relationships, the conclusion of contracts, t	heir form, and us	e of general			
business conditions. But	siness public competition, its influence on the obligations of participants. Securing the commitment - contractual penalty, gua	rantee. The main	contract types			
in construction - are cor	tract for the conclusion of a future contract, purchase contract, contract for work, and content of the contract.					
210DIST	Diagnostics of Buildings	Z,ZK	5			
Basics of experimental measurement and instrumentation of testing structures. Theory of experimental work, measurements, data exploatation and processing of results. Structures						
and principal behavior of testing devices, tenzometers, inductive senzors etc. Static and dynamic loading testing of structures and their parts. Destructive and nondestructive testing						
methods. Diagnostics of civil engineering structures. Excursion on site or on the building structure. Concept of management of quality, system of quality of the building firms, phase of						
control of the quality of the projects, building process and finished structures. Acreditation process of the testing laboratories. Certification of the quality systems of production and						

Name of the block: Compulsory elective courses Minimal number of credits of the block: 4 The role of the block: PV

Code of the group: BM20200700_2

Name of the group: Stavební inženýrství, specializace Materiálové inženýrství, povinn volitelné p edm ty 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:

certification of products.

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
123YSMA	Smart Building Materials Jan Fo t, Lukáš Fiala Lukáš Fiala (Gar.)	Z	2	1P+1C	Z	PV
124YBM1	Building Information Modeling (BIM) for Building Structures 1 Petr Mat jka, Renáta Ho ánková, Pavel Chour, Jií erný, Hana Kabrhelová, Karel Fazekas Jan R ži ka Jan R ži ka (Gar.)	Z	4	1P+3C	Z	PV
124YKSD	Complex Structural Detail Ji í Pazderka, Radek Zigler Ji í Pazderka Ji í Pazderka (Gar.)	Z	2	1P+1C	Z	PV
132YNMI	Numerical Methods in Engineering Practice Petr Kabele, Milan Jirásek, Jaroslav Kruis, Jan Zeman Milan Jirásek Milan Jirásek (Gar.)	Z	2	1P+1C	z	PV
133YPRK	Failures and Rehabilitation of Concrete Structures Jakub Žák, Petr Štemberk Petr Štemberk (Gar.)	Z	2	1P+1C	Z	PV
134YNKS	Glass Structures Martina Eliášová Martina Eliášová Martina Eliášová (Gar.)	Z	2	1P+1C	L	PV
123YATP	Numerical Analysis of Transport Processes Ji í Mad ra Ji í Mad ra Ji í Mad ra (Gar.)	Z	2	1P+1C	L	PV
124YDRS	Timber Buildings Jan R ži ka, Jaroslav Vychytil, Kamil Stan k, Lukáš Velebil, Milan Peukert, Marek Pokorný Jaroslav Vychytil Jan R ži ka (Gar.)	Z	2	1P+1C	L	PV
124YRHS	Reconstruction of Historical Building Structures Radek Zigler, Tomáš ejka, Ji í Witzany Ji í Witzany Ji í Witzany (Gar.)	Z	2	1P+1C	L	PV
133YMVB	Concrete and Masonry Structures 1 Tomáš Trtík, Petr Bilý, Josef Novák Petr Bílý Petr Bilý (Gar.)	Z	2	1P+1C	L	PV
134YDUV	Timber and Sustainable Construction Anna Kuklíková Anna Kuklíková Anna Kuklíková (Gar.)	Z	2	1P+1C	L	PV
134YTSK	Thin-Walled and Composite Structures Michal Jandera Michal Jandera Michal Jandera (Gar.)	Z	2	1P+1C	L	PV

Characteristics of the courses of this group of Study Plan: Code=BM20200700_2 Name=Stavební inženýrství, specializace Materiálové inženýrství, povinn volitelné p edm ty

123YSMA Smart Building Materials	Z	2
I he course content is an introduction to the study of sophisticated building materials (SMAR I materials) on the basis of cement-based materials and	d alkali-activated a	aiuminosilicates
with a black duplice and applies the students to get acquisited with the letter trands in the building industry. The subject	t focuses mainly c	on new materials
with respect to the principles of sustainable development	iuili-ciileila evalua	
124VPM1 Puilding Information Modeling (PIM) for Puilding Structures 1	7	4
1241 DWI DUIIUING INIONNALION WOUGHING (DIW) IOI DUIIUING STUCLUTES T	The subject use	4 s the Autodosk
Building information model (bini) - basic principles of cleaning a building information model in the field of civil engineering, specifics of bini modeling 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 f	inished building
124VKSD Complex Structural Datail		2
The sime of the course is to extend the knowledge gained in providue courses, it is intended for students who have already reached advanced level	of knowledge abo	∠ ut structural
The aim of the course is to extend the knowledge gamed in previous courses - it is interface for students who have alleddy reached advanced rever	taking into accourt	of the maximum
provinti in bolinangs, the content of the chosen solution		
132VNMI Numerical Methods in Engineering Practice	7	2
The course is focused on basic numerical methods for solving for active and a solution and boundary or initial value problems. In the context	t of differential equ	∠ ations the finite
difference and finite element methods are explained from the viewpoints of an engineering scientist and a mathematician	t of unforcinital equ	
133VDPK Failures and Peppahilitation of Concrete Structures	7	2
The course focuses on the description of failures of concrete structures evaluation of the causes of these failures and the design of remedial mea	<u>~</u> sures Methods of	∠ strenathenina
me conserve to access on the complete on discussed Surface renains, strengthening of contactors, strengthening of structural elements to the effects of the	ending moment a	od shear and
foundation structures are discussed. The course appropriately combines theoretical approaches with common practice	onding momonic di	la onoal, and
13/VNKS Glass Structures	7	2
The course is intending to introduce the students the field of structural applications of class and to give them some specific skills for calculation and de	<u>~</u> tailing of for basic	alass structures:
necessory and fins columns and walls point-supported dass as well as for diaring systems such as dass facades canopies and roofs stairs a	and floors. On this	purpose the
properties of plass as structural material will be presented in comparison with other basic building materials together with selected examples of d	ss/glazing applica	tions Design
details and connecting technology, relevant technical regulations, specification and current methods applied in design will be described. Worked exact	mples will accomr	any the lectures
for better understanding, and design project will help to fix specific knowledge.		
123YATP Numerical Analysis of Transport Processes	7	2
Assessment of hydrothermal conditions in civil engineering problems. Basic description of porous space. Description of transport processes (heat a	nd moisture) in po	rous materials.
Classification of mathematical models (diffusion-, convection- and mixed type). Computational models for solution of transport problems in porous space	e basic description	and application.
Introduction to structure and composition of computer codes WUFI and HEMOT, solution of simple transport problems (heat and moisture). Initial ar	nd boundary condi	tions principles,
significance and impact to analysis of transport problems.		/
124YDRS Timber Buildings	7	2
The aim is to present a complex overview on energy efficient timber structures. Basic theoretical and design principals are presented. The lectures are	i focused on follow	ina technoloaies
of timber structures: (i) heavy timber skeleton systems, (ii) light timber structures based on 2x4. (iii) CLT, (iv) log house. All technologies of timber str	uctures are preser	nted in structural
and building physics context of low energy and passive buildings.		
124YRHS Reconstruction of Historical Building Structures	7	2
In the period from the second half of the 19th century by 1960, more than 250 thousand of two- to five-story brick apartment (mainly rental) houses i	in traditional brick	technology were
constructed in the Czech Republic. Brick buildings from this period were built according to regulations, building codes and laws from the turn of the 19	9th and 20th centu	ries. Multi-storey
brick tenement houses do not meet the current thermal, acoustic and other requirements, the requirements of a dynamically developing society to the	ne required extent	, and in many
cases require regeneration and modernization interventions, including the replacement of non-compliant and out-of-date structures and equipment en	abling their further	use. The course
is focused on the current issue of renewal, reconstruction and modernization of brick multi-storey rental apartment buildings, on historical structures and	materials, the issu	e of degradation
and aging of structures and materials of historic brick residential buildings, their residual life, failures and reconstruction of historical buildings and the	eir parts. Furthern	nore, the course
is focused on the issue of improving the well-being of the internal environment, the replacement of finishing structures, opening fillings, etc. as an in	tegral part of the n	nodernization of
these buildings.		
133YMVB Concrete and Masonry Structures 1	Z	2
The content of the subject will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intr	oduction to nonlin	ear modeling of
reinforced concrete structures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program	ms for the design of	of concrete
structures.		
134YDUV Timber and Sustainable Construction	Z	2
Introduction to sustainable use of wood in construction with respect to previous courses. Theoretical methods of structural design and design of structural	ctures composed	from different
materials. Principles of strengthening and repairing of timber structures.		
134YTSK Thin-Walled and Composite Structures	Z	2
The course includes advanced analysis and structural design of slender sections and cold-formed sections. Advanced structural design of steel-con	crete composite is	also included.
Name of the block: Povinná ti lesná výchova, sportovní kurzv		
Minimal number of credits of the block: 0		
The role of the block: PT		

Code of the group: BTV_POV

Name of the group: Povinná t lesná výchova Requirement credits in the group:

Requirement courses in the group: In this group you have to complete at least 2 courses

Credits in the group: 0

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
TV1	Physical Education	Z	0	0+2	Z	PT

TV2	Physical Education	Z	0	0+2	L	PT
-						
Characteristics of t	he courses of this group of Study Plan: Code-BTV_POV Name-I	Povinná t los	ná vých	01/2		

TV1	Physical Education	Z	0
TV2	Physical Education	Z	0

Name of the block: Jazyky Minimal number of credits of the block: 3 The role of the block: J

Code of the group: BF20190201_J

Name of the group: Povinn volitelný jazyk, 2. semestr

Requirement credits in the group: In this group you have to gain at least 1 credit

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

Credits in the group: 1

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
104YCA1	English 1 Hana Horká, Petra Martincová, Petra Florianová, Sandra Giormani, Svatava Boboková Bartíková, V ra ermáková, Karolína Synková, Alexandra Steinerová, Elena Da eva, Svatava Boboková Bartíková Sandra Giormani (Gar.)	Z	1	2C	Z,L	J
104YCN1	German 1 Svatava Boboková Bartíková Svatava Boboková Bartíková Svatava Boboková Bartíková (Gar.)	Z	1	2C	Z,L	J

Characteristics of the courses of this group of Study Plan: Code=BF20190201_J Name=Povinn volitelný jazyk, 2. semestr

104YCA1 English 1

English 1 Course code: 104Y CA1 Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit The aim of the compulsory English course is to enhance the knowledge of lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on professional language (i.e., ESP - technical style) and communicative competence within the construction industry. The course also seeks to teach students to read technical literature and to be able to produce essential written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit. Literature: Horká Hana, Giormani Sandra, Martincová Petra, Nivenová Renata : Professional English for Civil Engineering (Units 1 - 5)

 104YCN1
 German 1

The compulsory course - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction industry, understanding professional texts, and learning the necessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Literature: A.Hanáková, J.Dressel: Deutsch im Bauwesen

Code of the group: BF20190302_J

Name of the group: Povinn volitelný jazyk, 3. semestr 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
104YC2A	English 2 Hana Horká, Petra Martincová, Petra Florianová, Sandra Giormani, Svatava Boboková Bartíková, V ra ermáková, Karolína Synková, Alexandra Steinerová, Elena Da eva, Svatava Boboková Bartíková Sandra Giormani (Gar.)	Z,ZK	2	2C		J
104YC2N	German 2 Svatava Boboková Bartíková Svatava Boboková Bartíková Svatava Boboková Bartíková (Gar.)	Z,ZK	2	2C		J

Characteristics of the courses of this group of Study Plan: Code=BF20190302_J Name=Povinn volitelný jazyk, 3. semestr

 104YC2A
 English 2
 Z,ZK
 2

 English 2 Course code: 104YC2A Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit and exam The aim of the compulsory English course is to enhance the knowledge of lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on professional language (i.e., ESP - technical style) and communicative competence within the construction industry. The course also seeks to teach students to read technical literature and to be able to produce essential written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit and an examination. Literature: Horká Hana, Giormani Sandra, Martincová Petra, Nivenová Renata : Professional English for Civil Engineering (Units 6 10)

104YC2N	German 2	Z,ZK	2
The compulsory course	- German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction in	dustry, understand	ling professional
texts, and learning the r	ecessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Li	iterature: A.Hanák	ová, J.Dressel:
Deutsch im Bauwesen			

Name of the block: Povinn volitelné p edm ty, doporu ení S1 Minimal number of credits of the block: 18 The role of the block: S1

Code of the group: BM20200700_1

Name of the group: Stavební inženýrství, specializace Materiálové inženýrství, 7. semestr, projekt 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 1 course 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
123P02M	Project 2M Alena Vimmrová, Eva Vejmelková, Jan Fo t, Lenka Scheinherrová, Zbyšek Pavlík, Martin Böhm Zbyšek Pavlík Zbyšek Pavlík (Gar.)	KZ	6	4C	z	S1
210P02M	Project 2M Petr Konrád, Pavel Reiterman Pavel Reiterman Petr Konrád (Gar.)	KZ	6	4C	Z	S1

Characteristics of the courses of this group of Study Plan: Code=BM20200700_1 Name=Stavební inženýrství, specializace Materiálové inženýrství, 7. semestr, projekt

123P02M	Project 2M	KZ	6
In accordance with the	project proposal.		
210P02M	Project 2M	KZ	6

Code of the group: BM20200800_1

Name of the group: Stavební inženýrství, specializace Materiálové inženýrství, bakalá ská práce 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 1 course

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
123BAPM	Bachelor Project Klára Kobeti ová, Alena Vimmrová, Eva Vejmelková Jan Pruška Jan Pruška (Gar.)	Z	12	10C	L,Z	S1
210BAPM	Bachelor Project Petr Konrád, Pavel Reiterman	Z	12	10C	L,Z	S1

Characteristics of the courses of this group of Study Plan: Code=BM20200800_1 Name=Stavební inženýrství, specializace Materiálové inženýrství, bakalá ská práce

123BAPM	Bachelor Project	Z	12			
In accordance with the	In accordance with the thesis proposal					
210BAPM	Bachelor Project	Z	12			

List of courses of this pass:

Code	Name of the course	Completion	Credits			
100ODPR	Industrial Training (3 weeks)	Z	0			
Professional practice is an important part of academic education in undergraduate degree programmes. The student will gain a basic understanding of duties and professional						
respon	responsibilities. The professional practice evaluates the sum of all knowledge acquired through previous theoretical studies and is a proof of their acquisition.					

101KG01	Constructive Geometry	Z,ZK	5
Projections and	projective methods. Axonometry. Oblique projection. Orthogonal axonometry. Displaying prisms, cones, cylinders, pyramids, balls. Sim	ple problems in ax	onometry.
Basics of lighting	g of solids and groupes of solids. Perspective projection. Curves, parametrisation. Frenet's trihedron, torsion and curvature. Helical sur	faces. Quadrics. S	urfaces in
	building industry.		
101MA01	Mathematics 1	Z,ZK	6
1011400	https://mat.isv.cvut.cz/bubenik/mat1detail.ntm	7 71/	<u> </u>
101MA02	Mathematics 2	Ζ,ΖΚ	6
101MA03	Mathematics 3	7.7K	6
TUTIVIAUS	https://mat.fsv.cv.ut.cz/vyuka/bakalari/eng/zs/	Ζ,ΖΓ	0
102FYI	Physics	7 7K	4
This is a basic p	hysics course for students of the study programmes Civil Engineering; Management and Economics in Construction. The course focus	ses on mechanics	and basic
thermodynamics.	The following areas are covered in the course: Mechanics of material points (particles) and deformable bodies. Discrete and continuou	s model of matter.	Kinematics
and dynamics	of a material point (particle). Mechanical force fields. Gravitational field. Mechanical vibrations. Material deformation. Elastic waves. Ad	oustics. Hydromed	hanics.
	Fundamentals of thermodynamics. Heat transfer.		
104YC2A	English 2	Z,ZK	2
English 2 Course	code: 104YC2A Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit and exam The aim of the compulsory	English course is	o enhance
the knowledge of	lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focu-	s is on professiona	l language
nroduce essential	I written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit at	and an examination	Literature.
	Horká Hana. Giormani Sandra. Martincová Petra. Nivenová Renata : Professional English for Civil Engineering (Units 6 10)	Entoraturo.
104YC2N	German 2	7.7K	2
The compulsory co	purse - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction indust	ry, understanding p	orofessional
texts, and learning	g the necessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Literative	ature: A.Hanáková,	J.Dressel:
	Deutsch im Bauwesen		
104YCA1	English 1	Z	1
English 1 Course o	code: 104Y CA1 Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit The aim of the compulsory English cours	e is to enhance the	knowledge
of lexis and gra	mmar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on profes	sional language (i.e	e., ESP -
technical style) and	d communicative competence within the construction industry. The course also seeks to teach students to read technical literature and is and to express themselves in writing on issues in their field of study. The end of course requirements are a credit Literature: Herké Hana	o be able to produc	ce essential
willen discourse a	Petra Nivenová Renata : Professional English for Civil Engineering (Units 1 - 5)	Giormani Sanura,	iviai tiricova
104YCN1	German 1	7	1
The compulsory co	burse - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction indust	ry, understanding p	orofessional
texts, and learning	g the necessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Literative	ature: A.Hanáková,	J.Dressel:
	Deutsch im Bauwesen		
105SVAI	Social Sciences and Architecture	Z,ZK	5
The subject comb	pines the teaching of several social sciences: economics and economic policies, political science, political philosophy and law, with an	overview of the de	velopment
of architecture. In t	the section devoted to economics, the basic categories of the market economy, the foundations of economic policy and the basic conce	pts of international	economics
are explained. In	reoretical interpretation is effectively combined with practical examples from economic reality. In the lectures devoted to law, a brief ov	erview of the devel	opment of
the Civil Code an	the Construction Act. In the political science lectures, the political development in ancient times is described in an engaging way the	e theory of the stat	e political
systems, democr	racy and totalitarianism are clarified. The series of lectures on the history of architecture and construction provides a comprehensive in	nterpretation of the	history of
-	architecture from antiquity to postmodernism and deconstruction.		-
122TSC	Construction Technology C	Z,ZK	6
123BAPM	Bachelor Project	Z	12
	In accordance with the thesis proposal	1	
123CHE	Chemistry	Z,ZK	4
Introduction to ge	eneral chemistry - chemical bond, compounds, reactions, equilibrium. Chemistry of environment - water, atmosphere, pedosphere. Che	emistry of building	materials -
inorganic binders,	glass, ceramic, metals, natural polymers, wood, synthetic polymers on C and Si basis. Introduction to degradation of building materia	Is and to analytical	chemistry.
123CHEM	Chemistry in Civil Engineering	Z,ZK	5
I his course comb	ines theoretical and practical skills in building chemistry, without chemical formulas and equations. It fouches on issues related to the	composition, prepa	iration, and
	Sustainable Building Materials	7.74	1
The aim of the cou	Usial lable Duilulity iviaterials	∠,∠r\ erav performance	of buildings
The course also	b looks at specific materials with a low carbon footprint. The course will not explicitly focus only on biomaterials, from a sustainability p	erspective it is nec	essary to
combine modern s	synthetic materials with purely eco-friendly ones. The aim of the course is for students to be able to appropriately combine modern mat	- rials with nurely n	atural ones,
to be able to min	· · · · · · · · · · · · · · · · · · ·	shalo what paroly h	
	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro	climate. Last but no	it least, to
	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling	climate. Last but no	t least, to
123MAOP	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection	KZ	2
123MAOP Building monume	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection ents consist from rather complicated collection of different materials and functions. It is important to obtain the information about the hi	klimate. Last but no 	2 chnologies
123MAOP Building monume	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro- assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection ents consist from rather complicated collection of different materials and functions. It is important to obtain the information about the hi and materials with respect to the monument protection principles. These information will be obtained during the course.	KZ	2 chnologies
123MAOP Building monume 123P02M	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection ents consist from rather complicated collection of different materials and functions. It is important to obtain the information about the hi and materials with respect to the monument protection principles. These information will be obtained during the course. Project 2M	KZ	2 chnologies 6
123MAOP Building monume 123P02M	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro- assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection ents consist from rather complicated collection of different materials and functions. It is important to obtain the information about the hi and materials with respect to the monument protection principles. These information will be obtained during the course. Project 2M In accordance with the project proposal. Building Materials	KZ KZ	2 chnologies 6
123MAOP Building monume 123P02M 123SH01 Building material	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro- assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection ents consist from rather complicated collection of different materials and functions. It is important to obtain the information about the hi and materials with respect to the monument protection principles. These information will be obtained during the course. Project 2M In accordance with the project proposal. Building Materials s - basis course. Clasification of the materials. Structure of materials. Main properties of materials. Application of materials in building	KZ KZ KZ KZ KZ KZ	2 chnologies 6 5 duction to
123MAOP Building monume 123P02M 123SH01 Building material	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro- assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection ents consist from rather complicated collection of different materials and functions. It is important to obtain the information about the hi and materials with respect to the monument protection principles. These information will be obtained during the course. Project 2M In accordance with the project proposal. S - basis course. Clasification of the materials. Structure of materials. Main properties of materials. Application of materials in building material testing.	KZ KZ KZ KZ KZ KZ KZ	2 chnologies 6 5 iduction to
123MAOP Building monume 123P02M 123SH01 Building material 123SSVM	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro- assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection ents consist from rather complicated collection of different materials and functions. It is important to obtain the information about the hi and materials with respect to the monument protection principles. These information will be obtained during the course. Project 2M In accordance with the project proposal. s - basis course. Clasification of the materials. Structure of materials. Main properties of materials. Application of materials in building material testing. Structural Analysis of Building Materials	KZ KZ KZ KZ KZ Z,ZK constructions. Intro	2 chnologies 6 5 iduction to 3
123MAOP Building monume 123P02M 123SH01 Building material 123SSVM Students are supp	initiate the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro- assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection ents consist from rather complicated collection of different materials and functions. It is important to obtain the information about the hi and materials with respect to the monument protection principles. These information will be obtained during the course. Project 2M In accordance with the project proposal. s - basis course. Clasification of the materials. Structure of materials. Main properties of materials. Application of materials in building material testing. Structural Analysis of Building Materials osed to get knowledge about relationships between structure of materials (chemical composition, microstructure) and their properties (in	KZ KZ KZ KZ KZ KZ KZ RC KZ RC RC RC KC	2 chnologies 6 5 iduction to 3 al, durability
123MAOP Building monume 123P02M 123SH01 Building material 123SSVM Students are supp etc.). The methods	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro- assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection ents consist from rather complicated collection of different materials and functions. It is important to obtain the information about the hi and materials with respect to the monument protection principles. These information will be obtained during the course. Project 2M In accordance with the project proposal. s - basis course. Clasification of the materials. Structure of materials. Main properties of materials. Application of materials in building material testing. Structural Analysis of Building Materials osed to get knowledge about relationships between structure of materials (chemical composition, microstructure) and their properties (s of materials characterization both chemical and physical will be explained. Particular important relations will be illustrated by help of	KZ KZ KZ KZ KZ KZ KZ KZ KZ Rechanical, therma	2 chnologies 6 5 duction to 3 al, durability range (and
123MAOP Building monume 123P02M 123SH01 Building material 123SSVM Students are supp etc.). The methods not or	imise the negative environmental impact of the construction industry, and to be able to create a pleasant interior with a healthy micro- assess materials in terms of their entire life cycle, i.e. production, maintenance and subsequent disposal or better recycling Materials for Monument Protection ents consist from rather complicated collection of different materials and functions. It is important to obtain the information about the hi and materials with respect to the monument protection principles. These information will be obtained during the course. Project 2M In accordance with the project proposal. s - basis course. Clasification of the materials. Structure of materials. Main properties of materials. Application of materials in building material testing. Structural Analysis of Building Materials osed to get knowledge about relationships between structure of materials (chemical composition, microstructure) and their properties (is s of materials characterization both chemical and physical will be explained. Particular important relations will be illustrated by help of hely) of building materials. Part of the lectures will be devoted individual groups of materials and their specific characterization technique	KZ KZ KZ KZ KZ KZ KZ KZ KZ KZ KZ kamples from the ss and properties.	2 chnologies 6 5 duction to 3 al, durability range (and

123VPMA	Influence of Environment on Building Materials	Z,ZK	7
The main objetcive	e of the subject is to introduce advanced techniques that are increasingly exploited for an assessment effects and impacts of building	materials exposed	to various
environment. The s	uccessful passing the course is supposed to provide deeper knowledge and inside to the problem in a complex way which is necessar	y for understanding	g the mutual
materials-environm	ient interactions. The students should be then able to solve particular problems independently using the most recent (advanced) metr	nods to reveal poss	SIDIE FISKS OF
4003475	materiais damage when exposed to various effects of environment.	_	
123YALP	Numerical Analysis of Transport Processes		2
Assessment of ny	promermal conditions in civil engineering problems. Basic description of porous space. Description of transport processes (neat and i the state and the civil engineering problems. Basic description of porous space. Description of transport processes (neat and i	moisture) in porous	s materiais.
Classification of ma	internancial moders (altrustor-, convection- and mixed type). Computational models for solution of transport problems in porous space ba	sic description and	application.
Introduction to stru	cture and composition of computer codes worl and HEMOT, solution of simple transport problems (near and moisture). Initial and b significance and impact to analysis of transport problems	oundary conditions	s principies,
100/0144	Significance and impact to analysis of transport problems.	7	
The source conton	Sinal i Dulluing widerials	∠ kali activated alum	∠ inociliaatoo
with respect to the	It is an introduction to the study of sophisticated building inaterials (shirk) in the basis of centeri-based materials and all materials properties on the study of sophisticated building inaterials properties and usability in practice. The subject for		w materials
with a higher adder	I value and enables the students to get acquainted with the latest trends in the building industry. The subject also touches on the multi-	criteria evaluation	of materials
with a higher added	with respect to the principles of sustainable development		ormaterials
1237476	Principles of Material Testing	7 7K	5
) v management Building materials requirements. Proprintes of Industrian resulting marking documentation Safety in labora	tories Testing and	evaluation
	of results. Statistical methods of evaluation	tiones. resting and	evaluation
1240010	Structural docian parciant 1	K7	6
124FUIC	 incrtural study of a smaller or medium-sized building for housing, administration, education, culture or sports into a detailed design of	f a building structu	o based on
static analysis inte	intervinal study of a similar of metulin-sized bulling to housing, administration, education, culture of sports mitor a detailed design of	and ontimalization	of a building
structures Design	action of bacuesaing and non-rotatuseaing elements and building physics, rocus on complex approach to practical design, analysis a elements of the load backing exclam proteining elements and building physics, rocus on complex approach to back	and optimalization of	ions dosign
of structures on	or variants of the load-bearing system, preinfiniary status analysis (calculation of boar-bearing elements) s status, countints, waits, etc), ca	culation of fourtual	noisture
	Elaboration of datailed drawings including floor and settings and protection again	ist water and son i	noisture.
12/001	Building Structures 1	7	4
The concept of des	in of building structures with a comprehensive consideration of the functional requirements imposed on individual elements. Require	ements for building	4 structures
structural system	sign of building structures with a comprehensive consideration of variable functional requirements imposed of individual elements. Requir	the structural desig	n of walls
columns) floor stru	interaction of elements, spatial elect of the structural years in bacterian bacterian structurals (interactions, requirements, principles of the structural years) and valids, worden caling structural years of the structural years of years and years of y	ncrete ceilings ste	al and steel
concret	colleges (unicolity, requirements, principles of the structural easign of valus, would reamings, removed concrete cernings, ceramic of e collings). Expansion ioints in load-bears on systems. Structural systems of sincle and multi-storey buildings, structural systems of log	nd-span structures	
1240012	Building Structures 21		
Staircases sloping	Duriuring Structures ZI	uilding foundations	- foundation
conditions types of	range, in statist - requirements, structure and material solutions, basics or spology, design principes, construction details, range, or	n against water wa	aterproofing
systems Structura	ternations, requirements, analyzing print a construction action structures thermal expansion comparison of differences in se	attlement construct	tion details
	Roof truss systems		dott dotano.
124STAO	Building Acoustics and Davlighting	7	3
124STAO	Building Acoustics and Daylighting Acoustics and Daylighting Acoustics and Daylighting	E Z E E E E E E E E E E E E E E E E E E	3 the options
124STAO Lighting technology for verifying the tim	Building Acoustics and Daylighting / deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirem e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the	Z nents and what are assessment of day	3 the options
124STAO Lighting technology for verifying the tim in the interiors of bu	Building Acoustics and Daylighting / deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requiren e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the uildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening.	Z nents and what are assessment of day In building acousti	3 the options /light mainly cs. students
124STAO Lighting technology for verifying the tim in the interiors of bu are first introduct	Building Acoustics and Daylighting v deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirent e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the uildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. ed to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of	Z nents and what are assessment of day In building acoustion the course deals w	3 the options /light mainly cs, students rith sound
124STAO Lighting technology for verifying the tim in the interiors of bu are first introduce propagation in free	Building Acoustics and Daylighting y deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirent e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the uildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. ed to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of and diffuse fields and sound propagation around barrier. Particular attention is paid to the sound insulation properties of partition str	Z nents and what are assessment of day In building acousti the course deals w ructures and sound	3 the options /light mainly cs, students rith sound absorbing
124STAO Lighting technology for verifying the tim in the interiors of bu are first introduce propagation in free	Building Acoustics and Daylighting y deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirent e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the uildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. ed to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of and diffuse fields and sound propagation around barrier. Particular attention is paid to the sound insulation properties of partition structures.	Z nents and what are assessment of day In building acousti the course deals w ructures and sound	3 the options /light mainly cs, students rith sound d absorbing
124STAO Lighting technology for verifying the tim in the interiors of bu are first introduce propagation in free 124STTT	Building Acoustics and Daylighting y deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirent e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the uildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. ed to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of a and diffuse fields and sound propagation around barrier. Particular attention is paid to the sound insulation properties of partition stu- structures. Hvgrothermal Performance of Buildings	Z nents and what are assessment of day In building acousti- the course deals w ructures and sound ZK	3 the options /light mainly cs, students rith sound d absorbing 3
124STAO Lighting technology for verifying the tim in the interiors of bu are first introduce propagation in free 124STTT 124YBM1	Building Acoustics and Daylighting y deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirent e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the uildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. ed to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of a and diffuse fields and sound propagation around barrier. Particular attention is paid to the sound insulation properties of partition stu- structures. Hygrothermal Performance of Building Building Information Modeling (BIM) for Building Structures 1	Z nents and what are assessment of day In building acoustive the course deals we ructures and sounce ZK ZK Z	3 the options /light mainly cs, students rith sound d absorbing 3 4
124STAO Lighting technology for verifying the tim in the interiors of bu are first introduce propagation in free 124STTT 124YBM1 Building informatic	Building Acoustics and Daylighting y deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirer e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the uildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. ed to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of a and diffuse fields and sound propagation around barrier. Particular attention is paid to the sound insulation properties of partition stu- structures. Hygrothermal Performance of Buildings Building Information Modeling (BIM) for Building Structures 1 n model (BIM) - basic principles of creating a building information model in the field of civil engineering, specifics of BIM modeling. The	Z nents and what are assessment of day In building acousti- the course deals w ructures and sound ZK Z he subject uses the	3 the options /light mainly cs, students rith sound d absorbing 3 4 e Autodesk
124STAO Lighting technology for verifying the tim in the interiors of bu are first introduce propagation in free 124STTT 124YBM1 Building informatic Revit software base	Building Acoustics and Daylighting y deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirer e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the uildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. ed to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of a and diffuse fields and sound propagation around barrier. Particular attention is paid to the sound insulation properties of partition stu- structures. Hygrothermal Performance of Buildings Building Information Modeling (BIM) for Building Structures 1 on model (BIM) - basic principles of creating a building information model in the field of civil engineering, specifics of BIM modeling. T a. Building information model in the life cycle of the building - information required during the design part, during construction and duri	Z nents and what are assessment of day In building acousti- the course deals w ructures and sound ZK Z he subject uses the ng use of the finish	3 the options /light mainly cs, students ith sound d absorbing 3 4 e Autodesk eed building.
124STAO Lighting technology for verifying the tim in the interiors of bu are first introduce propagation in free 124STTT 124YBM1 Building informatic Revit software base 124YDRS	Building Acoustics and Daylighting y deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirer e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the uildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. ed to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of a and diffuse fields and sound propagation around barrier. Particular attention is paid to the sound insulation properties of partition stu- structures. Hygrothermal Performance of Buildings Building Information Modeling (BIM) for Building Structures 1 on model (BIM) - basic principles of creating a building information model in the field of civil engineering, specifics of BIM modeling. T e. Building information model in the life cycle of the building - information required during the design part, during construction and duri Timber Buildings	Z nents and what are assessment of day In building acousti- the course deals w ructures and sound ZK Z he subject uses the ng use of the finish Z	3 the options /light mainly cs, students ith sound d absorbing 3 4 e Autodesk ied building. 2
124STAO Lighting technology for verifying the tim in the interiors of bu are first introduce propagation in free 124STTT 124YBM1 Building informatic Revit software base 124YDRS The aim is to prese	Building Acoustics and Daylighting Use and by the second part of the results with possible boundary conditions. The second part deals with the Use of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the Use of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the Use of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the Use of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the Use of the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of the and diffuse fields and sound propagation around barrier. Particular attention is paid to the sound insulation properties of partition structures. Hygrothermal Performance of Buildings Building Information Modeling (BIM) for Building Structures 1 on model (BIM) - basic principles of creating a building information model in the field of civil engineering, specifics of BIM modeling. T e. Building information model in the life cycle of the building - information required during the design part, during construction and duri Timber Buildings nt a complex overview on energy efficient timber structures Basic theoretical and design principals are presented. The lectures are for	Z nents and what are assessment of day In building acousti- the course deals w ructures and sound ZK Z he subject uses the ng use of the finish Z used on following to	3 the options /light mainly cs, students ith sound d absorbing 3 4 e Autodesk ied building. 2 echnologies
124STAO Lighting technology for verifying the tim in the interiors of bu are first introduce propagation in free <u>124STTT</u> <u>124YBM1</u> Building informatic Revit software base <u>124YDRS</u> The aim is to prese of timber structures	Building Acoustics and Daylighting / deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirer e of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the uildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. ed to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The next part of is and diffuse fields and sound propagation around barrier. Particular attention is paid to the sound insulation properties of partition structures. Hygrothermal Performance of Buildings Building Information Modeling (BIM) for Building Structures 1 on model (BIM) - basic principles of creating a building information model in the field of civil engineering, specifics of BIM modeling. T e. Building information model in the life cycle of the building - information required during the design part, during construction and duri Timber Buildings nt a complex overview on energy efficient timber structures. Basic theoretical and design principals are presented. The lectures are foc s: (i) beavy timber skeleton systems. (ii) light timber structures based on 2x4. (iii) CLT. (iv) log house. All technologies of timber structures	Z nents and what are assessment of day In building acoustic the course deals w ructures and sound ZK Z he subject uses the ng use of the finish Z used on following to res are presented	3 the options /light mainly cs, students ith sound d absorbing 3 4 e Autodesk eed building. 2 echnologies in structural
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126EKMN	Economics and Management	Z,ZK	7
The aim of the cou	urse is to provide students with an introduction to economics and management in the construction industry and to familiarize them wi	th basic economic	terms and
their practical ap	plications. Students will be prepared to solve basic construction-management problems in the construction industry. They will acquire	basic information a	about the
method of pricing of	construction works and master the basic methods of managing a construction company. Emphasis is placed on understanding the pri	nciple of economic	thinking in
	relation to the construction industry.		
126STMN	Construction Management	Z,ZK	6
Overview of selecte	ed concepts. Methods to support project management. Legal standards, SN and ISO standards. The essential aspects of Project M	anagement. Constr	uction as a
project product. Ol	pjectives, strategies, phases and surroundings of the construction project. Project manager role. Purchases and contracts in the project	ect. Quality manage	ement, risk
management. F	inancial management and project evaluation. Feasibility study. Cost and resource management. Change procedures. The Act on Spa	atial Planning and E	Building
Regulations, the	Act on the Awarding of Public Contracts, and the definition of terms. Business obligation relationships, the conclusion of contracts, the	eir form, and use c	r general
business condition	is business public competition, its initiatice on the obligations of participants. Securing the contract contractual penalty, guarantial contract for work, and contract of the contract contract for work and content of the contract contract contract for work.	tract	tract types
400000	In construction - are contract for the conclusion of a future contract, purchase contract, contract for work, and content of the con		<i>г</i>
12900P	Preservation and Restoration of Monuments	Z,ZK	5
132ANKC	Analysis of Structures	,ZK	5
Analyses of statica	ally determinate and statically/deformable indeterminate structures, concerning live loads solution, stresses in thin-wall beams, analy formulation of deformation method, principles of EEM, medals for a beam on electic foundation and stability of structures.	sis of walls and pla	tes, matrix
100000	Strongth of Metariolo	7 71/	6
IJZPRPE Eurodomontolo of th	Siterigin of Materials		0 baada abaal l
buckling long	the detrained sources and stant of straight beams subjected to be finding and nee torston, dumlate plastic capacity of a memory of elasticity, stress and strain of straight beams subjected to be finding and nee torston, dumlate plastic capacity of a memory the store is as the strain strain is 20 east	in um plates and	
	tris of straight compression members, basic assumptions, quantities, and equations describing the stress and strain state in 5D cont		e c
1325IVIU1	STRUCTURAL INECRIANICS 1		0 limonoional
Concurrent lorces,	torce systems acting on rigid bodies in space/plane, moment of a force about a point and line. Supports of a rigid body, reaction forces	s. Compound two-c	IIIIensionai
122SM02	Structures. Reaction forces appiying the principle of virtual work.	774	6
I JZ JIVIUZ	Cliuciui al IVICUI al IVICUI al IVICUI at IVICUI as and compound two-dimensional structures. Multiavially loaded captilever, De	∠,∠r∖ finition of normal s	tress and
nternariorces da	agrants of simple statically determinate plane structures and compound two-dimensional structures. Multiaxially loaded calificever, be	ents of inertia	
132SM3	Structural Machanics 3	774	5
Deformation and fo	Stituctural interchantations of the statically indetarminate heaves frames and trues structures Calculations and internal forces on statically indetarminate heaves frames.	$\Sigma, \Sigma I$	of beams
Deformation and to	frames, and truss structures using the principle of virtual works		s or bearing,
132VNMI	Numerical Methods in Engineering Practice	7	2
The course is focus	ed on basic numerical methods for solving large sets of algebraic equations and boundary or initial value problems. In the context of		∽ s the finite
	difference and finite element methods are explained from the viewpoints of an engineering scientist and a mathematician.		io, ino iniito
133BK01	Concrete and Masonry Structures 1	7 7K	6
The subject is focu	sed on the design of concrete elements and constructions of multi-storey buildings - it follows on from the subject Fundamentals of s	Structural Design T	he content
of the course is the	addition and generalization of procedures for verifying the load-bearing capacity of reinforced concrete structural elements for cases of	bending, shear, a c	ombination
of biaxial bending	and normal force, designing elements stressed by torsion, punching shear, assessment of slender compressed elements. Design p	rocedures are disc	ussed for
	individual types of structures, including the choice of suitable calculation models and calculation methods and reinforcement prin	ciples.	
133BK02	Concrete and Masonry Structures 2	Z,ZK	7
This course builds d	on the courses NNK and BK01 and widens the knowledge to the necessary minimum for the bachalor studium branches C and K. 13.	Masonry structures	- subjected
to compression,	bending, shear, reinforced masonry, strenghtening of masonry structures 4 6. Design of concrete structures to serviceability limit st	ates: stress limitation	on, crack
development and	crack width limitation, deflections, application on waterproof structures 78. Introduction to pre-stressed concrete: design of pre-stres	sing, losses of pre-	stressing,
technology 912. P	re-cast concrete structures 13. Bridges: nomenclature in bridges, cross-section arrangement, loading, construction methods, Introdu	ction to engineering	g structures
133NNKB	Fundamentals of Structural Design - Concrete	Z,ZK	4
The content of the	e subject are the basics of load-bearing concrete structures design and the design methodology according to valid standards, includi	ng the determination	on of load
effects. The pro	perties of concrete, the production and testing of concrete, the properties of concrete reinforcement and its interaction with concrete	are discussed. Des	ign and
reinforcement of co	oncrete structures for basic types of loading (bending, shear, pressure) are the main part of this course. An introduction to serviceabi	lity limit states is in	the end of
this course. Th	e course follows the introductory subject of Civil Engineering program (Structural Mechanics, Elasticity and Strength, Building Mater	ials, Building Struc	tures).
133YMVB	Concrete and Masonry Structures 1	Z	2
The content of the	subject will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Introdu	ction to nonlinear r	nodeling of
reinforced concr	ete structures. Preparation of input data for numerical models. Design of structures using MAILAB. Presentation of selected program	s for the design of	concrete
	structures.	7	0
	Failures and Renabilitation of Concrete Structures		2
The course focuse	is on the description of failures of concrete structures, explanation of the causes of these failures and the design of remedial measure failures and the description of failures of concrete structures, explanation of the causes of these failures and the description of the effect of the second structures of the second s	es. Methods of stre	ngtnening
existing concrete	foundation structures are discussed. The course appropriately combines theoretical approaches with common practice	ung moment and s	neal, and
	Design of Supporting Structures Leonal	771/	2
The basics of design	Design of Supporting Structures - Steel	∠,∠n offacts design diffa	J roncos duo
The basics of desig	to the specific properties of individual materials	enecis, design dine	iences due
	Stal and Timber Structures	7.74	Б
	oteet and remeasing on the strength str	$\Sigma, \Sigma \Gamma$	beol - poi
protection	nutilization Timber - loadings material propertie, limit states methodology design, connections, bracings, protection of structural tim	ber timber bridge	nig ioda,
	Timber and Sustainable Construction	7	
Introduction to su	stainable use of wood in construction with respect to previous courses. Theoretical methods of structural design and design of structural	res composed fror	n different
	materials. Principles of strengthening and repairing of timber structures.	nee competed net	
134YNKS	Glass Structures	7	2
The course is inten	ding to introduce the students the field of structural applications of glass and to give them some specific skills for calculation and detailing	ng of for basic glass	structures:
panes beams and	fins, columns and walls, point-supported glass, as well as for glazing systems such as glass facades, canopies and roofs, stairs an	d floors. On this pu	pose the
properties of glas	s as structural material will be presented in comparison with other basic building materials, together with selected examples of glass	/glazing application	s. Design
details and connect	ing technology, relevant technical regulations, specification and current methods applied in design will be described. Worked example	es will accompany	he lectures
	for better understanding, and design project will help to fix specific knowledge.		
134YTSK	Thin-Walled and Composite Structures	Z	2
		to composito is als	

		_			
135GM01	Geomechanics 1	Z	3		
The course focuses	s on the understanding of basic geological laws and principles in relation to architecture, civil engineering and urban planning. Empha	sis is placed on ex	plaining the		
influence of geolog	ical processes, both endogenous and exogenous, on the rock environment and how the geological situation affects the design of struc	tures and their inte	eraction with		
the rock environme	ent. At the same time, attention is paid to the technical properties of rocks with regard to their practical applications. The course also i	ncludes a brief intr	oduction to		
	the regional geology of the Czech Republic.				
135GM2I	Geomechanics 2I	Z,ZK	5		
Formation of so	ils, basic properties of soils, water in soil, strength and deformation properties of soils and their determination, improvement of soil pu	roperties, applicati	on tasks		
136DSUZ	Transport Structures and Urban Planning	Z,ZK	7		
The course 136DS	UZ is composed of 3 issues, which build on each other and complement each other. These are the area of transport structures (roads	and rail transport -	scope 3+1)		
and the area of urb	an planning and spatial planning (scope 2+0). Unlike the road construction and railroad construction sections, the urban planning se	ction does not end	with credit.		
Transport Structure	s - Roads (R): Introduction to basic terminology in the part of roads, history. Road Act and related legislative and technical regulation:	s, their impact on r	oad design.		
Design categories of roads and motorways, design speed, directional and elevation design of routes, cross-sectional layout of roads and motorways, earthwork - dimensions, shapes,					
drainage. Urban	roads, division and marking, definition of MK space, differences in design, operation and equipment. Carriageway, division, design p	rinciples. Safety eq	uipment,		
junctions and crossings. Transport Structures - Rail transport (RT): Introduction to basic terminology, Issues of railway crossings from the point of view of security, design and operation.					
Tram transport - history, principles of tram track construction, interaction with the environment. Metro as a system of urban rail transport. Basic principles and parameters, metro lines.					
Railway construction	ns - an introduction to the design and construction of a railway track in the conditions of the Czech Republic, the basic elements of the	railway superstruc	ture. Spatial		
	Planning (SP): Teaching spatial planning and urban planning, spatial planning tools and procedures for their acquisition.				
141HYA	Hydraulics	Z,ZK	5		
A course deals with	n issues of hydrostatics and hydrodynamics with aiming at civil engineering applications. There are analysed tasks related to hydrosta	atic and hydrodyna	mic loading		
	of structures, pipeline flow, open channel flow and groundwater flow.				
142VIZP	Water and Environmental Engineering	Z,ZK	4		
During the teaching	g semester, students are introduced to the fields of water engineering, water management and environmental engineering. In particul	lar, emphasis is pla	aced on the		
practical aspects of	water and environmental engineering in close relation to other branches of civil engineering. The course is taught in the form of lectu	ires and tutorials.	The lectures		
are divided them	atically into 20 blocks according to the different branches of the discipline (13 times water engineering and 7 times environmental en	gineering). In the e	exercises,		
students work on	basic problems in the field of hydrology, water supply and water structures, especially dams, hydropower and flood issues. All 4 "wat	er" departments of	K14x are		
	involved in teaching the course.				
154SG01	Land Surveying in Civil Engineering	Z,ZK	6		
The shape and si	ze of the Earth, substitutive surfaces, cartographic projections Horizontal and vertical control, coordinate calculations Quality control,	deviations and tol	erations in		
build-up Angle an	d distance measurements Heighting measurements Other geodetic methods in build-up (GNSS, DPZ,) Photogrammetry and laser	scanning Themati	c mapping		
and present state	documentation Geodetic works in build-up State map series of CR and thematic maps for build-up Geographic information systems a	and spatial plannin	g Cadastre		
	of real estates Laws and decrees for geodesy and build-up in Czech Republic				
210BAPM	Bachelor Project	Z	12		
210DIMA	Diagnostics of materials	Z,ZK	6		
Review of tools for	r experimental investigation of material, thermal and moisture properties of basic building materials, destructive and nondestructive t	ests of material pa	arameters,		
	accredited tests.				
210DIST	Diagnostics of Buildings	Z,ZK	5		
Basics of experime	ental measurement and instrumentation of testing structures. Theory of experimental work, measurements, data exploatation and pro	cessing of results.	Structures		
and principal beha	wor of testing devices, tenzometers, inductive senzors etc. Static and dynamic loading testing of structures and their parts. Destructive	ve and nondestruc	tive testing		
methods. Diagnost	ics of civil engineering structures. Excursion on site or on the building structure. Concept of management of quality, system of quality	of the building firm	ns, phase of		
control of the qua	lity of the projects, building process and finished structures. Acreditation process of the testing laboratories. Certification of the qualit	y systems of produ	uction and		
	certification of products.				
210P02M	Project 2M	KZ	6		
TV1	Physical Education	Z	0		
TV2	Physical Education	Z	0		

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