Study plan

Name of study plan: Civil Engineering

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: valid from 2023/24

Name of the block: Compulsory courses Minimal number of credits of the block: 214 The role of the block: Z

Code of the group: BD20200100 Name of the group: Civil Engineering, 1st semester 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 8 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
101CG01	Constructive Geometry Hana Lakomá, Jozef Bobok Hana Lakomá Hana Lakomá (Gar.)	Z,ZK	5	2P+2C	Z	Z
101MT01	Mathematics 1 Jozef Bobok, Yuliya Namlyeyeva Yuliya Namlyeyeva Yuliya Namlyeyeva (Gar.)	Z,ZK	6	2P+3C	Z	Z
123BM01	Building Materials Václav Ko í, Alena Vimmrová Alena Vimmrová Alena Vimmrová (Gar.)	Z,ZK	5	2P+2C	Z	Z
126BIME	BIM Robert Bouška, Petr Mat jka, Josef Žák Robert Bouška Josef Žák (Gar.)	Z	1	1P+1C	Z	Z
132ST01	Structural Mechanics 1 Michal Šejnoha Michal Šejnoha (Gar.)	Z,ZK	6	2P+2C	Z	Z
154FS01	Fieldwork Surveying Tomáš K emen Tomáš K emen (Gar.)	Z,ZK	6	2P+3C	Z	Z
104CFL1	Czech/Foreign Language 1 Tereza Novotná Sandra Giormani Svatava Boboková Bartíková (Gar.)	Z	1	2C	Z	Z
TV1	Physical Education	Z	0	0+2	Z	Z

Characteristics of the courses of this group of Study Plan: Code=BD20200100 Name=Civil Engineering, 1st semester

101CG01 Constructive Geometry	Z,ZK	5					
Description of space and main methods of the projection - multiview projection as a basis for orientation in 3D CAD systems, axonometry, linear perspective. Surfaces in building							
practice - graphic law, geometric characteristic and image in appropriate projection, realization and application. Namely: Cylinders and Cones, Hyperboloid of Revolution, Helical							
Surfaces, Quadrics. Visualization of objects in 3D program SketchUp. Curves in building practice - types of mathematical description.							
101MT01 Mathematics 1	Z,ZK	6					
https://mat.fsv.cvut.cz/vyuka/bakalari/eng/zs/MT01/syllabus							
123BM01 Building Materials	Z,ZK	5					
Main aim of course is giving basic information about the structure and properties of the building materials and about their testing methods on the bas	se of the contemp	orary knowledge					
and materials engineering approach. The laboratory work (exercise) consists in the testing of building materials from the point of view of physically - ct	nemical properties	and their quality					
control.							
126BIME BIM	Z	1					
The course is focused on basic knowledge in the field of building information modeling (BIM) in theoretical and practical areas, usable across various co	onstruction industr	y specializations					
and fields. Students will be acquainted not only with the basic knowledge of BIM (on the theoretical and practical level), data formats, IT systems typ	oical for the buildin	ig industry, but					
also with the context of BIM in the current construction industry in relation to the whole project life cycle and its specifics (delivery, expert focus, con	struction projects	phases, etc.)					
Theoretical knowledge is complemented by practical exercises aimed at mastering and understanding the basic principles of object-oriented parametric modeling.							
132ST01 Structural Mechanics 1	Z,ZK	6					
The principal objective of the course is to familiarize students with basic principles of mechanics such as equilibrium and equivalency applied to statically determined structures							

154FS01	Fieldwork Surveying	Z,ZK	6			
Introduction to surveyir	g, basic geodetic calculations, evaluation of precision and accuracy of a measurement, theory of errors, instrumentation, top	ographic survey, a	angular and			
distance measurements, determination of heights, photogrammetry, laser scanning, mapping, setting-out in construction, surveying for monitoring of displacements, cadastre of real						
estates.	estates.					
104CFL1	Czech/Foreign Language 1	Z	1			
Czech courses are inte	nded for international students. The course is aimed to provide training in basic language means necessary for communication	, on in everyday situ	uations. After			
successful completion	the student gains a credit. End of course level according to CEFR: A1 (Beginners) A2 (Elementary) Course code: 104 CFL1 Du	ration: 2 hours / 1	semester CEFR			
Level: A1 Literature: Hand-outs given by teacher; Lída Holá: Czech Step by Step 1 For further information: sandra.giormani@fsv.cvut.cz						
TV1	Physical Education	Z	0			

Code of the group: BD20200200

Name of the group: Civil Engineering, 2nd semester

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 8 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
101MT02	Mathematics 2 Jozef Bobok, Yuliya Namlyeyeva, Iva Malechová Yuliya Namlyeyeva Yuliya Namlyeyeva (Gar.)	Z,ZK	6	2P+3C	L	Z
102PHD	Physics Ji í Konfršt Ji í Konfršt Ji í Konfršt (Gar.)	Z,ZK	4	3P+1C	L	Z
105SOSC	Social Sciences Jitka Cirklová, Jan Gazda Jitka Cirklová Jitka Cirklová (Gar.)	Z,ZK	5	4P+1C	L	Z
123BUC	Chemistry Jana Náb Iková, Martin Keppert Martin Keppert Martin Keppert (Gar.)	Z,ZK	4	3P+1C	L	Z
132ST02	Structural Mechanics 2 Jan Vorel Jan Vorel Jan Vorel (Gar.)	Z,ZK	6	2P+2C	L	Z
135SOM1	Soil Mechanics 1 Tomáš Štor, Tomáš Hroch Kate ina Ková ová Tomáš Štor (Gar.)	Z	3	2P+1C	L	Z
104CL2	Czech/Foreign Language 2 Svatava Boboková Bartíková, Nad žda Bonaventurová Sandra Giormani Svatava Boboková Bartíková (Gar.)	Z,ZK	2	2C	L	Z
TV2	Physical Education	Z	0	0+2	L	Z

Characteristics of the courses of this group of Study Plan: Code=BD20200200 Name=Civil Engineering, 2nd semester

101MT02 Mathematics 2	Z,ZK	6					
https://mat.fsv.cvut.cz/vyuka/bakalari/eng/ls/MT02/							
102PHD Physics	Z,ZK	4					
This is a basic physics course in the English language for students of the study programmes Civil Engineering; Management and Economics in Construct	ction. The cou	rse is also open					
to students from other CTU faculties within the Erasmus programmes. The course focuses on mechanics and basic thermodynamics. The following areas are covered in the course:							
Mechanics of material points (particles) and deformable bodies. Discrete and continuous model of matter. Kinematics and dynamics of a material point (particle). Mechanical force							
fields. Gravitational field. Mechanical vibrations. Material deformation. Elastic waves. Acoustics. Hydromechanics. Fundamentals of thermodynamics. Hea	at transfer.						
105SOSC Social Sciences	Z,ZK	5					
The course Social Sciences encompasses a broader, multidisciplinary, framework (sociology, economy, marketing, politology, social anthropology, and m	,	•					
the course covers basic economic terms, demand, supply, market equilibrium, and rational consumer choice. Firm and production functions in the short and	0	•					
and short-run costs are discussed. Market structures and markets for productive inputs and public goods are other topics. Also presented are macroecon	00 0						
basics of macroeconomics. Social theories presented in the course are considered an analytical reflection on the concepts and formal cognitive schemes o							
will get familiar with social theories/paradigms that are used to study and interpret social phenomena. Seminars will focus on everyday life, its interactions,							
often interfere in negotiations about the direction and goals of society. The course also provides students with conceptual tools for their own further studie							
123BUC Chemistry	Z,ZK	4					
Lectures deal with the basic chemical principles in the branches as general, inorganic, organic and physical chemistry. Instances of topics are composition	on, properties	and behaviour					
of water, soil, air, wood, macromolecular compounds, inorganic binders, metals and other materials used in civil engineering.	,						
132ST02 Structural Mechanics 2	Z,ZK	6					
The principal objective of the course is to familiarise students with the application of basic principles of mechanics to the determination of the distribution	of internal for	rces in statically					
determined structures, cross-sectional properties and the elementary definition of stress.							
135SOM1 Soil Mechanics 1	Z	3					
The course focuses on the understanding of basic geological laws and principles in relation to architecture, civil engineering and urban planning. Emphase	•						
influence of geological processes, both endogenous and exogenous, on the rock environment and how the geological situation affects the design of structure							
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 inc	cludes a brief	introduction to					
the regional geology of the Czech Republic.							
104CL2 Czech/Foreign Language 2	Z,ZK	2					
This course accents the communicative approach to language teaching. Therefore, individual lessons are primarily centred around an underlying topic the	nat is complen	nented by the					
communicative language function. Further appropriate language aspects (i.e. grammar, lexis, pronunciation, skills) arise from the given communicative need. Basic communication in							
common situations is further enriched by communicative skills in a more specific university environment. The Czech course is intended for students in the English Programme, who							
have already gained some basic knowledge in the Czech language, i.e. they are at A1/A2 level. The course is aimed to provide training in language means necessary for communication							
have already gained some basic knowledge in the Czech language, i.e. they are at A1/A2 level. The course is aimed to provide training in language means in everyday situations and at university. After successful completion the student gains a credit and exam. End of course level according to CEFR: A2	necessary for	communication					

Code of the group: BD20200300 Name of the group: Civil Engineering, 3rd semester 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
101MT03	Mathematics 3 Jozef Bobok, Yuliya Namlyeyeva, Ond ej Zindulka, Martin Hála Yuliya Namlyeyeva Yuliya Namlyeyeva (Gar.)	Z,ZK	6	3P+2C	Z	Z
124BSD1	Building Structures 1 Eva Burgetová, Hana Gattermayerová Ctislav Fiala Hana Gattermayerová (Gar.)	Z	4	2P+1C	Z	Z
132TELA	Theory of Elasticity Jan Vorel Jan Vorel Jan Vorel (Gar.)	Z,ZK	6	3P+2C	Z	Z
135SOM2	Soil Mechanics 2 Jan Záleský, Daniel Jirásko Daniel Jirásko Jan Záleský (Gar.)	Z,ZK	5	2P+1C	Z	Z
141HYAE	Hydraulics Václav Matoušek Václav Matoušek (Gar.)	Z,ZK	5	2P+2C	Z	Z
142WEE	Water and Environmental Engineering Petr Nowak, Petr Sklená, David Zumr, Václav David, Tomáš Dostál, Martina Sobotková, Martin Šanda, Milan Zukal, Ladislav Satrapa, Milan Zukal Milan Zukal (Gar.)	Z,ZK	4	3P+1C	Z	Z

Characteristics of the courses of this group of Study Plan: Code=BD20200300 Name=Civil Engineering, 3rd semester

101MT03	Mathematics 3	Z,ZK	6		
https://mat.fsv.cvut.cz/v	yuka/bakalari/eng/zs/MT03/syllabus				
124BSD1	Building Structures 1	Z	4		
Introducing in civil engin	neering, basic elements and structures				
132TELA	Theory of Elasticity	Z,ZK	6		
Basic assumptions and	basic equations of theory of elasticity. Assumptions on deformation and stress distribution in beams. Tension and compression	, pure bending, b	ending moments		
in two planes, combinat	ion of axial and bending stresses. Core of a cross section. Differential equation of elasticity curve. Shear stresses in flexural b	eams. Free torsio	n. Elastic-plastic		
and plastic state of cros	s-section. Stability of beams. 2D problems, walls and plates.				
135SOM2	Soil Mechanics 2	Z,ZK	5		
Basic course of Soil Me	chanics for Civil Engineers. Introduction to origin of soils, soil description, multi-phase media behaviour, soil classification, cor	npressibility and s	hear resistance,		
soil testing, earth press	ures, assessment of stability and deformation of soil mass, applications in civil engineering.				
141HYAE	Hydraulics	Z,ZK	5		
Water as medium and r	atural resource, water in civil engineering. Physical properties of fluids/liquids. Hydrostatics - pressures, Pascal's law, hydros	tatic forces, buoya	ancy force.		
Fundamentals of hydro	dynamics - flow quantities, regimes and types of flow, hydraulic resistance, basic hydrodynamic equations. Flow in pressurize	d pipes - head los	ss due to friction		
and obstacles, simple h	ydraulic calculations. Pump-pipe systems. Flow in open channels - steady uniform flow, hydraulic design of open channel, su	bcritical, critical a	nd supercritical		
	nd longitudinal profiles of water level, hydraulic jump. Hydraulics of structures - outflow from orifice, overflow on weirs and sp		gh bridge and		
culvert. Flow around obstacles, impact force of flows and jets, drag force. Measurement of discharge. Groundwater flow - types and effects, Darcy's law, seepage.					
142WEE	Water and Environmental Engineering	Z,ZK	4		
In the course students will obtain basic knowledge about water and environmental management. The course focuses on practical knowledge with close relation to other disciplines of					
civil engineering. The su	ibject is taught in form of lectures and tutorials. The stress is laid on presentations with case studies (positive and negative) usi	ng all audio visua	I forms. Lectures		
of this course are divide	ed into two parts Water Engineering and Environmental Engineering.				

Code of the group: BD20200400

Name of the group: Civil Engineering, 4th semester

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
124BSD2	Building Structures 2 Eva Burgetová, Hana Gattermayerová Malila Noori Eva Burgetová (Gar.)	Z,ZK	5	2P+1C	L	Z
126ECM	Economics and Management Renáta Schneiderová Heralová, Aleš Tomek, Radan Tomek Aleš Tomek Aleš Tomek (Gar.)	Z,ZK	7	4P+2C	L	Z
132SM3E	Structural Mechanics 3 Jan Zeman Jan Zeman Jan Zeman (Gar.)	Z,ZK	5	2P+2C	L	Z

133FSTC	Fundamentals of Structural Design - Concrete Petr Štemberk, Yuliia Khmurovska Petr Štemberk Petr Štemberk (Gar.)	Z,ZK	4	2P+1C	L	Z
134FSTT	Fundamentals of Structural Design - Steel Zden k Sokol Zden k Sokol Zden k Sokol (Gar.)	Z,ZK	3	2P+1C	L	Z
136TSUP	I36TSUPTransp. Structures and Urban Planning Leoš Horní ek, Jan Valentin, Ji í Kugl, Václav Jetel, Ivan Horký Jan Valentin Jan Valentin (Gar.)Z,ZK6					Z
Characteristics of the	courses of this group of Study Plan: Code=BD20200400 Name	=Civil Engir	neering,	4th seme	ster	
Staircases, sloping ramps, lif	ilding Structures 2 it shafts - structural and material solutions, statical principles, load, requirements. Buildi sement - statical principles, load, requirements, waterproofing. Expansion joints of bear	•		on of subsoil		
A-Z of construction engineer concentrates on all major top management, cost control, ri Building Industry Game (BIG the role of contractors, comp	conomics and Management ing and management both at the corporate and project level. All participants, processes pics of company and project management, e.g. business development and marketing, b sk management, etc. Lectures are based on the real practice experience of all course's by will be played by all course participants through the whole semester (a computer sim eting in a market with variable demand for construction work). In this online game, development and the played by all the demand for construction work).	idding, planning s lecturers and v ulation of a reali	and contro arious case stic busines	uction industr Iling of all vita studies are s s environme	al processe studied and nt where pa	es, financial d solved. Online articipants play
132SM3E Str	ontractors, managing both, their companies and projects. uctural Mechanics 3			Z	"ZK	5
	ninate structures by the slope-deflection method and the force method. Principle of virt	ual work.				
The course is focused on des (bending, shear, combination production and material prop	ndamentals of Structural Design - Concrete sign of concrete structures based on ultimate state design method. The focal topics are of normal forces and bending moments) including determination of load effects; introd erties of concrete and their testing, properties of steel reinforcement and interaction of r sity, Building materials, Building structures.	luction to service	eability limit	ete members states. Other	topics are	technology of
The course is focused on dea	ndamentals of Structural Design - Steel sign of steel, steel and concrete concrete composite load-bearing structures. The stude ural bolted and welded connections.	ents will learn ho	w to desigr	1	,ZK uctural eler	3 ments (beams,
Introduction to the transporta construction. Noise and anti- pavement structure functions	nsp. Structures and Urban Planning tion engineering with the focus on road and railroad infrastructure. Rail transport and it noise measures. Road design and principles, Environmental aspects of road infrastruc s. Crossings and junctions. Construction materials for highway and rail road engineering ing and environmental, economic, culture-social, space and operational aspects of land	ture. Pavement of g. Introduction to	design (thic urban zoni	tages. Railwa kness design ng and plann) and princi	iples of the ng urbanism.

Code of the group: BD20200500

Name of the group: Civil Engineering, 5th semester

Requirement credits in the group: In this group you have to gain at least 30 credits

Requirement courses in the group: In this group you have to complete at least 5 courses

Credits in the group: 30

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
124BPH	Building Physics Ji í Nová ek, Zbyn k Svoboda Ji í Nová ek Zbyn k Svoboda (Gar.)	Z,ZK	6	3P+2C	Z	Z
132STA	Structural Analysis Jan Zeman Jan Zeman Jan Zeman (Gar.)	Z,ZK	5	2P+2C	Z	Z
133CM01	Concrete and Masonry Structures 1 Petr Bílý, Iva Broukalová Iva Broukalová Iva Broukalová (Gar.)	Z,ZK	6	3P+2C	Z	Z
134ST01	Steel Structures Zden k Sokol Zden k Sokol Zden k Sokol (Gar.)	Z,ZK	6	3P+2C	Z	Z
135FS01	Foundation of Structures Jan Záleský, Jan Kos Daniel Jirásko Jan Záleský (Gar.)	Z,ZK	7	3P+3C	Z	Z

Characteristics of the courses of this group of Study Plan: Code=BD20200500 Name=Civil Engineering, 5th semester

124BPH	Building Physics	Z,ZK	6				
Basic review of the thermal protection of buildings, building acoustics and daylighting (heat transfer, thermal conductivity, thermal resistence and thermal transmitance, multidimensional							
heat transfer, thermal b	heat transfer, thermal bridges and thermal joints, difusion of water vapour and vapour condensation, mould growth, transient heat transfer, risk of overheating, low-energy, passive and						
zero-energy buildings,	sound in the living and working environment, perception and description of sound: intensity, frequency, time factor, information	n value, interindiv	idual sensitivity,				
point, line and plane so	und sources, sound power level, directivity factor, sound propagation in the free field conditions, sound propagation in the diff	use field condition	ns, definable and				
indefinable sounds, airl	porne and structureborne sound, definition, measurement, evaluation and the limits, sound reduction index of double structur	es, mass-air-mas	s resonance,				
standing waves in a car	vity, definition, measurement, evaluation, the sun and the environment, basics of spherical astronomy, horizons and equatoria	al coordinates, cal	lculating of the				
sun azimuth and altitud	e, daylight and lighting, visual perception, basics of photometry, daylight factor and calculation models of the sky, methods fo	r determining day	light factor,				
influence of environment	t on a daylighting: photometric characteristics of shielding barriers, technical characteristics of lighting openings).						
132STA	Structural Analysis	Z,ZK	5				
Extreme effects of live load, influence lines. Matrix form of the direct stiffness method and its computer implementation for trusses and frames. Two-dimensional elasticity and its finite							
element treatment. Gov	element treatment. Governing equations of thin plates and their finite element treatment.						

133CM01	Concrete and Masonry Structures 1	Z,ZK	6				
Structural design of concrete structures; prerequisite course 133FSTC Fundamentals of Structural Design - Concrete. Calculation models, methods of analysis (focus on simplified and							
empirical methods), reinforcing and detailing for particular structures and structural elements: slabs, frames, shear walls, staircase, basement and retaining walls, foundations.							
134ST01	Steel Structures	Z,ZK	6				
The purpose of this cou	rse is to learn basic principles and general arrangement and structural detailing of multi-storey buildings and single-storey bu	uildings. Brief infor	rmation about				
structural analysis, load	, design codes and structural stability is also given. The course gives some examples of large span, tall and industrial buildin	gs.					
135FS01	Foundation of Structures	Z,ZK	7				
Basic design methods for shallow footings, piles, retaining structures, foundation pits, sheet pile walls, anchors and soil improvement. Principles of monitoring in foundation engineering.							
Use of Eurocode 7. Sel	ected case histories.						

Code of the group: BD20200600

Name of the group: Civil Engineering, 6th semester Requirement credits in the group: In this group you have to gain at least 30 credits Requirement courses in the group: In this group you have to complete at least 5 courses Credits in the group: 30 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
124BC01	Non-loadbearing Construction Vladimír Ž ára Vladimír Ž ára Vladimír Ž ára (Gar.)	Z,ZK	7	2P+3C	L	Z
124SDP1	Structural Design Project 1 Hana Gattermayerová, Iva Broukalová, Martin Jiránek Martin Jiránek Hana Gattermayerová (Gar.)	KZ	6	4C	L	Z
125BSE	Buildings Services Systems Karel Kabele, Michal Kabrhel Karel Kabele (Karel Kabele (Gar.)	Z,ZK	5	2P+2C	L	Z
133CM02	Concrete and Masonry Structures 2 Iva Broukalová, Jan Vítek, Radek Hájek, Roman Lenner Iva Broukalová Jan Vítek (Gar.)	Z,ZK	7	4P+2C	L	Z
134TS01	Timber Structures Petr Kuklík, Lukáš Velebil Petr Kuklík Petr Kuklík (Gar.)	Z,ZK	5	3P+1C	L	Z

Characteristics of the courses of this group of Study Plan: Code=BD20200600 Name=Civil Engineering, 6th semester

124BC01 Non-loadbearing Construction	Z,ZK	7
Course is focused on complex approach to practice design of the building envelope, flat and sloped roofing, doors and windows, partition walls, floor s	tructures and ceil	ings. This course
introduces theoretical foundations and computational approaches about two fields of building design: building physics and structure interaction. Integ	grated design of th	ne nonbearing
structures together with other building systems.		
124SDP1 Structural Design Project 1	KZ	6
Converting an architectural 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, interaction of load-bearing and non-load-bearing elements and building physics. Focus on complex approach to practical design, analysis	sis and optimaliza	ation of a building
structures. Design of variants of the load-bearing system, preliminary static analysis (calculation of load-bearing elements - slabs, columns, walls, etc),	, calculation of fou	Indations, design
of structures on the building envelope with respect to thermal protection of buildings, building physics, fire protection of buildings and protection agai	nst water and soi	l moisture.
Elaboration of detailed drawings including floor plans, sections and details. Public presentation.		
125BSE Buildings Services Systems	Z,ZK	5
Introductory Course of Building Services is focused on sanitary installations, gas supply system and heating systems. Sanitary installations - introduc	tion, hydraulic pip	bes, water supply
facilities, balance water needs. Internal water supply systems - installation, materials, calculation, waste water and disposal, sewage systems, intern	al drainage, types	s of fixtures. Gas
- external pipelines, connections, balance of gas, internal pipeline systems, flue gas. Central heating and design of heating surfaces. Calculation of h	neat balance. Hea	iting system.
Preparation of hot water. Heat sources - boiler, electric heating, district heating, renewable sources.		
133CM02 Concrete and Masonry Structures 2	Z,ZK	7
Design of concrete structures on serviceability. Limit states approach. Stress control, cracking and crack width analysis, allowable crack width in con	crete structures. I	Deformation of
reinforced concrete structures, numerical and simplified analysis, criteria of acceptance. Prestressed concrete. Introduction, basic principles, design	philosophy, prest	ress losses,
technology of prestressing, pre-tensioning and post-tensioning, verification of serviceability and ultimate limit states. Masonry structures, introduction	n, terminology, de	sign of structural
elements, reinforced masonry. Strengthening of masonry structures. Precast concrete structures, design situations, specific problems. Strut and tie n	nodels. Joints. Inc	dustrial halls.
Composite concrete-concrete structures. Introduction to concrete bridges and introduction to engineering structures.		
134TS01 Timber Structures	Z,ZK	5
The course is focused on basic rules for mechanical resistance, serviceability, durability of timber structures in normal temperature and in fire.		·

Code of the group: BD20200700 Name of the group: Civil Engineering, 7th semester 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 6 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
1000DPR	Industrial Training (3 weeks) Kate ina Sojková, Jan R ži ka, Petr Hájek Michal Jandera Michal Jandera (Gar.)	Z	0	6C	Z,L	Z
122TCD	Technology of Construction Alexander Ilkström Kravcov, en k Jarský, Mária Párová en k Jarský en k Jarský (Gar.)	Z,ZK	6	4P+2C	Z	Z
123MED	Material Engineering Alena Vimmrová, Igor Medve, Jan Fot Alena Vimmrová Igor Medve (Gar.)	Z,ZK	5	2P+2C	Z	Z
124BSD3	Building Structures 3 Vladimír Ž ára Vladimír Ž ára (Gar.)	Z,ZK	3	2P+1C	Z	Z
124PDRD	Failures, Deterioration, Renovations Eva Burgetová Eva Burgetová Eva Burgetová (Gar.)	Z,ZK	3	2P+1C	Z,L	Z
125BSE2	Buildings Services Systems 2 Michal Kabrhel, Zuzana Veverková Michal Kabrhel Michal Kabrhel (Gar.)	Z,ZK	5	2P+2C	Z	Z

Characteristics of the courses of this group of Study Plan: Code=BD20200700 Name=Civil Engineering, 7th semester

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 prof	essional
responsibilities. The prot	essional practice evaluates the sum of all knowledge acquired through previous theoretical studies and is a proof of their activity of the states and the sum of all knowledge acquired through previous theoretical studies and is a proof of their activity of the sum of all knowledge acquired through previous theoretical studies and is a proof of the sum of all knowledge acquired through previous theoretical studies and is a proof of the sum of all knowledge acquired through previous theoretical studies and is a proof of the sum of all knowledge acquired through previous theoretical studies and is a proof of the sum of all knowledge acquired through previous theoretical studies and is a proof of the sum of a sum of	quisition.	
122TCD	Technology of Construction	Z,ZK	6
Goal: To learn students	o know construction processes and their design and to create a model of the building process of a project for planning and n	nanagement of its	implementation
Contents: 1. Introduction	to construction technology, construction processes, basic terminology. 2. Earthworks, excavation of rock classes, types of e	xcavation, shoring	, compaction,
drainage. 3. Production	and transport of concrete mixture. Formwork and traditional system, placement of reinforcement, storage and compaction of	fresh concrete, cu	uring of fresh
concrete. 4. Construction	n Equipment (equipment for mining, transportation and compaction of rocks, concrete transport equipment, lifting equipment	, tower and mobile	e cranes, trucks,
elevators, hoists, trays, t	ools for finishing work). 6. Excursion to construction site. 7. Finishing works in building industry. Plasters, facings, paintings, sol	ffits, wallpapers flo	ors. 8. Facades,
	ns, sewerage, water, gas, electricity mains. 9. Health and safety at work. Environmental protection during construction. Qual		
l	ntation of buildings and projects. Main concepts and terms. Technological, spatial and time analysis of the building process, 1	•	•
	genous and non homogenous buildings.Long term and short term construction planning and scheduling. Construction techn	o, o	
	construction technology network analysis for project management. Use of computers in project planning and management.	13. Principles of de	esign of site
facilities and equipment			
123MED	Material Engineering	Z,ZK	5
	Material Engineering n on principles of designing and development of new types of materials having directed properties for specific building applic	, ,	-
		, ,	-
Subject gives informatio	n on principles of designing and development of new types of materials having directed properties for specific building applic	zations and structu	ures. 3
Subject gives informatio 124BSD3 The subject is focused of	n on principles of designing and development of new types of materials having directed properties for specific building applic Building Structures 3	Z,ZK	ares. 3 ention is focused
Subject gives informatio 124BSD3 The subject is focused of	n on principles of designing and development of new types of materials having directed properties for specific building applic Building Structures 3 n the complex design of load-bearing structures of roofs, large-span structures and structures of multi-storey buildings. In the ched roofs and hall buildings and on the supporting structures of multi-storey buildings. In the second part, students will learn	Z,ZK	ares. 3 ention is focused
Subject gives informatio 124BSD3 The subject is focused c on span structures of pit	n on principles of designing and development of new types of materials having directed properties for specific building applic Building Structures 3 n the complex design of load-bearing structures of roofs, large-span structures and structures of multi-storey buildings. In the ched roofs and hall buildings and on the supporting structures of multi-storey buildings. In the second part, students will learn	Z,ZK	ares. 3 ention is focused
Subject gives information 124BSD3 The subject is focused of on span structures of pitt indoor and multi-storey 124PDRD	n on principles of designing and development of new types of materials having directed properties for specific building applic Building Structures 3 n the complex design of load-bearing structures of roofs, large-span structures and structures of multi-storey buildings. In the ched roofs and hall buildings and on the supporting structures of multi-storey buildings. In the second part, students will learn structures.	zations and struct Z,ZK e first part, the atte about the design Z,ZK	arres. 3 ention is focused of prefabricated 3
Subject gives information 124BSD3 The subject is focused of on span structures of pitt indoor and multi-storey 124PDRD Types of defects, symptom	n on principles of designing and development of new types of materials having directed properties for specific building applic Building Structures 3 n the complex design of load-bearing structures of roofs, large-span structures and structures of multi-storey buildings. In the ched roofs and hall buildings and on the supporting structures of multi-storey buildings. In the second part, students will learn structures. Failures, Deterioration, Renovations	zations and struct Z,ZK e first part, the atte about the design Z,ZK	arres. 3 ention is focused of prefabricated 3
Subject gives information 124BSD3 The subject is focused of on span structures of pitt indoor and multi-storey 124PDRD Types of defects, symptom	n on principles of designing and development of new types of materials having directed properties for specific building applic Building Structures 3 n the complex design of load-bearing structures of roofs, large-span structures and structures of multi-storey buildings. In the ched roofs and hall buildings and on the supporting structures of multi-storey buildings. In the second part, students will learn structures. Failures, Deterioration, Renovations ms, significance, criticality, causes, reason for failures, Records of faults: origin, frequency, performance Agencies causing de	zations and struct Z,ZK e first part, the atte about the design Z,ZK	arres. 3 ention is focused of prefabricated 3
Subject gives informatio 124BSD3 The subject is focused of on span structures of pit indoor and multi-storey 124PDRD Types of defects, symptor role of external forces, in 125BSE2	n on principles of designing and development of new types of materials having directed properties for specific building applic Building Structures 3 n the complex design of load-bearing structures of roofs, large-span structures and structures of multi-storey buildings. In the ched roofs and hall buildings and on the supporting structures of multi-storey buildings. In the second part, students will learn structures. Failures, Deterioration, Renovations pms, significance, criticality, causes, reason for failures, Records of faults: origin, frequency, performance Agencies causing de instability and deficiency of structures, failure patterns Failures of foundation, walls and DPCs, claddings and roofs	zations and struct Z,ZK e first part, the atter about the design Z,ZK eterioration, durab	ares. 3 ention is focused of prefabricated 3 ility of materials,

Code of the group: BD20200800

Name of the group: Civil Engineering, 8th semester

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 2 courses Credits in the group: 12

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
124FSHB	Fire Safety and Healthy Buildings Martin Jiránek, Petr Hejtmánek, Pavla Ryparová, Zuzana Rácová, Veronika Ka ma íková, Vladimír Mózer Vladimír Mózer Martin Jiránek (Gar.)	Z,ZK	6	3P+2C	L	Z
126CMAN	Construction Management Aleš Tomek, Radan Tomek Aleš Tomek Aleš Tomek (Gar.)	Z,ZK	6	3P+2C	L	Z

Characteristics of the courses of this group of Study Plan: Code=BD20200800 Name=Civil Engineering, 8th semester

124FSHB Fire Safety and Healthy Buildings

Healthy Buildings Constituents of indoor microclimate, hazardous substances (VOCs, HFRs, heavy metals, moulds, microbes, aerosols, radionuclides, etc.), their sources and health effects. Influence of building structures and materials on quality of indoor microclimate. Design of buildings with respect to optimisation of indoor microclimate. Fire Safety Analysis of fire - course of fire, burning process, fire loading; legislation and European Standards; fire safety solutions - fire project, requirement for fire resistance of buildings, escape ways, distance separation, fire-fighting equipment; fire behaviour of the most used materials (wood, steel, concrete, plastics); protection of building materials against fire (brickwork, concreting, plasters and sprays, coatings, impregnates of wood, encasements, glued facings of mineral fibres); sandwiches from fire point of view; influence of claddings on the course fire; passive protection of building structures - fire walls, fire glazed structures, fire ceiling, draft stops and seals; repressive measures - electric fire signalling, stationary extinguishing devices, smoke extract, hydrant systems.

Z.ZK

6

126CMAN Construction Management Z,ZK 6 Course is oriented mainly on practical applications of corporate construction management systems. It includes corporate strategy, corporate finance and budgeting, marketing and methods of business development, etc. Sustainable profitability of the construction business and the best practice at both - field and corporate level is explained. Lectures are based on the real practice experience of all course's lecturers and various case studies are studied and solved. Online Building Industry Game (BIG) will be played by all course participants through the whole semester (a computer simulation of a realistic business environment where participants play the role of contractors, competing in a market with variable demand for construction work). In this online game, developed and directly operated by the California Polytechnic State University, students act as contractors, managing both, their companies and projects.

Name of the block: Compulsory elective courses Minimal number of credits of the block: 8 The role of the block: PV

Code of the group: BD20230700_2 Name of the group: Civil Engineering, Optional subjects, 7-8th semester Requirement credits in the group: In this group you have to gain at least 8 credits Requirement courses in the group: In this group you have to complete at least 4 courses Credits in the group: 8 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
102PHS	Physics - Seminar Ji í Konfršt Ji í Konfršt Ji í Konfršt (Gar.)	Z	2	2C	Z	PV
124CADE	CAD 1 (E) Pavel Chour Pavel Chour (Gar.)	KZ	3	3C	Z,L	PV
124YEOT	Energy Optimised Timber Buildings Jan R ži ka Jan R ži ka Jan R ži ka (Gar.)	Z	2	1P+1C	Z	PV
124YKSE	Complex Construction Detailing Ji í Pazderka	Z	2	1P+1C	Z	PV
128CGR	Computer Graphics Tomáš Vaní ek Tomáš Vaní ek (Gar.)	Z,ZK	4	2P+2C	Z,L	PV
132MMO	Modern Methods of Optimization Jan Zeman, Mat j Lepš Jan Zeman Mat j Lepš (Gar.)	Z	2	1P+1C	Z	PV
133BSBD	Basis of Bridges Design Roman Lenner, Pavel Ryjá ek, Vojt ch Stan ík Roman Lenner Roman Lenner (Gar.)	ZK	2	2P+1C	Z	PV
134TBST	Timber Based Structures Petr Kuklik Petr Kuklik Petr Kuklik (Gar.)	Z,ZK	2	1P+1C	Z	PV
137TENV	Rail Traffic and Environment Leoš Horní ek, Vít Lojda, Lenka Lomoz Leoš Horní ek Leoš Horní ek (Gar.)	Z,ZK	2	1P+1C	Z	PV
143ESP	Soil Physics for Engineers David Zumr, Jakub Je ábek, Milena Císlerová, Tailin Li David Zumr Milena Císlerová (Gar.)	Z,ZK	4	2P+2C	Z	PV
144BT1	Balneotechnology Bohumil Šastný, Filip Horký Filip Horký Bohumil Šastný (Gar.)	ZK	2	2P	Z	PV
144WS	Drinking Water Management Kate ina Slaví ková, Filip Horký Filip Horký Kate ina Slaví ková (Gar.)	KZ	2	2P	Z	PV
101MPRS	Probability and Statistics Jozef Bobok, Daniela Jarušková Daniela Jarušková Daniela Jarušková (Gar.)	ZK	4	2P+2C	Z,L	PV
124BIMR	BIM - Revit Architecture Pavel Chour, Renáta Ho ánková, Kristýna Schulzová Pavel Chour Renáta Ho ánková (Gar.)	КZ	2	1P+1C	Z,L	PV
124EDC	Civil Engineering in Developing Countries Jan Tilinger Jan Tilinger Jan Tilinger (Gar.)	Z,ZK	4	2P+2C	Z,L	PV
126YMCC	Management in Construction Company Aleš Tomek, Radan Tomek Petr Mat jka	Z	2	1P+1C	L	PV
128CS1	C# Programming and Application Development Miroslav S ra Miroslav S ra Miroslav S ra (Gar.)	Z,ZK	4	2P+2C	Z,L	PV
128CS2	C# 2 - Advanced Application Development Miroslav S ra Miroslav S ra Miroslav S ra (Gar.)	Z,ZK	4	2P+2C	Z,L	PV
128YIND	Computer Use Fundamentals Miroslav S ra Miroslav S ra Miroslav S ra (Gar.)	Z	2	2C	Z,L	PV
129ACM1	Architectural CAD Modelling 1 Vojt ch Dvo ák, Klára Škodová, Anna Marie erná Vojt ch Dvo ák Vojt ch Dvo ák (Gar.)	КZ	3	3C	Z,L	PV
129ACM2	Architectural CAD Modelling 2 Vojt ch Dvo ák, Klára Škodová, Anna Marie erná Vojt ch Dvo ák Vojt ch Dvo ák (Gar.)	КZ	3	3C	Z,L	PV

129CTA	Composition and Theory of Architecture Lenka Popelová, Klára Ciesarová Lenka Popelová Lenka Popelová (Gar.)	KZ	2	2C	Z,L	PV
133CASD	Computer Aided Structural Design Josef Novák Josef Novák Josef Novák (Gar.)	Z	2	1P+1C	Z,L	PV
133YCB	Concrete Bridges Roman Lenner Roman Lenner Roman Lenner (Gar.)	Z,ZK	4	2P+2C	L	PV
134FDTS	Fire Design of Steel, Concrete and Timber Str. Kamila Cábová Kamila Cábová Kamila Cábová (Gar.)	Z,ZK	2	1P+1C	L	PV
134GLST	Glass Structures Martina Eliášová Martina Eliášová Martina Eliášová (Gar.)	Z,ZK	2	1P+1C	L	PV
134SALS	Stainless Steel and Aluminium Structures Michal Jandera Michal Jandera Michal Jandera (Gar.)	Z,ZK	2	1P+1C	L	PV
143ENE	Environmental Engineering David Zumr, Tomáš Dostál, Martina Sobotková, Martin Šanda Martin Šanda Tomáš Dostál (Gar.)	Z,ZK	4	2P+1C	Z,L	PV

Characteristics of the courses of this group of Study Plan: Code=BD20230700_2 Name=Civil Engineering, Optional subjects, 7-8th semester

102PHS Physics - Seminar	Z	2
This course serves as a supplementary one for 102PH01. Students will solve many problems which provide better understanding of the topics dis	scussed in the lectur	es.
124CADE CAD 1 (E)	KZ	3
The seminar familiarizes students with the AutoCAD drawing software. This includes working with 2D & amp; 3D geometry, wire models, prints, SC	C/ACIS/Parasolid g	eometry models,
meshes, Bool operations, solid objects creation methods and advanced edits and modifications of the model.		
124YEOT Energy Optimised Timber Buildings	Z	2
The aim is to present a complex overview on energy efficient timber structures. Basic theoretical and design principals are presented. The lectures	are focused on follow	/ing technologies
of timber structures: (i) heavy timber skeleton systems, (ii) light timber structures based on 2x4. (iii) CLT, (iv) log house. All technologies of timber	structures are prese	nted in structural
and building physics context of low energy and passive buildings.		
124YKSE Complex Construction Detailing	Z	2
The aim of the course is to extend the knowledge gained in previous courses - it is intended for students who have already reached advanced lev	el of knowledge abo	out structural
problems in buildings. The content of the course is focused on the complex solution of construction details, following all legislative requirements a	nd taking into accou	Int the maximum
efficiency and durability of the chosen solution.	U U	
128CGR Computer Graphics	Z.ZK	4
Foundation of using various types of computer graphics programs. Grid graphics, digital photography, vector drawing, 3D modelling, visualisation.	1 '	phics algorithms.
132MMO Modern Methods of Optimization	Z	2
The course is aimed at an overview of numerical optimization methods applicable not only in the Civil Engineering area. The emphasis is put more of		-
however, practical applications in MATLAB environment are also conducted during exercises.		anning principiee,
133BSBD Basis of Bridges Design	ZK	2
This module offers an overview of bridge elements, construction techniques, bridge loading an analysis. After the introduction and differentiation		
nomenclature is discussed to equip the student with the necessary terminology, the superstructure is discussed from perspective of concrete and		-
loading for traffic loads and analysis are illustrated in detail with the support of influence lines. Necessary care is devoted the the construction tech		•
bridge types.		of uniferent basic
134TBST Timber Based Structures	Z,ZK	2
Examples of timber structures and bridges. Structural systems and details. Recommended design.	ζ_Λ	2
	7 71/	
137TENV Rail Traffic and Environment	Z,ZK	2
Basic principles for designing of railway and tramway structures, European railway network, rail transport, environmental impacts - acoustics, traff	c noise and vibration	ns, noise control,
modelling and attenuation of traffic noise.		1
143ESP Soil Physics for Engineers	Z,ZK	4
Engineering description of water movement and solute transport in a soil profile. Hydraulic characteristics of porous media. Retention curve and I	ydraulic conductivity	/ definition and
estimation. Field vs laboratory measurements. Preferential flow. Basics of modelling. Basics of transport processes		1
144BT1 Balneotechnology	ZK	2
Water treatment, design and operation of circulation water for swimmnig pool, natural and artificial complexes for water recreation and spas.		
144WS Drinking Water Management	KZ	2
Water treatment and water supply		
101MPRS Probability and Statistics	ZK	4
The goal is to get a basic knowledge in probability and inferential statistics. Probability. Discrete and continuous random variables. Normal distribution	tion. Asymptotic dis	tribution of a
mean. Multivariate distribution. Independence and correlation. Parameter estimation. Hypothesis testing. Simple linear regression.		
124BIMR BIM - Revit Architecture	KZ	2
The seminar introduces the basic principles of building design as an information model. Teaching takes place on the Autodesk platform. Teaching	is focused on the in	terpretation of
the principle of modeling building elements, their relationships and properties. During the exercise, students will create a simple BIM model, they we	vill learn to work with	other SW - data
export and import, they will learn basic principles of creating 2D documentation, scheduling, 3D presentation - render, animation.		
124EDC Civil Engineering in Developing Countries	Z,ZK	4
For a long time, organizations operating in developing and climatically or culturally diverse regions have been struggling with the lack of construction	1 '	d be able to work
in a setting that is culturally, climatically, socially and economically different. The aim of the course is to provide students with basic information at		
regions. Within the subject we will deal with constructional approaches with respect to different climate, use of non-standard procedures, material	s and organizational	approaches and
other factors different from the standards in the Europe or Czech Republic (e.g. building requirements, seismic activity, tsunami, animals, insects,	monsoon rain , abse	nce of networks,
etc.).		

126YMCC Management in Construction Company	Z	2
Nature of Construction Business Primary Causes of Business Failure, External and Internal Influences Business Strategies to Minimize the Risk of Business	ess Failure Busine	ss Development,
Marketing and Bidding Planning Strategies Plan Implementation/Control Strategies Financial Management Strategies Construction Risk Management Lea		
Behavior Corporate & amp; Employee Ethics Company Performance Checklist Managing Profitable Construction Business Lectures are based on th	e real practice exp	erience of all
course's lecturers and various case studies are studied and solved. Online Building Industry Game (BIG) will be played by all course participants throug	h the whole seme	ster (a computer
simulation of a realistic business environment where participants play the role of contractors, competing in a market with variable demand for constr	uction work). In thi	is online game,
developed and directly operated by the California Polytechnic State University, students act as contractors, managing both, their companies and pro	jects. Active partic	ipation in the
online game and meeting the attendance requirement is required to receive course credit (zápo et). The awarding of the course credit is a condition	for being allowed t	o take the exam
(zkouška).	-	
128CS1 C# Programming and Application Development	Z,ZK	4
Students will become acquainted with one of the currently most popular programming language from C-family languages containing next to C# also	I ' I	-
syntax of C# enables to study the language incrementally by developing real applications since the very beginning. Thus students can develop their of		•
time of study. Thanks to this fact students can pursue themes like advanced use of objects, some of design patterns and application architecture, or		
128CS2 C# 2 - Advanced Application Development	Z.ZK	4
Synopsis: Students will get more familiar with one (C#) of the most popular programming language of the C-family languages, where next to C# also	I ' I	-
will pursue themes like advanced usage and design of objects, user class libraries and re-use of objects in application development, as well as design		
architecture.	gii patterns and a	plication
	Z	2
128YIND Computer Use Fundamentals	-	
Annotation: Documents and data processing - focused on documents and data that are not one-use only or not "use once then discard". Exploiting (
OpenOffice) for advanced document management. Documents (Word), spreadsheets (Excel) and automated data calculations. Desk-top databases		-
(IS), basic principles, what is an IS and what is not an IS. Other problem-oriented programs and user interfaces (e.g. np++). With an option: Compute		
129ACM1 Architectural CAD Modelling 1	KZ	3
The students are acquainted with the possibilities of BIM using ArchiCAD software. Basic tools, functions and principles are demonstrated. Students	-	
knowledge on a simplified BIM model of a family house or another appropriate building or structure. Objective of this course is to teach prospective a	architects and civil	engineers an
effective method of creation BIM model that is base for 2D and 3D documentation (including VR model, IFC etc.).		
129ACM2 Architectural CAD Modelling 2	KZ	3
The subject enhances and develops skills acquired in the basic course 129ACM1. The course is focused on methods and tools for creating of complic	ated shapes and I	ibrary elements.
129CTA Composition and Theory of Architecture	KZ	2
Seminars are focused on the composition of architecture, which will be analyzed through the basic ordering principles, pattern making process and app	lication of the theo	retical concepts.
133CASD Computer Aided Structural Design	Z	2
Computer-Aided Structural Design has been implemented as an optional compulsory course which provides students to gain knowledge in a compu	I – I	
reinforced concrete structures. The objective of the course is to demonstrate the practical use of selected FEM software for the limit state design of va	-	-
the focus is on computational models, reinforcement design, numerical modelling, crack control, deformation control and internal forces distribution.		lotal ool talloly,
133YCB Concrete Bridges	Z,ZK	4
The course of Concrete Bridges is focused on design and construction of this type of bridge structures. Lectures are devoted to spatial arrangement a	· · ·	•
		-
bridges, bridge substructure, effects and realization of prestressing, types of concrete bridge structures and technologies of their construction. Semin and provide an opportunity to apply the learnt principles.	ars are spin into i	iteresting issues
	7 71/	0
134FDTS Fire Design of Steel, Concrete and Timber Str.	Z,ZK	2
The course is focused on basic principles of design of structural elements exposed to fire. The principles of loads applied at fire and methods for evaluation of structural elements exposed to fire and timber structural elements are simple at a size of the structural elements are s	aluating gas tempe	erature and
temperature of structural elements are explained. The design methods for simple steel, composite and timber structures are given.		
134GLST Glass Structures	Z,ZK	2
The course is intending to introduce the students the field of structural applications of glass and to give them some specific skills for calculation and de	-	-
panes beams and fins, columns and walls, point-supported glass, as well as for glazing systems such as glass facades, canopies and roofs, stairs a		
properties of glass as structural material will be presented in comparison with other basic building materials, together with selected examples of glass		•
details and connecting technology, relevant technical regulations, specification and current methods applied in design will be described. Worked examples and connecting technology, relevant technical regulations, specification and current methods applied in design will be described.	mples will accomp	any the lectures
for better understanding, and design project will help to fix specific knowledge.		
134SALS Stainless Steel and Aluminium Structures	Z,ZK	2
The course covers two parts, design of aluminium and stainless steel structures. The first part covers evolution of stainless steel materials/structures and	nd examples of rea	lized structures.
Stainless steels suitable for structures are described in a detail, including their properties. Dissimilarities in assessments of members under common le	padings with respe	ect to low-carbon
steels is described for both ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, en	ection and installa	tion of stainless
steel members are described. In the second part of the subject, the same topics are covered for aluminium structures. Welding and heat-affected zon	es are discussed i	n detail in terms
of weld design, section design and local welds effect in members.		
143ENE Environmental Engineering	Z,ZK	4
General information about interaction between human beings and their environment. Information about water quality and pollution, flood hazard, air		landscape
utilization and protection, soil erosion, climate change, sustainability, waste production and disposal, energy production and consumption. Questions of e	ethics, philosophy a	and globalization
are discussed together. The topics are given on basic information level, respecting various backgrounds of the students.	-	
Name of the block: Povinn, volitelné pledm tv. doporu, ení S1		

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: BD20200700_1 Name of the group: Civil Engineering, Project, 7th semester 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
124SDP2	Structural Design Project 2 Tomáš Vlach Tomáš Vlach (Gar.)	KZ	6	4C	Z	S1
133SDP2	Structural Design Project 2 Iva Broukalová	KZ	6	4C	Z	S1
134SDP2	Structural Design Project 2 Michal Jandera Michal Jandera (Gar.)	KZ	6	4C	Z	S1
135SDP2	Structural Design Project 2 Michal Jandera Jan Salák (Gar.)	KZ	6	4C	Z	S1
Characteristics of the	e courses of this group of Study Plan: Code=BD20200700_1 N	ame=Civil Eng	gineering	, Projec	t, 7th seme	ester
124SDP2 St	ructural Design Project 2				KZ	6
The subject of the course is	a technical solution design of advanced structures. Structural design project 2 focus	on complex approa	ch to practio	ce design, a	analysis and o	otimalization
of advanced multistorey or lo	ong span building structures, or their reconstruction. Analysis of load, functional and t	echnologic require	ments, desig	gn of load-b	earing system	alternatives
including foundations, prelim	inary bearing elements dimensions calculation, choice of most suitable version. Preliminary	inary statical desig	n of chosen v	version, tecl	hnical report, a	nd drawings.
133SDP2 St	ructural Design Project 2				KZ	6
Elaboration of the structural	part of the project documentation for the given structure (part of the structure). The d	esign of the selected	ed variant of	the structu	re with regard	to the
requirements of other profes	ssions. Structural analysis and drawing documentation to the extent specified during c	onsultations The I	Department	of Architect	ural Engineeri	na (K124)

ΚZ

ΚZ

6

6

and Geotechnics (K135) collaborate in teaching in the course.

134SDP2Structural Design Project 2

Design of steel / timber load bearing building structure according to external requirements in relation to interaction of load bearing and final completion structural elements. The project is assigned by the seminar leader.

 135SDP2
 Structural Design Project 2

Design, static calculation and drawing documentation of the building substructure

Code of the group: BD20200800_1

Name of the group: Civil Engineering, Bachelor Project

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
102BPRO	Bachelor Project Ji í Novák	Z	12	10C	L,Z	S1
122BPRO	Bachelor Project en k Jarský Rostislav Šulc en k Jarský (Gar.)	Z	12	10C	L,Z	S1
123BPRO	Bachelor Project Alena Vimmrová Jan Pruška Jan Pruška (Gar.)	Z	12	10C	L,Z	S1
124BPRO	Bachelor Project Petr Hájek	Z	12	10C	L,Z	S1
125BPRO	Bachelor Project Karel Kabele Karel Kabele (Gar.)	Z	12	10C	L,Z	S1
132BPRO	Bachelor Project Jan Vorel, Aleš Jíra, Milan Jirásek Aleš Jíra	Z	12	10C	L,Z	S1
133BPRO	Bachelor Thesis	Z	12	10C	L,Z	S1
134BPRO	Bachelor Project Michal Jandera Michal Jandera (Gar.)	Z	12	10C	L,Z	S1
135BPRO	Bachelor Project Jan Salák	Z	12	10C	L,Z	S1

Characteristics of the courses of this group of Study Plan: Code=BD20200800_1 Name=Civil Engineering, Bachelor Project

102BPRO	Bachelor Project	Z	12		
in accordance with the	in accordance with the thesis proposal				
122BPRO	Bachelor Project	Z	12		
The bachelor's thesis e	nds the bachelor study. The student demonstrates that he / she can apply the knowledge gained during the study on a specil	ic project. The wo	rk may take the		
form of theoretical or p	roject. Students consult the issue with the thesis supervisors and experts from the predetermined departments.				
123BPRO	Bachelor Project	Z	12		
In accordance with the	thesis proposal				
124BPRO	Bachelor Project	Z	12		
The topics of bachelor's theses are based on the needs of practice or the scientific research activities of the department, scope and difficulty correspond to the student's knowledge					
acquired during bachelor's studies. The supervisor of the bachelor's thesis can designate additional consultants to the student.					
125BPRO	Bachelor Project	Z	12		
Bachelor Thesis is the result of the Bachelor degree study programme. It should prove student's ability to work independently in the area of Building Services Systems. The thesis can					
cover theoretical aspects or to focus on practical application on an object within building services systems. Students consult the supervisor and specialists from other departments.					
The theorie is presented	h in front of the commission				

132BPRO	Bachelor Project	Ζ	12	
The assignment of the	inal thesis is always individual based on the agreement of the teacher and the student. The vast majority of assignments are	connected with the	he scientific and	
research activities of the	e respective employee. The output of the solution may be a brief research study of the given problem, experimental activity, p	rogramming and	others according	
to the respective assign	ment.			
133BPRO	Bachelor Thesis	Z	12	
A bachelor thesis is the qualification thesis of a bachelor's degree. It can take the form of processing the structural part of the building design project or research study on the topic of				
designing and application of a structural element with a variant comparative analysis or parametric study or performing and analysing experiments, etc.				
134BPRO	Bachelor Project	Z	12	
In this course, student formulates a bachelor's thesis that is necessary to reach the bachelor's degree. This course is focused on steel or timber structural design.				
135BPRO	Bachelor Project	Z	12	
Individual assignment in accordance with the thesis proposal				

List of courses of this pass:

Code	Name of the course	Completion	Credits	
1000DPR	Industrial Training (3 weeks)	Z	0	
Professional pra	actice is an important part of academic education in undergraduate degree programmes. The student will gain a basic understanding	of duties and prof	essional	
respor	isibilities. The professional practice evaluates the sum of all knowledge acquired through previous theoretical studies and is a proof c	of their acquisition.		
101CG01	Constructive Geometry	Z,ZK	5	
Description of sp	ace and main methods of the projection - multiview projection as a basis for orientation in 3D CAD systems, axonometry, linear pers	pective. Surfaces i	n building	
practice - graphi	c law, geometric characteristic and image in appropriate projection, realization and application. Namely: Cylinders and Cones, Hyper	boloid of Revolutio	n, Helical	
	Surfaces, Quadrics. Visualization of objects in 3D program SketchUp. Curves in building practice - types of mathematical descr	iption.		
101MPRS	Probability and Statistics	ZK	4	
The goal is to ge	t a basic knowledge in probability and inferential statistics. Probability. Discrete and continuous random variables. Normal distributior	. Asymptotic distric	oution of a	
	mean. Multivariate distribution. Independence and correlation. Parameter estimation. Hypothesis testing. Simple linear regres			
101MT01	Mathematics 1	Z,ZK	6	
	https://mat.fsv.cvut.cz/vyuka/bakalari/eng/zs/MT01/syllabus			
101MT02	Mathematics 2	Z,ZK	6	
	https://mat.fsv.cvut.cz/vyuka/bakalari/eng/ls/MT02/			
101MT03	Mathematics 3	Z,ZK	6	
	https://mat.fsv.cvut.cz/vyuka/bakalari/eng/zs/MT03/syllabus		1	
102BPRO	Bachelor Project	Z	12	
	in accordance with the thesis proposal	1	1	
102PHD	Physics	Z,ZK	4	
	sics course in the English language for students of the study programmes Civil Engineering; Management and Economics in Constru		is also open	
	ther CTU faculties within the Erasmus programmes. The course focuses on mechanics and basic thermodynamics. The following are		-	
Mechanics of ma	terial points (particles) and deformable bodies. Discrete and continuous model of matter. Kinematics and dynamics of a material poir	nt (particle). Mecha	nical force	
fields. Gra	avitational field. Mechanical vibrations. Material deformation. Elastic waves. Acoustics. Hydromechanics. Fundamentals of thermodyr	amics. Heat transfe	er.	
102PHS	Physics - Seminar	Z	2	
This course	serves as a supplementary one for 102PH01. Students will solve many problems which provide better understanding of the topics di	scussed in the lect	ures.	
104CFL1	Czech/Foreign Language 1	Z	1	
Czech courses a	re intended for international students. The course is aimed to provide training in basic language means necessary for communication	່ in everyday situat	ions. After	
successful complet	ion the student gains a credit. End of course level according to CEFR: A1 (Beginners) A2 (Elementary) Course code: 104 CFL1 Durati	on: 2 hours / 1 sem	ester CEFR	
	Level: A1 Literature: Hand-outs given by teacher; Lída Holá: Czech Step by Step 1 For further information: sandra.giormani@fsv	.cvut.cz		
104CL2	Czech/Foreign Language 2	Z,ZK	2	
	ts the communicative approach to language teaching. Therefore, individual lessons are primarily centred around an underlying topic			
communicative lan	guage function. Further appropriate language aspects (i.e. grammar, lexis, pronunciation, skills) arise from the given communicative	need. Basic comm	unication in	
	s is further enriched by communicative skills in a more specific university environment. The Czech course is intended for students in			
	d some basic knowledge in the Czech language, i.e. they are at A1/A2 level. The course is aimed to provide training in language mean	-	nmunication	
	everyday situations and at university. After successful completion the student gains a credit and exam. End of course level according	-		
105SOSC	Social Sciences	Z,ZK	5	
	Sciences encompasses a broader, multidisciplinary, framework (sociology, economy, marketing, politology, social anthropology, and		-	
the course covers basic economic terms, demand, supply, market equilibrium, and rational consumer choice. Firm and production functions in the short and long run as well as long-run				
and short-run costs are discussed. Market structures and markets for productive inputs and public goods are other topics. Also presented are macroeconomic aggregates and the				
	nomics. Social theories presented in the course are considered an analytical reflection on the concepts and formal cognitive schemes			
will get familiar with social theories/paradigms that are used to study and interpret social phenomena. Seminars will focus on everyday life, its interactions, and opinion polemics, which often interfere in negotiations about the direction and goals of society. The course also provides students with conceptual tools for their own further studies based on critical thinking.				
122BPRO	Bachelor Project	7	12	
	bachelor Floject sis ends the bachelor study. The student demonstrates that he / she can apply the knowledge gained during the study on a specific j	<u>~</u> project The work m	1	
form of theoretical or project. Students consult the issue with the thesis supervisors and experts from the predetermined departments.				
122TCD	Technology of Construction	Z,ZK	6	
	ents to know construction processes and their design and to create a model of the building process of a project for planning and mar	1	1	
Contents: 1. Introduction to construction technology, construction processes, basic terminology. 2. Earthworks, excavation of rock classes, types of excavation, shoring, compaction,				
drainage. 3. Production and transport of concrete mixture. Formwork and traditional system, placement of reinforcement, storage and compaction of fresh concrete, curing of fresh				
	uction Equipment (equipment for mining, transportation and compaction of rocks, concrete transport equipment, lifting equipment, to		0	
	ays, tools for finishing work). 6. Excursion to construction site. 7. Finishing works in building industry. Plasters, facings, paintings, soffits			

	allations, sewerage, water, gas, electricity mains. 9. Health and safety at work. Environmental protection during construction. Quality		
	ementation of buildings and projects. Main concepts and terms. Technological, spatial and time analysis of the building process, 11. nomogenous and non homogenous buildings.Long term and short term construction planning and scheduling. Construction technolo		
	use of construction technology network analysis for project management. Use of computers in project planning and management. 13		
building madelity,	facilities and equipment		sign of one
123BM01	Building Materials	Z,ZK	5
	is giving basic information about the structure and properties of the building materials and about their testing methods on the base of		-
	eering approach. The laboratory work (exercise) consists in the testing of building materials from the point of view of physically - chemi control.		
123BPRO	Bachelor Project	Z	12
IZSDERU	In accordance with the thesis proposal	Z	12
123BUC	Chemistry	Z,ZK	4
	the basic chemical principles in the branches as general, inorganic, organic and physical chemistry. Instances of topics are composit	,	1 -
	of water, soil, air, wood, macromolecular compounds, inorganic binders, metals and other materials used in civil engineering	g.	
123MED	Material Engineering	Z,ZK	5
Subject gives	information on principles of designing and development of new types of materials having directed properties for specific building approximation of the specific building appro	lications and stru	ctures.
124BC01	Non-loadbearing Construction	Z,ZK	7
	on complex approach to practice design of the building envelope, flat and sloped roofing, doors and windows, partition walls, floor struc	-	
introduces theore	ical foundations and computational approaches about two fields of building design: building physics and structure interaction. Integra	ted design of the	nonbearing
	structures together with other building systems.	1/7	0
124BIMR	BIM - Revit Architecture duces the basic principles of building design as an information model. Teaching takes place on the Autodesk platform. Teaching is for	KZ	2
	leling building elements, their relationships and properties. During the exercise, students will create a simple BIM model, they will lear		
	export and import, they will learn basic principles of creating 2D documentation, scheduling, 3D presentation - render, animat		
124BPH	Building Physics	Z,ZK	6
	thermal protection of buildings, building acoustics and daylighting (heat transfer, thermal conductivity, thermal resistence and thermal t		-
	al bridges and thermal joints, difusion of water vapour and vapour condensation, mould growth, transient heat transfer, risk of overhe		
zero-energy buildir	ngs, sound in the living and working environment, perception and description of sound: intensity, frequency, time factor, information va	alue, interindividua	al sensitivity,
point, line and plan	e sound sources, sound power level, directivity factor, sound propagation in the free field conditions, sound propagation in the diffuse	field conditions, d	efinable and
	Is, airborne and structureborne sound, definition, measurement, evaluation and the limits, sound reduction index of double structures		
-	a cavity, definition, measurement, evaluation, the sun and the environment, basics of spherical astronomy, horizons and equatorial c		-
sun azimuth and	altitude, daylight and lighting, visual perception, basics of photometry, daylight factor and calculation models of the sky, methods for		ght factor,
4040000	influence of environment on a daylighting: photometric characteristics of shielding barriers, technical characteristics of lighting op		40
124BPRO	Bachelor Project elor's theses are based on the needs of practice or the scientific research activities of the department, scope and difficulty correspor	Z d to the student's	12
	lefor s theses are based on the needs of practice of the scientific research activities of the department, scope and difficulty correspond		
			knowledge
	acquired during bachelor's studies. The supervisor of the bachelor's thesis can designate additional consultants to the stude	nt.	-
124BSD1	acquired during bachelor's studies. The supervisor of the bachelor's thesis can designate additional consultants to the stude Building Structures 1		knowledge
124BSD1	acquired during bachelor's studies. The supervisor of the bachelor's thesis can designate additional consultants to the stude Building Structures 1 Introducing in civil engineering, basic elements and structures	nt. Z	4
124BSD1 124BSD2	acquired during bachelor's studies. The supervisor of the bachelor's thesis can designate additional consultants to the stude Building Structures 1 Introducing in civil engineering, basic elements and structures Building Structures 2	nt. Z Z,ZK	4
124BSD1 124BSD2 Staircases, slopir	acquired during bachelor's studies. The supervisor of the bachelor's thesis can designate additional consultants to the stude Building Structures 1 Introducing in civil engineering, basic elements and structures	nt. Z Z,ZK ubsoil, types of fo	4
124BSD1 124BSD2 Staircases, slopir	acquired during bachelor's studies. The supervisor of the bachelor's thesis can designate additional consultants to the stude Building Structures 1 Introducing in civil engineering, basic elements and structures Building Structures 2 ng ramps, lift shafts - structural and material solutions, statical principles, load, requirements. Building foundations - classification of s	nt. Z Z,ZK ubsoil, types of fo	4
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124SDP2	Structural Design Project 2	KZ	6
	course is a technical solution design of advanced structures. Structural design project 2 focus on complex approach to practice design	in, analysis and op	timalization
of advanced multis	storey or long span building structures, or their reconstruction. Analysis of load, functional and technologic requirements, design of load	ad-bearing system	alternatives
including foundation	ons, preliminary bearing elements dimensions calculation, choice of most suitable version. Preliminary statical design of chosen version,	technical report, an	nd drawings.
124YEOT	Energy Optimised Timber Buildings	Z	2
The aim is to prese	ent a complex overview on energy efficient timber structures. Basic theoretical and design principals are presented. The lectures are foc	used on following to	echnologies
of timber structure	s: (i) heavy timber skeleton systems, (ii) light timber structures based on 2x4. (iii) CLT, (iv) log house. All technologies of timber structu	res are presented	in structural
	and building physics context of low energy and passive buildings.		
124YKSE	Complex Construction Detailing	Z	2
The aim of the o	ourse is to extend the knowledge gained in previous courses - it is intended for students who have already reached advanced level of	knowledge about	structural
problems in buildi	ngs. The content of the course is focused on the complex solution of construction details, following all legislative requirements and tak	ing into account the	e maximum
	efficiency and durability of the chosen solution.		
125BPRO	Bachelor Project	Z	12
Bachelor Thesis is	the result of the Bachelor degree study programme. It should prove student's ability to work independently in the area of Building Ser	vices Systems. The	e thesis can
cover theoretical	aspects or to focus on practical application on an object within building services systems. Students consult the supervisor and specia	lists from other dep	partments.
	The thesis is presented in front of the commission.		
125BSE	Buildings Services Systems	Z,ZK	5
Introductory Cours	e of Building Services is focused on sanitary installations, gas supply system and heating systems. Sanitary installations - introduction	i, hydraulic pipes, v	vater supply
facilities, balance	water needs. Internal water supply systems - installation, materials, calculation, waste water and disposal, sewage systems, internal d	Irainage, types of fi	xtures. Gas
- external pipelir	nes, connections, balance of gas, internal pipeline systems, flue gas. Central heating and design of heating surfaces. Calculation of he	at balance. Heatin	g system.
	Preparation of hot water. Heat sources - boiler, electric heating, district heating, renewable sources.		
125BSE2	Buildings Services Systems 2	Z,ZK	5
	Introduction to the indoor environmental quality, building ventilation and basic artificial lighting and electrical installation.		
126BIME	BIM	Z	1
	, sed on basic knowledge in the field of building information modeling (BIM) in theoretical and practical areas, usable across various const	ruction industry spe	ecializations
and fields. Studer	nts will be acquainted not only with the basic knowledge of BIM (on the theoretical and practical level), data formats, IT systems typica	al for the building in	dustry, but
also with the cor	ntext of BIM in the current construction industry in relation to the whole project life cycle and its specifics (delivery, expert focus, constr	ruction projects pha	ases, etc.)
Theoreti	cal knowledge is complemented by practical exercises aimed at mastering and understanding the basic principles of object-oriented p	arametric modelin	g.
126CMAN	Construction Management	Z,ZK	6
	ad mainly on practical applications of corporate construction management systems. It includes corporate strategy, corporate finance a	I ' I	
	ess development, etc. Sustainable profitability of the construction business and the best practice at both - field and corporate level is e		-
on the real practic	e experience of all course's lecturers and various case studies are studied and solved. Online Building Industry Game (BIG) will be pl	ayed by all course	participants
through the whole	semester (a computer simulation of a realistic business environment where participants play the role of contractors, competing in a m	arket with variable	demand for
construction worl	x). In this online game, developed and directly operated by the California Polytechnic State University, students act as contractors, ma	naging both, their o	companies
	and projects.		
126ECM	Economics and Management	Z,ZK	7
A-Z of construction	n engineering and management both at the corporate and project level. All participants, processes and aspects of the construction in	dustry are introduc	ed. Course
concentrates on	all major topics of company and project management, e.g. business development and marketing, bidding, planning and controlling of	all vital processes	, financial
management, cos	t control, risk management, etc. Lectures are based on the real practice experience of all course"s lecturers and various case studies	are studied and so	lved. Online
Building Industry	Game (BIG) will be played by all course participants through the whole semester (a computer simulation of a realistic business environ	nment where partic	cipants play
the role of contra	actors, competing in a market with variable demand for construction work). In this online game, developed and directly operated by the	California Polytec	hnic State
	University, students act as contractors, managing both, their companies and projects.		
126YMCC	Management in Construction Company	Z	2
Nature of Construc	tion Business Primary Causes of Business Failure, External and Internal Influences Business Strategies to Minimize the Risk of Business	Failure Business De	evelopment,
Marketing and Bide	ling Planning Strategies Plan Implementation/Control Strategies Financial Management Strategies Construction Risk Management Leader	ship Challenges Or	ganizational
Behavior Corpor	ate & Employee Ethics Company Performance Checklist Managing Profitable Construction Business Lectures are based on the r	eal practice experi-	ence of all
	and various case studies are studied and solved. Online Building Industry Game (BIG) will be played by all course participants through th		
	alistic business environment where participants play the role of contractors, competing in a market with variable demand for construct	,	
	irectly operated by the California Polytechnic State University, students act as contractors, managing both, their companies and project		
online game and n	neeting the attendance requirement is required to receive course credit (zápo et). The awarding of the course credit is a condition for b	being allowed to tak	ke the exam
	(zkouška).		
128CGR	Computer Graphics	Z,ZK	4
Foundation of usin	g various types of computer graphics programs. Grid graphics, digital photography, vector drawing, 3D modelling, visualisation. Based	computer graphics	algorithms.
128CS1	C# Programming and Application Development	Z,ZK	4
Students will bec	come acquainted with one of the currently most popular programming language from C-family languages containing next to C# also a	well-known Java. T	he simple
-	les to study the language incrementally by developing real applications since the very beginning. Thus students can develop their own		-
	dy. Thanks to this fact students can pursue themes like advanced use of objects, some of design patterns and application architecture	, or user class libra	ries.
128CS2	C# 2 - Advanced Application Development	Z,ZK	4
	ts will get more familiar with one (C#) of the most popular programming language of the C-family languages, where next to C# also th		
will pursue the	mes like advanced usage and design of objects, user class libraries and re-use of objects in application development, as well as design	on patterns and ap	plication
	architecture.		
128YIND	Computer Use Fundamentals	Z	2
	uments and data processing - focused on documents and data that are not one-use only or not "use once then discard". Exploiting Of		
	advanced document management. Documents (Word), spreadsheets (Excel) and automated data calculations. Desk-top databases (A		-
	les, what is an IS and what is not an IS. Other problem-oriented programs and user interfaces (e.g. np++). With an option: Computer a	ided processes an	
129ACM1	Architectural CAD Modelling 1	KZ	3
	re acquainted with the possibilities of BIM using ArchiCAD software. Basic tools, functions and principles are demonstrated. Students		-
knowledge on a s	simplified BIM model of a family house or another appropriate building or structure. Objective of this course is to teach prospective arc	hitects and civil en	gineers an
	effective method of creation BIM model that is base for 2D and 3D documentation (including VR model, IFC etc.).	·	
129ACM2	Architectural CAD Modelling 2	KZ	3
The subject enhan	ces and develops skills acquired in the basic course 129ACM1. The course is focused on methods and tools for creating of complicated	d shapes and librar	y elements.

129CTA	Composition and Theory of Architecture	KZ	2	
Seminars are focus	ed on the composition of architecture, which will be analyzed through the basic ordering principles, pattern making process and applica	tion of the theoretic	al concepts.	
132BPRO	Bachelor Project	Z	12	
The assignment of	the final thesis is always individual based on the agreement of the teacher and the student. The vast majority of assignments are co	nnected with the s	cientific and	
research activities	of the respective employee. The output of the solution may be a brief research study of the given problem, experimental activity, prog to the respective assignment.	ramming and othe	rs according	
132MMO	Modern Methods of Optimization	Z	2	
The course is aime	d at an overview of numerical optimization methods applicable not only in the Civil Engineering area. The emphasis is put more on the in	troduction of drivin	g principles,	
	however, practical applications in MATLAB environment are also conducted during exercises.			
132SM3E	Structural Mechanics 3	Z,ZK	5	
	Analysis of statically indeterminate structures by the slope-deflection method and the force method. Principle of virtual wor	k.		
132ST01	Structural Mechanics 1	Z,ZK	6	
The principal ob	jective of the course is to familiarize students with basic principles of mechanics such as equilibrium and equivalency applied to stati	cally determined s	tructures	
132ST02	Structural Mechanics 2	Z,ZK	6	
The principal object	tive of the course is to familiarise students with the application of basic principles of mechanics to the determination of the distributio	n of internal forces	in statically	
	determined structures, cross-sectional properties and the elementary definition of stress.		1	
132STA	Structural Analysis	Z,ZK	5	
Extreme effects of	live load, influence lines. Matrix form of the direct stiffness method and its computer implementation for trusses and frames. Two-dim	ensional elasticity	and its finite	
	element treatment. Governing equations of thin plates and their finite element treatment.		1	
132TELA	Theory of Elasticity	Z,ZK	6	
	and basic equations of theory of elasticity. Assumptions on deformation and stress distribution in beams. Tension and compression, pu	-	-	
in two planes, com	bination of axial and bending stresses. Core of a cross section. Differential equation of elasticity curve. Shear stresses in flexural bear	ns. Free torsion. El	lastic-plastic	
	and plastic state of cross-section. Stability of beams. 2D problems, walls and plates.			
133BPRO	Bachelor Thesis	Z	12	
	s the qualification thesis of a bachelor's degree. It can take the form of processing the structural part of the building design project or		the topic of	
	igning and application of a structural element with a variant comparative analysis or parametric study or performing and analysing ex			
133BSBD	Basis of Bridges Design	ZK	2	
	s an overview of bridge elements, construction techniques, bridge loading an analysis. After the introduction and differentiation of ba	-	-	
	scussed to equip the student with the necessary terminology, the superstructure is discussed from perspective of concrete and steel		-	
	ads and analysis are illustrated in detail with the support of influence lines. Necessary care is devoted the the construction techniques	and analysis of di	nerent basic	
4000400	bridge types.	7		
133CASD	Computer Aided Structural Design Structural Design has been implemented as an optional compulsory course which provides students to gain knowledge in a computer	Z	2	
	e structures. The objective of the course is to demonstrate the practical use of selected FEM software for the limit state design of variou			
	e focus is on computational models, reinforcement design, numerical modelling, crack control, deformation control and internal force		res. Marriery,	
133CM01	Concrete and Masonry Structures 1	Z.ZK	6	
	f concrete structures; prerequisite course 133FSTC Fundamentals of Structural Design - Concrete. Calculation models, methods of ar	, ,	-	
	bods), reinforcing and detailing for particular structures and structural elements: slabs, frames, shear walls, staircase, basement and re		•	
133CM02	Concrete and Masonry Structures 2	Z,ZK	7	
	e structures on serviceability. Limit states approach. Stress control, cracking and crack width analysis, allowable crack width in concru		1 -	
-	ete structures, numerical and simplified analysis, criteria of acceptance. Prestressed concrete. Introduction, basic principles, design p			
	ressing, pre-tensioning and post-tensioning, verification of serviceability and ultimate limit states. Masonry structures, introduction, te			
elements, reinfor	ced masonry. Strengthening of masonry structures. Precast concrete structures, design situations, specific problems. Strut and tie m	odels. Joints. Indus	strial halls.	
	Composite concrete-concrete structures. Introduction to concrete bridges and introduction to engineering structures.			
133FSTC	Fundamentals of Structural Design - Concrete	Z,ZK	4	
The course is focus	sed on design of concrete structures based on ultimate state design method. The focal topics are design of reinforced concrete memb	ers for basic types	s of straining	
	ombination of normal forces and bending moments) including determination of load effects; introduction to serviceability limit states.			
production and mat	terial properties of concrete and their testing, properties of steel reinforcement and interaction of reinforcement and concrete. The prer	equisite courses a	re Structural	
	mechanics, Theory of Elasticity, Building materials, Building structures.			
133SDP2	Structural Design Project 2	KZ	6	
	he structural part of the project documentation for the given structure (part of the structure). The design of the selected variant of the	•		
requirements of o	ther professions. Structural analysis and drawing documentation to the extent specified during consultations. The Department of Arcl	nitectural Engineer	ing (K124)	
400\/0D	and Geotechnics (K135) collaborate in teaching in the course.	7 71/	4	
133YCB	Concrete Bridges	Z,ZK	4	
	crete Bridges is focused on design and construction of this type of bridge structures. Lectures are devoted to spatial arrangement and structure, effects and realization of prestressing, types of concrete bridge structures and technologies of their construction. Seminars		-	
bildges, bildge sub	and provide an opportunity to apply the learnt principles.	are spin into intere	sung issues	
134BPRO	Bachelor Project	Z	12	
	burse, student formulates a bachelor's thesis that is necessary to reach the bachelor's degree. This course is focused on steel or time	1	1	
			1	
134FDTS	Fire Design of Steel, Concrete and Timber Str. cused on basic principles of design of structural elements exposed to fire. The principles of loads applied at fire and methods for eval	Z,ZK	2 ature and	
	temperature of structural elements are explained. The design methods for simple steel, composite and timber structures are g			
134FSTT	Fundamentals of Structural Design - Steel	Z,ZK	3	
	sed on design of steel, steel and concrete concrete composite load-bearing structures. The students will learn how to design of simp		1	
	columns, trusses) and structural bolted and welded connections.			
134GLST	Glass Structures	Z,ZK	2	
	ding to introduce the students the field of structural applications of glass and to give them some specific skills for calculation and detaili		1	
	d fins, columns and walls, point-supported glass, as well as for glazing systems such as glass facades, canopies and roofs, stairs an			
	properties of glass as structural material will be presented in comparison with other basic building materials, together with selected examples of glass/glazing applications. Design			
	ting technology, relevant technical regulations, specification and current methods applied in design will be described. Worked exampl	· ·	-	
	for better understanding, and design project will help to fix specific knowledge.			

1345L5 Stahless Steel and Aluminium Structures ZZK 2 because conversion and enderstanding and relations. The for an ender of stabless and metalizations and enversions and enderstanding and relations and enversions and enderstanding and relations and enversions and enversions. The enderstanding and relations and enversions and enversions and enversions and enversions and enversions. The enderstanding and relations and enversions and enversions and enversions and enversions and enversions. The enversion and enversions and enversions and enversions and enversions and enversions and enversions. The enversion and enversions and enversions. The enversion and enversions and enversions and enversions and enversions and enversions and enversions. The enversion of enversions and enversions and enversions and enversions and enversions and enversions. The enversion and enversion and enversions and enversions and enversions and enversions and enversions. The enversion and enversion and enversions and enversions and enversions and enversions and enversions and enversions. The enversion and enversions and enversions and enversions and enversions and enversions and enversions. The enversions and enversions and enversions and enversions and enversions and enversions. The enversions and enversions and enversions and enversions and enversions and enversions and enversions. The enversion and enversion and enversions and enversions and enversions and enversions and enversions and enversions. ZZK C 13455501 Enversions and enversions and enversions enversions and enversions. ZZK Z RZZK RZZK RZZK<					
site in merchan an electrical, in the second part of the subject, the same tapics are covered for adamtine, structures. Weising and the effected carries are discussed in detail in terms of evel designs, sector design and cold weith effect in merchans. 134SPD2 Structured Design Project 2 KZ 6 134SP01 Streed Structures 0 weith electrication of the design of the interpretained in terms of the interpretained in terms of the interpretained interpretained in terms of the interpretained interpretai	Stainless steels suitable for structures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with respect to low-carbon				
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