

# 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: 120

Elective courses credits: 0

Sum of credits in the plan: 120

Note on the plan: tento studijní plán platí od roku 2020 a pokračuje v 5. až 8. semestru podle jednotlivých specializací

Name of the block: Compulsory courses

Minimal number of credits of the block: 117

The role of the block: Z

Code of the group: BI20190100

Name of the group: Stavební inženýrství, varianta I, 1. semestr

Requirement credits in the group: In this group you have to gain at least 29 credits

Requirement courses in the group: In this group you have to complete at least 6 courses

Credits in the group: 29

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
101KG01	<b>Constructive Geometry</b> Iva Kivková, Iva Malechová, Liya Gaynutdinova, Michal Zdražil, Iva Slámová, Hana Lakomá, Jana Šapová <b>Jana Šapová</b> Iva Kivková (Gar.)	Z,ZK	5	2P+2C	Z,L	z
101MA01	<b>Mathematics 1</b> Iva Kivková, Iva Malechová, Iva Slámová, Jana Šapová, Petr Kůra, František Bubeník, Zdeněk Skalák, Ondřej Zindulka, Ivana Pultarová, ..... <b>Aleš Někvinda</b> Aleš Někvinda (Gar.)	Z,ZK	6	2P+3C	Z,L	z
123SH01	<b>Building Materials</b> Eva Vejmelková, Alena Vimmrová, Miloš Jerman <b>Alena Vimmrová</b> Alena Vimmrová (Gar.)	Z,ZK	5	2P+2C	Z,L	z
126BIM1	<b>BIM</b> Josef Žák <b>Josef Žák</b> Josef Žák (Gar.)	Z	1	1P+1C	Z	z
132SM01	<b>Structural Mechanics 1</b> Michal Polák, Martin Válek, Daniel Rypl, Anna Kurová, Matěj Lepš, Jan Sýkora, Tomáš Krejčí, Miroslav Šap, Karel Pohl, ..... <b>Michal Polák</b> Michal Polák (Gar.)	Z,ZK	6	2P+2C	Z,L	z
154SG01	<b>Land Surveying in Civil Engineering</b> Rudolf Urban, Martin Štroner <b>Rudolf Urban</b> Rudolf Urban (Gar.)	Z,ZK	6	2P+3C	Z,L	z

### Characteristics of the courses of this group of Study Plan: Code=BI20190100 Name=Stavební inženýrství, varianta I, 1. semestr

101KG01	Constructive Geometry Projections and projective methods. Axonometry. Oblique projection. Orthogonal axonometry. Displaying prisms, cones, cylinders, pyramids, balls. Simple problems in axonometry. Basics of lighting of solids and groups of solids. Perspective projection. Curves, parametrisation. Frenet's trihedron, torsion and curvature. Helical surfaces. Quadrics. Surfaces in building industry.	Z,ZK	5
101MA01	Mathematics 1 <a href="https://mat.fsv.cvut.cz/bubenik/mat1detail.htm">https://mat.fsv.cvut.cz/bubenik/mat1detail.htm</a>	Z,ZK	6
123SH01	Building Materials Building materials - basis course. Classification of the materials. Structure of materials. Main properties of materials. Application of materials in building constructions. Introduction to material testing.	Z,ZK	5
126BIM1	BIM The course focuses on teaching basic knowledge in the field of Building Information Management (BIM) in theoretical and practical areas, applicable across different specialisations and disciplines of the construction industry. Students will be introduced to data formats, data standards, intellectual property issues, working with digitized documents, raster and vector graphics, open data sources in the Czech Republic, ICT and enterprise systems, information systems for the construction industry, but also the context of BIM in the current construction industry in relation to the entire project life cycle and its specifics (delivery, expert focus, phases of construction projects, etc.) The theoretical knowledge is complemented by practical exercises aimed at mastering and understanding the basic principles of object-oriented parametric modelling.	Z	1

132SM01	Structural Mechanics 1	Z,ZK	6
Concurrent forces, force systems acting on rigid bodies in space/plane, moment of a force about a point and line. Supports of a rigid body, reaction forces. Compound two-dimensional structures. Trusses. Reaction forces applying the principle of virtual work.			
154SG01	Land Surveying in Civil Engineering	Z,ZK	6
The shape and size of the Earth, substitutive surfaces, cartographic projections Horizontal and vertical control, coordinate calculations Quality control, deviations and tolerations in build-up Angle and distance measurements Heighting measurements Other geodetic methods in build-up (GNSS, DPZ, ...) Photogrammetry and laser scanning Thematic mapping and present state documentation Geodetic works in build-up State map series of CR and thematic maps for build-up Geographic information systems and spatial planning Cadastre of real estates Laws and decrees for geodesy and build-up in Czech Republic			

Code of the group: BI20190200

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

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

Requirement courses in the group: In this group you have to complete at least 6 courses

Credits in the group: 28

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
101MA02	<b>Mathematics 2</b> Iva Kivková, Iva Malechová, Iva Slámová, Hana Lakomá, Jana Ápová, Petr Kuera, František Bubeník, Zdeněk Skalák, Ondřej Zindulka, ..... <b>Ivana Pultarová</b> Ivana Pultarová (Gar.)	Z,ZK	6	2P+3C	L,Z	z
102FYI	<b>Physics</b> Pavel Novák, Jiří Konříšt, Petr Pokorný, Pavel Demo <b>Pavel Novák</b> Pavel Novák (Gar.)	Z,ZK	4	3P+1C	L	z
105SVAI	<b>Social Sciences and Architecture</b> Josef Záruba Pfeffermann, Bořivoj Marek, Rudolf Pošva, Dana Šímanová, Jana Hrbková <b>Josef Záruba Pfeffermann</b> Josef Záruba Pfeffermann (Gar.)	Z,ZK	5	4P+1C	L	z
123CHE	<b>Chemistry</b> Jana Nábělková, Martin Keppert, Milena Pavlíková <b>Milena Pavlíková</b> Milena Pavlíková (Gar.)	Z,ZK	4	3P+1C	L	z
132SM02	<b>Structural Mechanics 2</b> Michal Polák, Martin Válek, Daniel Rypl, Anna Kurová, Matěj Lepš, Jan Sýkora, Miroslav Áp, Karel Pohl, Jitka Němcová, ..... <b>Matěj Lepš</b> Michal Polák (Gar.)	Z,ZK	6	2P+2C	L,Z	z
135GM01	<b>Geomechanics 1</b> Kateřina Křiváková, Jan Jelínek, Svatoslav Chamra, Richard Malát <b>Kateřina Křiváková</b> Kateřina Křiváková (Gar.)	Z	3	2P+1C	L	z

Characteristics of the courses of this group of Study Plan: Code=BI20190200 Name=Stavební inženýrství, varianta I, 2. semestr

101MA02	Mathematics 2 <a href="https://mat.fsv.cvut.cz/vyuka/bakalari/eng/ls/MT02/">https://mat.fsv.cvut.cz/vyuka/bakalari/eng/ls/MT02/</a>	Z,ZK	6
102FYI	Physics This is a basic physics course for students of the study programmes Civil Engineering; Management and Economics in Construction. The course focuses on mechanics and basic thermodynamics. The 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. Heat transfer.	Z,ZK	4
105SVAI	Social Sciences and Architecture The subject combines the teaching of several social sciences: economics and economic policies, political science, political philosophy and law, with an overview of the development of architecture. In the section devoted to economics, the basic categories of the market economy, the foundations of economic policy and the basic concepts of international economics are explained. Theoretical interpretation is effectively combined with practical examples from economic reality. In the lectures devoted to law, a brief overview of the development of Roman law and its institutions is supplemented by a well-founded interpretation of the constitution, human rights and the labor code. Great attention is paid to selected provisions of the Civil Code and the Construction Act. In the political science lectures, the political development in ancient times is described in an engaging way, the theory of the state, political systems, democracy and totalitarianism are clarified. The series of lectures on the history of architecture and construction provides a comprehensive interpretation of the history of architecture from antiquity to postmodernism and deconstruction.	Z,ZK	5
123CHE	Chemistry Introduction to general chemistry - chemical bond, compounds, reactions, equilibrium. Chemistry of environment - water, atmosphere, pedosphere. Chemistry of building materials - inorganic binders, glass, ceramic, metals, natural polymers, wood, synthetic polymers on C and Si basis. Introduction to degradation of building materials and to analytical chemistry.	Z,ZK	4
132SM02	Structural Mechanics 2 Internal forces diagrams of simple statically determinate plane structures and compound two-dimensional structures. Multiaxially loaded cantilever. Definition of normal stress and prepositions of its distribution in a cross section. Equivalence of internal forces. Geometry of mass and areas, centre of gravity and moments of inertia.	Z,ZK	6
135GM01	Geomechanics 1 The course focuses on the understanding of basic geological laws and principles in relation to architecture, civil engineering and urban planning. Emphasis is placed on explaining the influence of geological processes, both endogenous and exogenous, on the rock environment and how the geological situation affects the design of structures and their interaction with the rock environment. At the same time, attention is paid to the technical properties of rocks with regard to their practical applications. The course also includes a brief introduction to the regional geology of the Czech Republic.	Z	3

Code of the group: BI20190300

Name of the group: Stavební inženýrství, varianta I, 3. semestr

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

Requirement courses in the group: In this group you have to complete at least 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
101MA03	<b>Mathematics 3</b> Iva Malečková, Petr Kučera, Ondřej Zindulka, Ivana Pultarová, Miloš Vlasák, Aleš Nekvinda, Michal Beneš, Martin Hála, Martin Soukenka, ..... <b>Michal Beneš</b> Michal Beneš (Gar.)	Z,ZK	6	3P+2C	Z,L	z
124PSI1	<b>Building Structures 11</b> Petr Hájek, Ctislav Fiala, Jan Růžička, Běla Stibřková, Jaroslav Vychytil <b>Petr Hájek</b> Petr Hájek (Gar.)	Z	4	2P+1C	Z	z
126EKMN	<b>Economics and Management</b> Božena Kadeřáková, Petr Kalvoda, Eduard Hromada, Pavlína Píchová, Pavlína Píchová <b>Eduard Hromada</b> Petr Kalvoda (Gar.)	Z,ZK	7	4P+2C		z
132PRPE	<b>Strength of Materials</b> Karel Pohl, Tomáš Plachý, Martin Doškál, Dagmar Jandeková, Tomáš Koudelka, Milan Jirásek, Michal Šejnoha, Petr Kabele, Lenka Melzerová, ..... <b>Petr Kabele</b> Petr Kabele (Gar.)	Z,ZK	6	3P+2C	Z,L	z
136DSUZ	<b>Transport Structures and Urban Planning</b> Lenka Lomoz, Ludvík Vébr, František Pospíšil, Ondřej Bret, Jan Hradil, Tomáš Havlíček, Petr Mondschein <b>Ludvík Vébr</b> Ludvík Vébr (Gar.)	Z,ZK	7	5P+1C	L,Z	z

Characteristics of the courses of this group of Study Plan: Code=BI20190300 Name=Stavební inženýrství, varianta I, 3. semestr

101MA03	Mathematics 3 <a href="https://mat.fsv.cvut.cz/vyuka/bakalari/eng/zs/">https://mat.fsv.cvut.cz/vyuka/bakalari/eng/zs/</a>	Z,ZK	6			
124PSI1	<b>Building Structures 11</b> The concept of design of building structures with a comprehensive consideration of the functional requirements imposed on individual elements. Requirements for building structures, structural system, interaction of elements, spatial effect of the structural system. Vertical load-bearing structures (functions, requirements, principles of the structural design of walls, columns), floor structures (functions, requirements, principles of the structural design of vaults, wooden ceilings, reinforced concrete ceilings, ceramic concrete ceilings, steel and steel concrete ceilings). Expansion joints in load-bearing systems. Structural systems of single and multi-storey buildings, structural systems of long-span structures.	Z	4			
126EKMN	<b>Economics and Management</b> The aim of the course is to provide students with an introduction to economics and management in the construction industry and to familiarize them with basic economic terms and their practical applications. Students will be prepared to solve basic construction-management problems in the construction industry. They will acquire basic information about the method of pricing construction works and master the basic methods of managing a construction company. Emphasis is placed on understanding the principle of economic thinking in relation to the construction industry.	Z,ZK	7			
132PRPE	<b>Strength of Materials</b> Fundamentals of the theory of elasticity: stress and strain of straight beams subjected to bending and free torsion, ultimate plastic capacity of a member in bending, critical loads and buckling lengths of straight compression members. Basic assumptions, quantities, and equations describing the stress and strain state in 3D continuum, plates and walls.	Z,ZK	6			
136DSUZ	<b>Transport Structures and Urban Planning</b> The course 136DSUZ is composed of 3 issues, which build on each other and complement each other. These are the area of transport structures (roads and rail transport - scope 3+1) and the area of urban planning and spatial planning (scope 2+0). Unlike the road construction and railroad construction sections, the urban planning section does not end with credit. Transport Structures - Roads (R): Introduction to basic terminology in the part of roads, history. Road Act and related legislative and technical regulations, their impact on road design. Design categories of roads and motorways, design speed, directional and elevation design of routes, cross-sectional layout of roads and motorways, earthwork - dimensions, shapes, drainage. Urban roads, division and marking, definition of MK space, differences in design, operation and equipment. Carriageway, division, design principles. Safety equipment, junctions and crossings. Transport Structures - Rail transport (RT): Introduction to basic terminology, Issues of railway crossings from the point of view of security, design and operation. Tram transport - history, principles of tram track construction, interaction with the environment. Metro as a system of urban rail transport. Basic principles and parameters, metro lines. Railway constructions - an introduction to the design and construction of a railway track in the conditions of the Czech Republic, the basic elements of the railway superstructure. Spatial Planning (SP): Teaching spatial planning and urban planning, spatial planning tools and procedures for their acquisition.	Z,ZK	7			

Code of the group: BI20190400

Name of the group: Stavební inženýrství, varianta I, 4. semestr

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

Requirement courses in the group: In this group you have to complete at least 7 courses

Credits in the group: 30

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
124PSI2	<b>Building Structures 21</b> Petr Hájek, Ctislav Fiala, Jan Růžička, Malila Noori, Běla Stibřková, Jiří Nováček, Jaroslav Vychytil, Tereza Pavl, Jiří Pazderka, ..... <b>Jiří Pazderka</b> Jiří Pazderka (Gar.)	Z,ZK	4	2P+1C	L	z
132SM3	<b>Structural Mechanics 3</b> Tomáš Krejčí, Tomáš Plachý, Tomáš Koudelka, Milan Jirásek, Michal Šejnoha, Petr Kabele, Lenka Melzerová, Martin Lebeda, Eva Novotná, ..... <b>Petr Kabele</b> Petr Kabele (Gar.)	Z,ZK	5	2P+2C	L,Z	z

133NNKB	<b>Fundamentals of Structural Design - Concrete</b> <i>Martin Típka, Jitka Vašková, Radek Štefan, Michal Števula, Nicole Svobodová</i> <b>Martin Típka</b> Martin Típka (Gar.)	Z,ZK	4	2P+1C	L,Z	z
134NNKO	<b>Design of Supporting StructuresI - Steel</b> <i>František Wald, Martina Eliášová</i> <b>Martina Eliášová</b> Martina Eliášová (Gar.)	Z,ZK	3	2P+1C	L	z
135GM2I	<b>Geomechanics 2I</b> <i>Jiří Košťál, Jan Salák, Ivan Vaníek</i> <b>Ivan Vaníek</b> Ivan Vaníek (Gar.)	Z,ZK	5	2P+1C	Z	z
141HYA	<b>Hydraulics</b> <i>Aleš Havlík, Tomáš Píček, Václav Matoušek, Petr Sklenář, Anna Špačková, Jakub Novotný, Vojtěch Bareš, Jan Krupička, Veronika Skalová, .....</i> <b>Václav Matoušek</b> Václav Matoušek (Gar.)	Z,ZK	5	2P+2C	Z,L	z
142VIZP	<b>Water and Environmental Engineering</b> <i>Aleš Havlík, Petr Nowak, Tomáš Dostál, Martin Doška, Martin Šanda, Pavel Fošumpaur, Bohumil Šastný, Ladislav Satrapa, David Stránský, .....</i> <b>Ladislav Satrapa</b> (Gar.)	Z,ZK	4	3P+1C	Z,L	z

**Characteristics of the courses of this group of Study Plan: Code=BI20190400 Name=Stavební inženýrství, varianta I, 4. semestr**

124PSI2	Building Structures 2I	Z,ZK	4	Staircases, sloping ramps, lift shafts - requirements, structural and material solutions, basics of typology, design principles, construction details, railing. Building foundations - foundation conditions, types of foundations, requirements, building plinth area (construction details). Basement - solution of basement walls, requirements, protection against water, waterproofing systems. Structural expansion joints in buildings - principles of joints design in bearing structures, thermal expansion, compensation of differences in settlement, construction details. Roof truss systems.		
132SM3	Structural Mechanics 3	Z,ZK	5	Deformation and force method for the solution of reactions and internal forces on statically indeterminate beams, frames, and truss structures. Calculation of displacements of beams, frames, and truss structures using the principle of virtual works.		
133NNKB	Fundamentals of Structural Design - Concrete	Z,ZK	4	The content of the subject are the basics of load-bearing concrete structures design and the design methodology according to valid standards, including the determination of load effects. The properties of concrete, the production and testing of concrete, the properties of concrete reinforcement and its interaction with concrete are discussed. Design and reinforcement of concrete structures for basic types of loading (bending, shear, pressure) are the main part of this course. An introduction to serviceability limit states is in the end of this course. The course follows the introductory subject of Civil Engineering program (Structural Mechanics, Elasticity and Strength, Building Materials, Building Structures).		
134NNKO	Design of Supporting StructuresI - Steel	Z,ZK	3	The basics of designing steel, steel-concrete and wooden load-bearing structures according to applicable standards, including the determination of load effects, design differences due to the specific properties of individual materials.		
135GM2I	Geomechanics 2I	Z,ZK	5	Formation of soils, basic properties of soils, water in soil, strength and deformation properties of soils and their determination, improvement of soil properties, application tasks		
141HYA	Hydraulics	Z,ZK	5	A course deals with issues of hydrostatics and hydrodynamics with aiming at civil engineering applications. There are analysed tasks related to hydrostatic and hydrodynamic loading of structures, pipeline flow, open channel flow and groundwater flow.		
142VIZP	Water and Environmental Engineering	Z,ZK	4	During the teaching semester, students are introduced to the fields of water engineering, water management and environmental engineering. In particular, emphasis is placed on the practical aspects of water and environmental engineering in close relation to other branches of civil engineering. The course is taught in the form of lectures and tutorials. The lectures are divided thematically into 20 blocks according to the different branches of the discipline (13 times water engineering and 7 times environmental engineering). In the exercises, students work on basic problems in the field of hydrology, water supply and water structures, especially dams, hydropower and flood issues. All 4 "water" departments of K14x are involved in teaching the course.		

Name of the block: Povinná tělesná výchova, sportovní kurzy

Minimal number of credits of the block: 0

The role of the block: PT

Code of the group: BTV\_POV

Name of the group: Povinná tělesná výchova

Requirement credits in the group:

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

Credits in the group: 0

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
TV1	Physical Education	Z	0	0+2	Z	PT
TV2	Physical Education	Z	0	0+2	L	PT

**Characteristics of the courses of this group of Study Plan: Code=BTV\_POV Name=Povinná tělesná výchova**

TV1	Physical Education	Z	0
TV2	Physical Education	Z	0

Name of the block: Jazyky

Minimal number of credits of the block: 3

The role of the block: J

Code of the group: BF20190101\_I

Name of the group: Povinn volitelný jazyk, 1. semestr

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

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

Credits in the group: 1

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
104YCA1	<b>English 1</b> Jarmila Fu íková, Sandra Giormani, Anna Študentová, Hana Horká, Petra Martinová, V ra ermáková, Michaela Németh, Petra Florianová, Svatava Boboková-Bartíková, ..... <b>Svatava Boboková-Bartíková</b> Sandra Giormani (Gar.)	Z	1	2C	Z,L	J
104YCN1	<b>German 1</b> Svatava Boboková-Bartíková <b>Svatava Boboková-Bartíková</b> Svatava Boboková-Bartíková (Gar.)	Z	1	2C	Z,L	J

Characteristics of the courses of this group of Study Plan: Code=BF20190101\_I Name=Povinn volitelný jazyk, 1. semestr

104YCA1	English 1				Z	1
English 1 Course code: 104Y CA1 Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit The aim of the compulsory English course is to enhance the knowledge of lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on professional language (i.e., ESP - technical style) and communicative competence within the construction industry. The course also seeks to teach students to read technical literature and to be able to produce essential written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit. Literature: Horká Hana, Giormani Sandra, Martinová Petra, Nivenová Renata : Professional English for Civil Engineering (Units 1 - 5)						
104YCN1	German 1				Z	1
The compulsory course - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction industry, understanding professional texts, and learning the necessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Literature: A.Hanáková, J.Dressel: Deutsch im Bauwesen						

Code of the group: BF20190202\_I

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

Requirement credits in the group: In this group you have to gain at least 2 credits

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

Credits in the group: 2

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
104YC2A	<b>English 2</b> Jarmila Fu íková, Sandra Giormani, Anna Študentová, Hana Horká, Petra Martinová, V ra ermáková, Michaela Németh, Petra Florianová, Svatava Boboková-Bartíková, ..... <b>Svatava Boboková-Bartíková</b> Sandra Giormani (Gar.)	Z,ZK	2	2C		J
104YC2N	<b>German 2</b> Svatava Boboková-Bartíková <b>Sandra Giormani</b> Svatava Boboková-Bartíková (Gar.)	Z,ZK	2	2C		J

Characteristics of the courses of this group of Study Plan: Code=BF20190202\_I Name=Povinn volitelný jazyk, 2. semestr

104YC2A	English 2				Z,ZK	2
English 2 Course code: 104YC2A Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit and exam The aim of the compulsory English course is to enhance the knowledge of lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on professional language (i.e., ESP - technical style) and communicative competence within the construction industry. The course also seeks to teach students to read technical literature and to be able to produce essential written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit and an examination. Literature: Horká Hana, Giormani Sandra, Martinová Petra, Nivenová Renata : Professional English for Civil Engineering (Units 6 – 10)						
104YC2N	German 2				Z,ZK	2
The compulsory course - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction industry, understanding professional texts, and learning the necessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Literature: A.Hanáková, J.Dressel: Deutsch im Bauwesen						

## List of courses of this pass:

Code	Name of the course	Completion	Credits
101KG01	Constructive Geometry Projections and projective methods. Axonometry. Oblique projection. Orthogonal axonometry. Displaying prisms, cones, cylinders, pyramids, balls. Simple problems in axonometry. Basics of lighting of solids and groups of solids. Perspective projection. Curves, parametrisation. Frenet's trihedron, torsion and curvature. Helical surfaces. Quadrics. Surfaces in building industry.	Z,ZK	5
101MA01	Mathematics 1 <a href="https://mat.fsv.cvut.cz/bubenik/mat1detail.htm">https://mat.fsv.cvut.cz/bubenik/mat1detail.htm</a>	Z,ZK	6
101MA02	Mathematics 2 <a href="https://mat.fsv.cvut.cz/vyuka/bakalari/eng/ls/MT02/">https://mat.fsv.cvut.cz/vyuka/bakalari/eng/ls/MT02/</a>	Z,ZK	6
101MA03	Mathematics 3 <a href="https://mat.fsv.cvut.cz/vyuka/bakalari/eng/zs/">https://mat.fsv.cvut.cz/vyuka/bakalari/eng/zs/</a>	Z,ZK	6
102FYI	Physics This is a basic physics course for students of the study programmes Civil Engineering; Management and Economics in Construction. The course focuses on mechanics and basic thermodynamics. The 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. Heat transfer.	Z,ZK	4
104YC2A	English 2 English 2 Course code: 104YC2A Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit and exam The aim of the compulsory English course is to enhance the knowledge of lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on professional language (i.e., ESP - technical style) and communicative competence within the construction industry. The course also seeks to teach students to read technical literature and to be able to produce essential written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit and an examination. Literature: Horká Hana, Giormani Sandra, Martincová Petra, Nivenová Renata : Professional English for Civil Engineering (Units 6 – 10)	Z,ZK	2
104YC2N	German 2 The compulsory course - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction industry, understanding professional texts, and learning the necessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Literature: A.Hanáková, J.Dressel: Deutsch im Bauwesen	Z,ZK	2
104YCA1	English 1 English 1 Course code: 104Y CA1 Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit The aim of the compulsory English course is to enhance the knowledge of lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on professional language (i.e., ESP - technical style) and communicative competence within the construction industry. The course also seeks to teach students to read technical literature and to be able to produce essential written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit. Literature: Horká Hana, Giormani Sandra, Martincová Petra, Nivenová Renata : Professional English for Civil Engineering (Units 1 - 5)	Z	1
104YCN1	German 1 The compulsory course - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction industry, understanding professional texts, and learning the necessary presentation skills in order to present all relevant professional issues. The end-of-course requirement is a credit. Literature: A.Hanáková, J.Dressel: Deutsch im Bauwesen	Z	1
105SVAI	Social Sciences and Architecture The subject combines the teaching of several social sciences: economics and economic policies, political science, political philosophy and law, with an overview of the development of architecture. In the section devoted to economics, the basic categories of the market economy, the foundations of economic policy and the basic concepts of international economics are explained. Theoretical interpretation is effectively combined with practical examples from economic reality. In the lectures devoted to law, a brief overview of the development of Roman law and its institutions is supplemented by a well-founded interpretation of the constitution, human rights and the labor code. Great attention is paid to selected provisions of the Civil Code and the Construction Act. In the political science lectures, the political development in ancient times is described in an engaging way, the theory of the state, political systems, democracy and totalitarianism are clarified. The series of lectures on the history of architecture and construction provides a comprehensive interpretation of the history of architecture from antiquity to postmodernism and deconstruction.	Z,ZK	5
123CHE	Chemistry Introduction to general chemistry - chemical bond, compounds, reactions, equilibrium. Chemistry of environment - water, atmosphere, pedosphere. Chemistry of building materials - inorganic binders, glass, ceramic, metals, natural polymers, wood, synthetic polymers on C and Si basis. Introduction to degradation of building materials and to analytical chemistry.	Z,ZK	4
123SH01	Building Materials Building materials - basis course. Classification of the materials. Structure of materials. Main properties of materials. Application of materials in building constructions. Introduction to material testing.	Z,ZK	5
124PSI1	Building Structures 1I The concept of design of building structures with a comprehensive consideration of the functional requirements imposed on individual elements. Requirements for building structures, structural system, interaction of elements, spatial effect of the structural system. Vertical load-bearing structures (functions, requirements, principles of the structural design of walls, columns), floor structures (functions, requirements, principles of the structural design of vaults, wooden ceilings, reinforced concrete ceilings, ceramic concrete ceilings, steel and steel concrete ceilings). Expansion joints in load-bearing systems. Structural systems of single and multi-storey buildings, structural systems of long-span structures.	Z	4
124PSI2	Building Structures 2I Staircases, sloping ramps, lift shafts - requirements, structural and material solutions, basics of typology, design principles, construction details, railing. Building foundations - foundation conditions, types of foundations, requirements, building plinth area (construction details). Basement - solution of basement walls, requirements, protection against water, waterproofing systems. Structural expansion joints in buildings - principles of joints design in bearing structures, thermal expansion, compensation of differences in settlement, construction details. Roof truss systems.	Z,ZK	4
126BIM1	BIM The course focuses on teaching basic knowledge in the field of Building Information Management (BIM) in theoretical and practical areas, applicable across different specialisations and disciplines of the construction industry. Students will be introduced to data formats, data standards, intellectual property issues, working with digitized documents, raster and vector graphics, open data sources in the Czech Republic, ICT and enterprise systems, information systems for the construction industry, but also the context of BIM in the current construction	Z	1

industry in relation to the entire project life cycle and its specifics (delivery, expert focus, phases of construction projects, etc. ) The theoretical knowledge is complemented by practical exercises aimed at mastering and understanding the basic principles of object-oriented parametric modelling.			
126EKMN	Economics and Management	Z,ZK	7
The aim of the course is to provide students with an introduction to economics and management in the construction industry and to familiarize them with basic economic terms and their practical applications. Students will be prepared to solve basic construction-management problems in the construction industry. They will acquire basic information about the method of pricing construction works and master the basic methods of managing a construction company. Emphasis is placed on understanding the principle of economic thinking in relation to the construction industry.			
132PRPE	Strength of Materials	Z,ZK	6
Fundamentals of the theory of elasticity: stress and strain of straight beams subjected to bending and free torsion, ultimate plastic capacity of a member in bending, critical loads and buckling lengths of straight compression members. Basic assumptions, quantities, and equations describing the stress and strain state in 3D continuum, plates and walls.			
132SM01	Structural Mechanics 1	Z,ZK	6
Concurrent forces, force systems acting on rigid bodies in space/plane, moment of a force about a point and line. Supports of a rigid body, reaction forces. Compound two-dimensional structures. Trusses. Reaction forces applying the principle of virtual work.			
132SM02	Structural Mechanics 2	Z,ZK	6
Internal forces diagrams of simple statically determinate plane structures and compound two-dimensional structures. Multiaxially loaded cantilever. Definition of normal stress and prepositions of its distribution in a cross section. Equivalence of internal forces. Geometry of mass and areas, centre of gravity and moments of inertia.			
132SM3	Structural Mechanics 3	Z,ZK	5
Deformation and force method for the solution of reactions and internal forces on statically indeterminate beams, frames, and truss structures. Calculation of displacements of beams, frames, and truss structures using the principle of virtual works.			
133NNKB	Fundamentals of Structural Design - Concrete	Z,ZK	4
The content of the subject are the basics of load-bearing concrete structures design and the design methodology according to valid standards, including the determination of load effects. The properties of concrete, the production and testing of concrete, the properties of concrete reinforcement and its interaction with concrete are discussed. Design and reinforcement of concrete structures for basic types of loading (bending, shear, pressure) are the main part of this course. An introduction to serviceability limit states is in the end of this course. The course follows the introductory subject of Civil Engineering program (Structural Mechanics, Elasticity and Strength, Building Materials, Building Structures).			
134NNKO	Design of Supporting StructuresI - Steel	Z,ZK	3
The basics of designing steel, steel-concrete and wooden load-bearing structures according to applicable standards, including the determination of load effects, design differences due to the specific properties of individual materials.			
135GM01	Geomechanics 1	Z	3
The course focuses on the understanding of basic geological laws and principles in relation to architecture, civil engineering and urban planning. Emphasis is placed on explaining the influence of geological processes, both endogenous and exogenous, on the rock environment and how the geological situation affects the design of structures and their interaction with the rock environment. At the same time, attention is paid to the technical properties of rocks with regard to their practical applications. The course also includes a brief introduction to the regional geology of the Czech Republic.			
135GM2I	Geomechanics 2I	Z,ZK	5
Formation of soils, basic properties of soils, water in soil, strength and deformation properties of soils and their determination, improvement of soil properties, application tasks			
136DSUZ	Transport Structures and Urban Planning	Z,ZK	7
The course 136DSUZ is composed of 3 issues, which build on each other and complement each other. These are the area of transport structures (roads and rail transport - scope 3+1) and the area of urban planning and spatial planning (scope 2+0). Unlike the road construction and railroad construction sections, the urban planning section does not end with credit. Transport Structures - Roads (R): Introduction to basic terminology in the part of roads, history. Road Act and related legislative and technical regulations, their impact on road design. Design categories of roads and motorways, design speed, directional and elevation design of routes, cross-sectional layout of roads and motorways, earthwork - dimensions, shapes, drainage. Urban roads, division and marking, definition of MK space, differences in design, operation and equipment. Carriageway, division, design principles. Safety equipment, junctions and crossings. Transport Structures - Rail transport (RT): Introduction to basic terminology, Issues of railway crossings from the point of view of security, design and operation. Tram transport - history, principles of tram track construction, interaction with the environment. Metro as a system of urban rail transport. Basic principles and parameters, metro lines. Railway constructions - an introduction to the design and construction of a railway track in the conditions of the Czech Republic, the basic elements of the railway superstructure. Spatial Planning (SP): Teaching spatial planning and urban planning, spatial planning tools and procedures for their acquisition.			
141HYA	Hydraulics	Z,ZK	5
A course deals with issues of hydrostatics and hydrodynamics with aiming at civil engineering applications. There are analysed tasks related to hydrostatic and hydrodynamic loading of structures, pipeline flow, open channel flow and groundwater flow.			
142VIZP	Water and Environmental Engineering	Z,ZK	4
During the teaching semester, students are introduced to the fields of water engineering, water management and environmental engineering. In particular, emphasis is placed on the practical aspects of water and environmental engineering in close relation to other branches of civil engineering. The course is taught in the form of lectures and tutorials. The lectures are divided thematically into 20 blocks according to the different branches of the discipline (13 times water engineering and 7 times environmental engineering). In the exercises, students work on basic problems in the field of hydrology, water supply and water structures, especially dams, hydropower and flood issues. All 4 "water" departments of K14x are involved in teaching the course.			
154SG01	Land Surveying in Civil Engineering	Z,ZK	6
The shape and size of the Earth, substitutive surfaces, cartographic projections Horizontal and vertical control, coordinate calculations Quality control, deviations and tolerations in build-up Angle and distance measurements Heighting measurements Other geodetic methods in build-up (GNSS, DPZ, ...) Photogrammetry and laser scanning Thematic mapping and present state documentation Geodetic works in build-up State map series of CR and thematic maps for build-up Geographic information systems and spatial planning Cadastre of real estates Laws and decrees for geodesy and build-up in Czech Republic			
TV1	Physical Education	Z	0
TV2	Physical Education	Z	0

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

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