Study plan

Name of study plan: Stavební inženýrství, specializace Vodní hospodářství a vodní stavby

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Civil Engineering
Type of study: Bachelor full-time
Required credits: 240
Elective courses credits: 0
Sum of credits in the plan: 240
Note on the plan: tento studijní plán platí od akademického roku 2020/21

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

Code of the group: BJ20190100
Name of the group: Stavební inženýrství, varianta J, 1. semestr
Requirement credits in the group: In this group you have to gain at least 29 credits
Requirement courses in the group: In this group you have to complete at least 6 courses
Credits in the group: 29
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
101KG01	**Constructive Geometry** *Iva Křivková, Iva Malechová, Michal Zdražil, Iva Slámová, Hana Lakomá, Petra Vacková, Jana Čápová, Jozef Bobok* ***Iva Křivková*** *Iva Křivková (Gar.)*	Z,ZK	5	2P+2C	Z,L	z
101MA01	**Mathematics 1** *Iva Malechová, Iva Slámová, Petra Vacková, Jana Čápová, Jozef Bobok, Michal Beneš, Ivana Pultarová, Ondřej Zindulka, Jan Chleboun, ...* ***Aleš Nekvinda*** *Aleš Nekvinda (Gar.)*	Z,ZK	6	2P+3C	Z,L	z
105SVAI	**Social Sciences and Architecture** *Josef Záruba Pfeffermann, Bořivoj Marek, Rudolf Pošva, Dana Římanová, Jana Hrbková* ***Josef Záruba Pfeffermann*** *Josef Záruba Pfeffermann (Gar.)*	Z,ZK	5	4P+1C	L	z
123CHE	**Chemistry** *Jana Nábělková, Martin Keppert, Milena Pavlíková* ***Milena Pavlíková*** *Milena Pavlíková (Gar.)*	Z,ZK	4	3P+1C	L	z
132SM01	**Structural Mechanics 1** *Michal Polák, Daniel Rypl, Matěj Lepš, Jan Sýkora, Tomáš Koudelka, Aleš Palička, Karel Pohl, Tomáš Plachý, Martin Válek, ...* ***Michal Polák*** *Michal Polák (Gar.)*	Z,ZK	6	2P+2C	Z,L	z
135GM01	**Geomechanics 1** *Kateřina Kovářová, Jan Jelínek, Svatoslav Chamra, Richard Malát* ***Kateřina Kovářová*** *Kateřina Kovářová (Gar.)*	Z	3	2P+1C	L	z

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

101KG01	Constructive Geometry	Z,ZK	5

Projections and projective methods. Axonometry. Oblique projection. Orthogonal axonometry. Displaying prisms, cones, cylinders, pyramids, balls. Simple problems in axonometry. Basics of lighting of solids and groupes of solids. Perspective projection. Curves, parametrisation. Frenet's trihedron, torsion and curvature. Helical surfaces. Quadrics. Surfaces in building industry.

101MA01	Mathematics 1	Z,ZK	6

https://mat.fsv.cvut.cz/bubenik/mat1detail.htm

105SVAI	Social Sciences and Architecture	Z,ZK	5

The subject combines the teaching of several social sciences: economics and economic policies, political science, political philosophy and law, with an overview of the development of architecture. In the section devoted to economics, the basic categories of the market economy, the foundations of economic policy and the basic concepts of international economics are explained. Theoretical interpretation is effectively combined with practical examples from economic reality. In the lectures devoted to law, a brief overview of the development of Roman law and its institutions is supplemented by a well-founded interpretation of the constitution, human rights and the labor code. Great attention is paid to selected provisions of the Civil Code and the Construction Act. In the political science lectures, the political development in ancient times is described in an engaging way, the theory of the state, political systems, democracy and totalitarianism are clarified. The series of lectures on the history of architecture and construction provides a comprehensive interpretation of the history of architecture from antiquity to postmodernism and deconstruction.

123CHE	Chemistry	Z,ZK	4
Introduction to general 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.			
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.			
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.			

Code of the group: BJ20190200
Name of the group: Stavební inženýrství, varianta J, 2. semestr
Requirement credits in the group: In this group you have to gain at least 28 credits
Requirement courses in the group: In this group you have to complete at least 6 courses
Credits in the group: 28
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
101MA02	**Mathematics 2** *Iva Malechová, Iva Slámová, Hana Lakomá, Petra Vacková, Jana Čápová, Jozef Bobok, Michal Beneš, Ivana Pultarová, Ondřej Zindulka, ...* ***Ivana Pultarová*** *Ivana Pultarová (Gar.)*	Z,ZK	6	2P+3C	L,Z	z
102FYI	**Physics** *Pavel Novák, Tomáš Zbíral, Jiří Konfršt, Petr Pokorný, Jan Trejbal, Pavel Demo, Jiří Novák* ***Jiří Konfršt*** *Pavel Novák (Gar.)*	Z,ZK	4	3P+1C	L	z
123SH01	**Building Materials** *Alena Vimmrová, Eva Vejmelková, Miloš Jerman* ***Eva Vejmelková*** *Alena Vimmrová (Gar.)*	Z,ZK	5	2P+2C	Z,L	z
126BIM1	**BIM** *Petr Matějka, Josef Žák* ***Josef Žák*** *Josef Žák (Gar.)*	Z	1	1P+1C	Z	z
132SM02	**Structural Mechanics 2** *Michal Polák, Daniel Rypl, Matěj Lepš, Jan Sýkora, Tomáš Koudelka, Aleš Palička, Martin Válek, Jitka Němečková, Šimon Glanc, ...* ***Michal Polák*** *Michal Polák (Gar.)*	Z,ZK	6	2P+2C	L,Z	z
154SG01	**Land Surveying in Civil Engineering** *Rudolf Urban, Martin Štroner* ***Rudolf Urban*** *Rudolf Urban (Gar.)*	Z,ZK	6	2P+3C	Z,L	z

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

101MA02	Mathematics 2	Z,ZK	6
https://mat.fsv.cvut.cz/vyuka/bakalari/eng/ls/MT02/			
102FYI	Physics	Z,ZK	4
This is a basic physics course for students of the study programmes Civil Engineering; Management and Economics in Construction. The course focuses on mechanics and basic thermodynamics. The 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.			
123SH01	Building Materials	Z,ZK	5
Building materials - basis course. Clasification of the materials. Structure of materials. Main properties of materials. Application of materials in building constructions. Introduction to material testing.			
126BIM1	BIM	Z	1
The course focuses on teaching basic knowledge in the field of Building Information Management (BIM) in theoretical and practical areas, applicable across different specialisations and disciplines of the 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.			
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.			
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: BJ20190300
Name of the group: Stavební inženýrství, varianta J, 3. semestr
Requirement credits in the group: In this group you have to gain at least 30 credits
Requirement courses in the group: In this group you have to complete at least 6 courses

Credits in the group: 30
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
101MA03	**Mathematics 3** *Iva Malechová, Jozef Bobok, Michal Beneš, Ondřej Zindulka, Petr Kučera, Zdeněk Skalák, Martin Hála, Martin Soukenka, Petr Mayer, ... **Michal Beneš** Michal Beneš (Gar.)*	Z,ZK	6	3P+2C	Z,L	z
124PSI1	**Building Structures 1I** *Ctislav Fiala, Jan Růžička, Petr Hájek, Jaroslav Vychytil, Běla Stibůrková **Jan Růžička** Petr Hájek (Gar.)*	Z	4	2P+1C	Z	z
132PRPE	**Strength of Materials** *Petr Kabele, Michal Šejnoha, Milan Jirásek, Jan Vorel, Eva Novotná, Martin Doškář, Martin Horák, Martin Lebeda, Barbora Hálková, ... **Petr Kabele** Petr Kabele (Gar.)*	Z,ZK	6	3P+2C	Z,L	z
135GM2I	**Geomechanics 2I** *Jan Salák, Jiří Košťál, Martin Vaníček, Ivan Vaníček **Ivan Vaníček** Jan Salák (Gar.)*	Z,ZK	5	2P+1C	Z	z
141HYA	**Hydraulics** *Michal Dohnal, Aleš Havlík, Tomáš Picek, Václav Matoušek, Petr Sklenář, Martin Fencl, Anna Špačková, Jakub Novotný, Vojtěch Bareš, ... **Václav Matoušek** Michal Dohnal (Gar.)*	Z,ZK	5	2P+2C	Z,L	z
142VIZP	**Water and Environmental Engineering** *Aleš Havlík, Martin Fencl, Michal Sněhota, Petr Nowak, Tomáš Dostál, Martin Dočkal, Martin Šanda, Pavel Fošumpaur, Bohumil Šťastný, ... **Filip Horký** Ladislav Satrapa (Gar.)*	Z,ZK	4	3P+1C	Z,L	z

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

101MA03	Mathematics 3	Z,ZK	6
https://mat.fsv.cvut.cz/vyuka/bakalari/eng/zs/			
124PSI1	Building Structures 1I	Z	4
The concept of design 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.			
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.			
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.			

Code of the group: BJ20190400
Name of the group: Stavební inženýrství, varianta J, 4. semestr
Requirement credits in the group: In this group you have to gain at least 30 credits
Requirement courses in the group: In this group you have to complete at least 6 courses
Credits in the group: 30
Note on the group:

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	**Building Structures 2I** *Ctislav Fiala, Petr Hájek, Malila Noori, Veronika Kačmaříková, Jaroslav Vychytil, Tereza Pavlů, Jiří Pazderka, Jiří Nováček **Jiří Pazderka** Jiří Pazderka (Gar.)*	Z,ZK	4	2P+1C	L	z
126EKMN	**Economics and Management** *Eduard Hromada, Martin Čásenský, Božena Kadeřábková, Petr Kalčev, Pavlína Píchová, Pavlína Píchová **Petr Kalčev** Eduard Hromada (Gar.)*	Z,ZK	7	4P+2C		z
132SM3	**Structural Mechanics 3** *Tomáš Koudelka, Petr Kabele, Michal Šejnoha, Milan Jirásek, Jan Vorel, Eva Novotná, Martin Horák, Michal Šmejkal, Tomáš Krejčí, ... **Petr Kabele** Petr Kabele (Gar.)*	Z,ZK	5	2P+2C	L,Z	z

133NNKB	**Fundamentals of Structural Design - Concrete** *Martin Tipka, Radek Štefan, Jitka Vašková **Martin Tipka** Martin Tipka (Gar.)*	Z,ZK	4	2P+1C	L,Z	Z
134NNKO	**Design of Supporting StructuresI - Steel** *František Wald, Michal Jandera, Martina Eliášová **Michal Jandera** Martina Eliášová (Gar.)*	Z,ZK	3	2P+1C	L	Z
136DSUZ	**Transport Structures and Urban Planning** *Ludvík Vébr, František Pospíšil, Ondřej Bret **František Pospíšil** Ludvík Vébr (Gar.)*	Z,ZK	7	5P+1C	L,Z	Z

Characteristics of the courses of this group of Study Plan: Code=BJ20190400 Name=Stavební inženýrství, varianta J, 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.

126EKMN	Economics and Management	Z,ZK	7

The aim of the course is to provide students with an introduction to economics and management in the construction industry and to familiarize them with basic economic terms and their practical applications. Students will be prepared to solve basic construction-management problems in the construction industry. They will acquire basic information about the method of pricing construction works and master the basic methods of managing a construction company. Emphasis is placed on understanding the principle of economic thinking in relation to the construction industry.

132SM3	Structural Mechanics 3	Z,ZK	5

Deformation and force method for the solution of reactions and internal forces on statically indeterminate beams, frames, and truss structures. Calculation of displacements of beams, frames, and truss structures using the principle of virtual works.

133NNKB	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.

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.

Name of the block: Compulsory courses in the program
Minimal number of credits of the block: 108
The role of the block: P

Code of the group: BV202005
Name of the group: Stavební inženýrství, specializace Vodní hospodářství a vodní stavby, 5.semestr
Requirement credits in the group: In this group you have to gain at least 30 credits
Requirement courses in the group: In this group you have to complete at least 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**
133BZKV	**Concrete and Masonry Structures** *Petr Štemberk, Yuliia Khmurovska, Michaela Frantová **Petr Štemberk** Petr Štemberk (Gar.)*	Z,ZK	5	2P+2C	Z	P
141HYKL	**Hydrology and Climatology** *Michal Dohnal, Josef Křeček, Tomáš Vogel, Marie Uhrová, Eva Pažourková **Michal Dohnal** Michal Dohnal (Gar.)*	Z,ZK	7	3P+3C	Z	P
141HYA2	**Hydraulics 2** *Aleš Havlík, Tomáš Picek **Tomáš Picek** Karel Picek (Gar.)*	Z,ZK	6	2P+3C	Z	P
142JVCE	**Weirs and Waterways** *Martin Králík **Martin Králík** Ladislav Satrapa (Gar.)*	Z,ZK	6	3P+2C	Z	P
143HYP	**Soil Physics and Soil Science** *Michal Sněhota **Michal Sněhota** Michal Sněhota (Gar.)*	Z,ZK	6	2P+2C	Z	P

Characteristics of the courses of this group of Study Plan: Code=BV202005 Name=Stavební inženýrství, specializace Vodní hospodářství a vodní stavby, 5.semestr

133BZKV	Concrete and Masonry Structures	Z,ZK	5
The aim of the course is to deepen students' knowledge in the field of design of reinforced concrete structures at MSU in connection with the FSTC course. The subject content includes the problems of superimposition of slabs with one-way and two-way tension, principles of design of staircases, stiffening walls, masonry structures, foundations, retaining walls, prefabricated structures, halls and prestressed concrete. Serviceability limit states. Introduction to the design of civil engineering structures and bridges.			
141HYKL	Hydrology and Climatology	Z,ZK	7
The course is oriented mainly on the study of water phenomena at the Earth. In the focus of this subject are: meteorological processes near the ground and precipitation-runoff formation.			
141HYA2	Hydraulics 2	Z,ZK	6
A Course Hydraulics 2 is focused on practical problems of a hydrostatics (including hydrostatic loading of complicated structures, such as hydrostatic weirs), hydraulics of pipeline (including pipe nets and systems pipes-pumps) and open channel hydraulics (including structures such as spillways, bridges and culverts).			
142JVCE	Weirs and Waterways	Z,ZK	6
The course provides information and serves to acquire knowledge in the field of design and operation of weirs and waterways. It covers the following topics: Weirs - basic concepts, classification, design fundamentals, basic hydraulic and static calculations. Weir foundation, groundwater seepage, weir stability. Fixed and movable weirs, classification, construction, main parts. Waterways - navigation, inland waterways, structures on waterways: lock chambers, ship lifts, aquaducts, ports etc. The first part of the semester is devoted to theoretical knowledge such as loads, design basis and basic static and hydraulic calculations. The second part of the course is devoted to weir gates, focusing on the interpretation and understanding of the principles of their design and function. The third part is devoted to inland waterways.			
143HYP	Soil Physics and Soil Science	Z,ZK	6
Soil and the environment. Soil genesis, pedogenetic factors. Soil structure and texture. Physical and physiochemical soil properties. Physical, chemical and biological processes in soils. Soil classification. Soil survey and mapping. Soils of the world. Clay minerals, soil chemistry. Hydrostatic and hydrodynamic behaviour of soil water, capillarity. Determination of soil moisture. Flow of water in variably saturated porous media.			

Code of the group: BV202006

Name of the group: Stavební inženýrství, specializace Vodní hospodářství a vodní stavby, 6.semestr

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

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

Credits in the group: 30

Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
141VTO	**Water Courses** *Petr Sklenář* ***Petr Sklenář*** *Petr Sklenář (Gar.)*	Z,ZK	5	3P+1C	L	P
141VYV1	**Fieldwork Training (1 week)** *Michal Dohnal, Tomáš Picek, Michal Sněhota, Martin Šanda* ***Michal Dohnal*** *Michal Dohnal (Gar.)*	Z	2	2C	L	P
142PPVD	**Dams and the Operation of Hydraulic Structures** *Petr Nowak, Pavel Fošumpaur, Ladislav Satrapa, Martin Horský, Petra Nešvarová Chvojková, Miroslav Brouček, Jitka Kučerová* ***Miroslav Brouček*** *Pavel Satrapa (Gar.)*	Z,ZK	5	2P+3C	L	P
141PVTS	**Water Courses** *Aleš Havlík, Petr Sklenář, Martin Králík* ***Petr Sklenář*** *Petr Sklenář (Gar.)*	KZ	5	4C	L	P
143ZAOS	**Irrigation and Drainage Systems** *Pavla Schwarzová* ***Pavla Schwarzová*** *Pavla Schwarzová (Gar.)*	Z,ZK	6	4P+2C	L	P
144UDPV	**Treatment and distribution of drinking water** *Jana Nábělková, Bohumil Šťastný, Filip Horký, Kateřina Slavíčková* ***Filip Horký*** *Bohumil Šťastný (Gar.)*	Z,ZK	7	4P+2C	L	P

Characteristics of the courses of this group of Study Plan: Code=BV202006 Name=Stavební inženýrství, specializace Vodní hospodářství a vodní stavby, 6.semestr

141VTO	Water Courses	Z,ZK	5
Students meet geomorphic fluvial processes taking place in river channels, expand their knowlege in the field of river hydraulics and river training technology and gain an idea of administration, maintenance and management of rivers in the Czech Republic. In practical part students are requested to prepare a report on assesment of river reach of own choice with aim to identify problems to be solved.			
141VYV1	Fieldwork Training (1 week)	Z	2
Not applicable.			
142PPVD	Dams and the Operation of Hydraulic Structures	Z,ZK	5
Students will be introduced to the basics of dam design, construction and operation with a focus on safety and other links to the surrounding environment during the Dam Education Semester. An important area of instruction is dam construction in a forward-looking perspective - safety, repairs, upgrades and reconstruction. In addition, students will receive basic information on the state administration in water management with a focus on hydraulic structures in the waterworks operation block. They will learn about the contents of the hydraulic structures regulations and operating rules. They will receive basic information on the issue of winter operation of streams and hydraulic structures and on monitoring the behaviour of hydraulic structures. At the end of the course, the safety of hydraulic structures in operation will be presented. The course is taught in the form of lectures and exercises. In the exercises, students work on individual tasks related to the design of dams.			
141PVTS	Water Courses	KZ	5
The watercourses option of this project deals with complex technical intervention on the watercourse and in its catchment area in the form of flow stabilization, flood protection technical measures or flood protection measures close to nature. It also includes the design and construction of a suitable structure on the watercourse depending on the intended intervention on the watercourse. In the hydraulic constructions option, the design of the weir or dam with handling facilities and their variant layout is addressed.			
143ZAOS	Irrigation and Drainage Systems	Z,ZK	6
The course is devoted to the history and present of irrigation and drainage systems used mainly in agriculture. Students will learn about irrigation and drainage devices, their purpose and the principle of their function. They will obtain the basic knowledge for designing, maintaining and upgrading drainage and irrigation systems.			

144UDPV	Treatment and distribution of drinking water	Z,ZK	7

The subject deals with the issue of water supply from the source, from raw water intake, treatment processes, accumulation and distribution of drinking water to the consumers, to its subsequent use by specific customers (eg. balneology and food production). The subject also includes the basics of hydrochemistry and hydrobiology of drinking water and water in the source.

Code of the group: BV202007
Name of the group: Stavební inženýrství, specializace Vodní hospodářství a vodní stavby, 7.semestr
Requirement credits in the group: In this group you have to gain at least 30 credits
Requirement courses in the group: In this group you have to complete at least 6 courses
Credits in the group: 30
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
134ODKV	**Steel and Timber Structures** *Michal Netušil, Anna Kuklíková* ***Michal Netušil*** *Michal Netušil (Gar.)*	Z,ZK	5	2P+2C	Z,L	P
135ZSVV	**Foundations** *Josef Jettmar, Jan Masopust* ***Jan Masopust*** *Jan Kos (Gar.)*	Z,ZK	5	2P+2C	Z	P
143PSOK	**Project - Water Management Buildings in the Towns and Landscape** ***Filip Horký*** *Adam Vokurka (Gar.)*	KZ	5	4C	Z	P
143RSDT	**Small Water Reservoirs and Other Structures on Small Watercourses** *Adam Vokurka, Petr Koudelka, Václav David* ***Václav David*** *Václav David (Gar.)*	Z,ZK	7	4P+2C	Z	P
144SCOV	**Drainage and treatment of waste waters** *Jana Nábělková, David Stránský, Karel Kříž, Jaroslav Pollert* ***Karel Kříž*** *David Stránský (Gar.)*	Z,ZK	8	4P+2C	Z	P
100ODPR	**Industrial Training (3 weeks)** *Jan Růžička, Petr Hájek, Kateřina Sojková* ***Michal Jandera*** *Michal Jandera (Gar.)*	Z	0	6C	Z,L	P

Characteristics of the courses of this group of Study Plan: Code=BV202007 Name=Stavební inženýrství, specializace Vodní hospodářství a vodní stavby, 7.semestr

134ODKV	Steel and Timber Structures	Z,ZK	5

Steel structures - pros and contras, material properties, fabrication, connections, industrial steel buildings, cables, high strength steel, buildings in terms of water engineering - load, protection, utilization. Timber - loadings, material propertie, limit states methodology, design, connections, bracings, protection of structural timber, timber bridges.

135ZSVV	Foundations	Z,ZK	5

Introduction to the subject, literature, design principles, geotechnical categories Strength and deformation characteristics of foundation soils, slab foundations Limit states of flat foundations, calculation of bearing capacity and settlement of flat foundations Deep foundations - typology, pile foundations, drilled and driven pile technology Axial capacity of isolated piles, pile load tests Determination of bearing capacity of transversely loaded piles, pile group Micropiles, anchors, technology Conventional and jet grouting, underground walls Construction pits, technology of construction pits, shafts Principles for the design and assessment of shoring structures, earth pressure, water effect Calculation of casing structures, pressure dependent methods Dewatering of construction pits Protection of foundation structures from the effects of aggressive environments

143PSOK	Project - Water Management Buildings in the Towns and Landscape	KZ	5

The subject is the implementation of a simplified project of water management structures in smaller municipalities and the surrounding countryside. This includes health engineering, flood and erosion protection, water source protection, small water reservoirs, irrigation, drainage and complex measures of revitalisation and protection of the catchment area.

143RSDT	Small Water Reservoirs and Other Structures on Small Watercourses	Z,ZK	7

The course focuses on structures applied on small water courses, mainly small water reservoirs, dry reservoirs, torrent control structures, renaturalisations etc. Lectures consist mainly of technical aspects of design of such structures, wider circumstances, relations with surrounding space and the role in the landscape are also discussed. During the seminars, the conception of design of small water reservoir is explained and practiced including design of single parts and objects.

144SCOV	Drainage and treatment of waste waters	Z,ZK	8

Basics of sewer and waste water systems are described and explained in the lessons. In the first part, lessons focus on history of sewer systems and development of its purpose in time. Further, different types, layouts, means of waste water transport and disposition of sewers are described. Waste waters and storm waters are characterized. Hydraulic design of sewer systems is explained and practised. Further, sewer system structures, construction and rehabilitation methods of sewer system and OHS are discussed. In the second part, waste water composition is described together with waste water treatment process. Different layouts of waste water treatment plants are explained; consequent stages of treatment process are described in a detail, including sludge management. Design methods and calculations are explained and practised.

100ODPR	Industrial Training (3 weeks)	Z	0

Professional practice is an important part of academic education in undergraduate degree programmes. The student will gain a basic understanding of duties and professional responsibilities. The professional practice evaluates the sum of all knowledge acquired through previous theoretical studies and is a proof of their acquisition.

Code of the group: BV202008
Name of the group: Stavební inženýrství, specializace Vodní hospodářství a vodní stavby, 8.semestr
Requirement credits in the group: In this group you have to gain at least 18 credits
Requirement courses in the group: In this group you have to complete at least 3 courses
Credits in the group: 18
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
126STMN	**Construction Management** *Dana Měšťanová, Renáta Schneiderová Heralová, Václav Tatýrek, Jaroslava Tománková, Zita Prostějovská* ***Dana Měšťanová*** *Zita Prostějovská (Gar.)*	Z,ZK	6	3P+2C	Z,L	P
142NVS	**Water Resources Management** *Pavel Fošumpaur* ***Pavel Fošumpaur*** *Pavel Fošumpaur (Gar.)*	Z,ZK	6	2P+3C	L	P
142VVE	**Hydropower plants** *Petr Nowak, Martin Horský, Eva Bílková, Jiří Souček* ***Eva Bílková*** *Petr Nowak (Gar.)*	Z,ZK	6	3P+2C	L	P

Characteristics of the courses of this group of Study Plan: Code=BV202008 Name=Stavební inženýrství, specializace Vodní hospodářství a vodní stavby, 8.semestr

126STMN	Construction Management	Z,ZK	6
Overview of selected concepts. Methods to support project management. Legal standards, ČSN and ISO standards. The essential aspects of Project Management. Construction as a project product. Objectives, strategies, phases and surroundings of the construction project. Project manager role. Purchases and contracts in the project. Quality management, risk management. Financial management and project evaluation. Feasibility study. Cost and resource management. Change procedures. The Act on Spatial Planning and Building Regulations, the Act on the Awarding of Public Contracts, and the definition of terms. Business obligation relationships, the conclusion of contracts, their form, and use of general business conditions. Business public competition, its influence on the obligations of participants. Securing the commitment - contractual penalty, guarantee. The main contract types in construction - are contract for the conclusion of a future contract, purchase contract, contract for work, and content of the contract.			
142NVS	Water Resources Management	Z,ZK	6
Approach to water management in reservoirs and water management systems. Water management of reservoir storage and protection functions. Analysis of the process of inflow to and outflow from the reservoir. Preparation of materials for the design of reservoirs. Design of reservoirs with multi-year, seasonal and short-term runoff control. Flood protection. Design of the retention function of reservoirs. Safety of water works during floods. Operation and management of reservoirs. Interaction of reservoirs with the environment. Reservoirs in the natural environment. Water quality in reservoirs.			
142VVE	Hydropower plants	Z,ZK	6
Basic sources of energy, power engineering development, hydropower potential of river, basic schemes of hydropower stations, types of hydropower plants, peak and pump storage calculations, intake structures, derivative canals, hydraulic tunnels, pressure pipes, surge chambers, water hammer and theory, type of turbines and their theory, electric part, powerhouse			

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)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
TV1	**Physical Education**	Z	0	0+2	Z	PT
TV2	**Physical Education**	Z	0	0+2	L	PT

Characteristics of 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: BF20190201_J
Name of the group: Povinně volitelný jazyk, 2. semestr
Requirement credits in the group: In this group you have to gain at least 1 credit
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 1
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
104YCA1	**English 1** *Hana Horká, Petra Martincová, Petra Florianová, Sandra Giormani, Svatava Boboková Bartíková, Věra Čermáková, Karolína Synková, Alexandra Steinerová, Elena Dačeva, ... **Svatava Boboková Bartíková** Sandra Giormani (Gar.)*	Z	1	2C	Z,L	J
104YCN1	**German 1** *Svatava Boboková Bartíková **Svatava Boboková Bartíková** Svatava Boboková Bartíková (Gar.)*	Z	1	2C	Z,L	J

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

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Code of the group: BF20190302_J
Name of the group: Povinně volitelný jazyk, 3. semestr
Requirement credits in the group: In this group you have to gain at least 2 credits
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 2
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
104YC2A	**English 2** *Hana Horká, Petra Martincová, Petra Florianová, Sandra Giormani, Svatava Boboková Bartíková, Věra Čermáková, Karolína Synková, Alexandra Steinerová, Elena Dačeva, ... **Svatava Boboková Bartíková** Sandra Giormani (Gar.)*	Z,ZK	2	2C		J
104YC2N	**German 2** *Svatava Boboková Bartíková **Svatava Boboková Bartíková** Svatava Boboková Bartíková (Gar.)*	Z,ZK	2	2C		J

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

104YC2A	English 2	Z,ZK	2

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

104YC2N	German 2	Z,ZK	2

The compulsory course - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction 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

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Name of the block: Povinně volitelné předměty, doporučení S1
Minimal number of credits of the block: 12
The role of the block: S1

Code of the group: BV202008_1
Name of the group: Stavební inženýrství, specializace Vodní hospodářství a vodní stavby, bakalářská práce
Requirement credits in the group: In this group you have to gain at least 12 credits
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 12
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
141BAPV	**Bachelor Thesis** *Michal Dohnal, Aleš Havlík, Tomáš Picek, Petr Sklenář, Josef Křeček* ***Tomáš Vogel*** *Jan Pruška (Gar.)*	Z	12	10C	L,Z	S1
142BAPV	**Bachelor Thesis** *Petr Nowak, Pavel Fošumpaur, Ladislav Satrapa, Martin Horský, Petra Nešvarová Chvojková, Martin Králík, Miroslav Brouček, Jitka Kučerová, Tomáš Dally, ...* ***Milan Zukal***	Z	12	10C	L,Z	S1
143BAPV	**Bachelor Thesis** *Michal Sněhota, Tomáš Dostál, Martin Dočkal, Martin Šanda, Pavla Schwarzová, Adam Vokurka, Petr Koudelka, Václav David, Petr Kavka, ...* ***Barbora Jáchymová*** *Tomáš Dostál (Gar.)*	Z	12	10C	L,Z	S1
144BAPV	**Bachelor Thesis** *Iva Čiháková* ***Bronislava Rohanová*** *Jana Nábělková (Gar.)*	Z	12	10C	L,Z	S1

Characteristics of the courses of this group of Study Plan: Code=BV202008_1 Name=Stavební inženýrství, specializace Vodní hospodářství a vodní stavby, bakalářská práce

141BAPV	Bachelor Thesis	Z	12
Preparation of a bachelor thesis in the field of hydraulics, hydrology, water flows or flood protection solutions. The thesis has the character of a study, in the case of students who are expected to continue in the follow-up master's studies, it is assumed that the thesis includes, among other things, a detailed analysis of the problems for the follow-up master's thesis.			
142BAPV	Bachelor Thesis	Z	12
The course includes individual work of the student and consultations related to the work on the bachelor thesis.			
143BAPV	Bachelor Thesis	Z	12
Final thesis of bachelor study usually is a continuation of study and pre-diploma seminar. Student selects the topic from offer given by selected department. In close cooperation with responsible supervisor, student works on chosen topic.			
144BAPV	Bachelor Thesis	Z	12
Bachelor Thesis concerning sewerage, waste water treatment, water suply, networks and balnology.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
100ODPR	Industrial Training (3 weeks)	Z	0
Professional practice is an important part of academic education in undergraduate degree programmes. The student will gain a basic understanding of duties and professional responsibilities. The professional practice evaluates the sum of all knowledge acquired through previous theoretical studies and is a proof of their acquisition.			
101KG01	Constructive Geometry	Z,ZK	5
Projections and projective methods. Axonometry. Oblique projection. Orthogonal axonometry. Displaying prisms, cones, cylinders, pyramids, balls. Simple problems in axonometry. Basics of lighting of solids and groupes of solids. Perspective projection. Curves, parametrisation. Frenet's trihedron, torsion and curvature. Helical surfaces. Quadrics. Surfaces in building industry.			
101MA01	Mathematics 1	Z,ZK	6
https://mat.fsv.cvut.cz/bubenik/mat1detail.htm			
101MA02	Mathematics 2	Z,ZK	6
https://mat.fsv.cvut.cz/vyuka/bakalari/eng/ls/MT02/			
101MA03	Mathematics 3	Z,ZK	6
https://mat.fsv.cvut.cz/vyuka/bakalari/eng/zs/			
102FYI	Physics	Z,ZK	4
This is a basic physics course for students of the study programmes Civil Engineering; Management and Economics in Construction. The course focuses on mechanics and basic thermodynamics. The 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.			
104YC2A	English 2	Z,ZK	2
English 2 Course code: 104YC2A Scope: 0 + 2 (practical sessions) Number of credits: 1 Final assessment: credit and exam The aim of the compulsory English course is to enhance the knowledge of lexis and grammar within the scope of the chosen field of study and university studies in general (Academic English); the overall focus is on professional language (i.e., ESP - technical style) and communicative competence within the construction industry. The course also seeks to teach students to read technical literature and to be able to produce essential written discourse and to express themselves in writing on issues in their field of study. The end of course requirements are a credit and an examination. Literature: Horká Hana, Giormani Sandra, Martincová Petra, Nivenová Renata : Professional English for Civil Engineering (Units 6 10)			
104YC2N	German 2	Z,ZK	2
The compulsory course - German Language for Civil Engineering is aimed at practising professional vocabulary within the scope of the construction 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			
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, Martincová 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			
105SVAI	Social Sciences and Architecture	Z,ZK	5
The subject combines the teaching of several social sciences: economics and economic policies, political science, political philosophy and law, with an overview of the development of architecture. In the section devoted to economics, the basic categories of the market economy, the foundations of economic policy and the basic concepts of international economics are explained. Theoretical interpretation is effectively combined with practical examples from economic reality. In the lectures devoted to law, a brief overview of the development of Roman law and its institutions is supplemented by a well-founded interpretation of the constitution, human rights and the labor code. Great attention is paid to selected provisions of the Civil Code and the Construction Act. In the political science lectures, the political development in ancient times is described in an engaging way, the theory of the state, political systems, democracy and totalitarianism are clarified. The series of lectures on the history of architecture and construction provides a comprehensive interpretation of the history of architecture from antiquity to postmodernism and deconstruction.			
123CHE	Chemistry	Z,ZK	4
Introduction to general 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.			
123SH01	Building Materials	Z,ZK	5
Building materials - basis course. Clasification of the materials. Structure of materials. Main properties of materials. Application of materials in building constructions. Introduction to material testing.			
124PSI1	Building Structures 1I	Z	4
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.			
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.			
126BIM1	BIM	Z	1
The course focuses on teaching basic knowledge in the field of Building Information Management (BIM) in theoretical and practical areas, applicable across different specialisations and disciplines of the 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.			
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.			
126STMN	Construction Management	Z,ZK	6
Overview of selected concepts. Methods to support project management. Legal standards, ČSN and ISO standards. The essential aspects of Project Management. Construction as a project product. Objectives, strategies, phases and surroundings of the construction project. Project manager role. Purchases and contracts in the project. Quality management, risk management. Financial management and project evaluation. Feasibility study. Cost and resource management. Change procedures. The Act on Spatial Planning and Building Regulations, the Act on the Awarding of Public Contracts, and the definition of terms. Business obligation relationships, the conclusion of contracts, their form, and use of general business conditions. Business public competition, its influence on the obligations of participants. Securing the commitment - contractual penalty, guarantee. The main contract types in construction - are contract for the conclusion of a future contract, purchase contract, contract for work, and content of the contract.			
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.			
133BZKV	Concrete and Masonry Structures	Z,ZK	5
The aim of the course is to deepen students' knowledge in the field of design of reinforced concrete structures at MSU in connection with the FSTC course. The subject content includes the problems of superimposition of slabs with one-way and two-way tension, principles of design of staircases, stiffening walls, masonry structures, foundations, retaining walls, prefabricated structures, halls and prestressed concrete. Serviceability limit states. Introduction to the design of civil engineering structures and bridges.			
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.			

134ODKV	Steel and Timber Structures	Z,ZK	5
Steel structures - pros and contras, material properties, fabrication, connections, industrial steel buildings, cables, high strength steel, buildings in terms of water engineering - load, protection, utilization. Timber - loadings, material propertie, limit states methodology, design, connections, bracings, protection of structural timber, timber bridges.			
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			
135ZSVV	Foundations	Z,ZK	5
Introduction to the subject, literature, design principles, geotechnical categories Strength and deformation characteristics of foundation soils, slab foundations Limit states of flat foundations, calculation of bearing capacity and settlement of flat foundations Deep foundations - typology, pile foundations, drilled and driven pile technology Axial capacity of isolated piles, pile load tests Determination of bearing capacity of transversely loaded piles, pile group Micropiles, anchors, technology Conventional and jet grouting, underground walls Construction pits, technology of construction pits, shafts Principles for the design and assessment of shoring structures, earth pressure, water effect Calculation of casing structures, pressure dependent methods Dewatering of construction pits Protection of foundation structures from the effects of aggressive environments			
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.			
141BAPV	Bachelor Thesis	Z	12
Preparation of a bachelor thesis in the field of hydraulics, hydrology, water flows or flood protection solutions. The thesis has the character of a study, in the case of students who are expected to continue in the follow-up master's studies, it is assumed that the thesis includes, among other things, a detailed analysis of the problems for the follow-up master's thesis.			
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.			
141HYA2	Hydraulics 2	Z,ZK	6
A Course Hydraulics 2 is focused on practical problems of a hydrostatics (including hydrostatic loading of complicated structures, such as hydrostatic weirs), hydraulics of pipeline (including pipe nets and systems pipes-pumps) and open channel hydraulics (including structures such as spillways, bridges and culverts).			
141HYKL	Hydrology and Climatology	Z,ZK	7
The course is oriented mainly on the study of water phenomena at the Earth. In the focus of this subject are: meteorological processes near the ground and precipitation-runoff formation.			
141PVTS	Water Courses	KZ	5
The watercourses option of this project deals with complex technical intervention on the watercourse and in its catchment area in the form of flow stabilization, flood protection technical measures or flood protection measures close to nature. It also includes the design and construction of a suitable structure on the watercourse depending on the intended intervention on the watercourse. In the hydraulic constructions option, the design of the weir or dam with handling facilities and their variant layout is addressed.			
141VTO	Water Courses	Z,ZK	5
Students meet geomorphic fluvial processes taking place in river channels, expand their knowlege in the field of river hydraulics and river training technology and gain an idea of administration, maintenance and management of rivers in the Czech Republic. In practical part students are requested to prepare a report on assesment of river reach of own choice with aim to identify problems to be solved.			
141VYV1	Fieldwork Training (1 week)	Z	2
Not applicable.			
142BAPV	Bachelor Thesis	Z	12
The course includes individual work of the student and consultations related to the work on the bachelor thesis.			
142JVCE	Weirs and Waterways	Z,ZK	6
The course provides information and serves to acquire knowledge in the field of design and operation of weirs and waterways. It covers the following topics: Weirs - basic concepts, classification, design fundamentals, basic hydraulic and static calculations. Weir foundation, groundwater seepage, weir stability. Fixed and movable weirs, classification, construction, main parts. Waterways - navigation, inland waterways, structures on waterways: lock chambers, ship lifts, aquaducts, ports etc. The first part of the semester is devoted to theoretical knowledge such as loads, design basis and basic static and hydraulic calculations. The second part of the course is devoted to weir gates, focusing on the interpretation and understanding of the principles of their design and function. The third part is devoted to inland waterways.			
142NVS	Water Resources Management	Z,ZK	6
Approach to water management in reservoirs and water management systems. Water management of reservoir storage and protection functions. Analysis of the process of inflow to and outflow from the reservoir. Preparation of materials for the design of reservoirs. Design of reservoirs with multi-year, seasonal and short-term runoff control. Flood protection. Design of the retention function of reservoirs. Safety of water works during floods. Operation and management of reservoirs. Interaction of reservoirs with the environment. Reservoirs in the natural environment. Water quality in reservoirs.			
142PPVD	Dams and the Operation of Hydraulic Structures	Z,ZK	5
Students will be introduced to the basics of dam design, construction and operation with a focus on safety and other links to the surrounding environment during the Dam Education Semester. An important area of instruction is dam construction in a forward-looking perspective - safety, repairs, upgrades and reconstruction. In addition, students will receive basic information on the state administration in water management with a focus on hydraulic structures in the waterworks operation block. They will learn about the contents of the hydraulic structures regulations and operating rules. They will receive basic information on the issue of winter operation of streams and hydraulic structures and on monitoring the behaviour of hydraulic structures. At the end of the course, the safety of hydraulic structures in operation will be presented. The course is taught in the form of lectures and exercises. In the exercises, students work on individual tasks related to the design of dams.			
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.		
142VVE	Hydropower plants	Z,ZK	6
	Basic sources of energy, power engineering development, hydropower potential of river, basic schemes of hydropower stations, types of hydropower plants, peak and pump storage calculations, intake structures, derivative canals, hydraulic tunnels, pressure pipes, surge chambers, water hammer and theory, type of turbines and their theory, electric part, powerhouse		
143BAPV	Bachelor Thesis	Z	12
	Final thesis of bachelor study usually is a continuation of study and pre-diploma seminar. Student selects the topic from offer given by selected department. In close cooperation with responsible supervisor, student works on chosen topic.		
143HYP	Soil Physics and Soil Science	Z,ZK	6
	Soil and the environment. Soil genesis, pedogenetic factors. Soil structure and texture. Physical and physiochemical soil properties. Physical, chemical and biological processes in soils. Soil classification. Soil survey and mapping. Soils of the world. Clay minerals, soil chemistry. Hydrostatic and hydrodynamic behaviour of soil water, capillarity. Determination of soil moisture. Flow of water in variably saturated porous media.		
143PSOK	Project - Water Management Buildings in the Towns and Landscape	KZ	5
	The subject is the implementation of a simplified project of water management structures in smaller municipalities and the surrounding countryside. This includes health engineering, flood and erosion protection, water source protection, small water reservoirs, irrigation, drainage and complex measures of revitalisation and protection of the catchment area.		
143RSDT	Small Water Reservoirs and Other Structures on Small Watercourses	Z,ZK	7
	The course focuses on structures applied on small water courses, mainly small water reservoirs, dry reservoirs, torrent control structures, renaturalisations etc. Lectures consist mainly of technical aspects of design of such structures, wider circumstances, relations with surrounding space and the role in the landscape are also discussed. During the seminars, the conception of design of small water reservoir is explained and practiced including design of single parts and objects.		
143ZAOS	Irrigation and Drainage Systems	Z,ZK	6
	The course is devoted to the history and present of irrigation and drainage systems used mainly in agriculture. Students will learn about irrigation and drainage devices, their purpose and the principle of their function. They will obtain the basic knowledge for designing, maintaining and upgrading drainage and irrigation systems.		
144BAPV	Bachelor Thesis	Z	12
	Bachelor Thesis concerning sewerage, waste water treatment, water suply, networks and balnology.		
144SCOV	Drainage and treatment of waste waters	Z,ZK	8
	Basics of sewer and waste water systems are described and explained in the lessons. In the first part, lessons focus on history of sewer systems and development of its purpose in time. Further, different types, layouts, means of waste water transport and disposition of sewers are described. Waste waters and storm waters are characterized. Hydraulic design of sewer systems is explained and practised. Further, sewer system structures, construction and rehabilitation methods of sewer system and OHS are discussed. In the second part, waste water composition is described together with waste water treatment process. Different layouts of waste water treatment plants are explained; consequent stages of treatment process are described in a detail, including sludge management. Design methods and calculations are explained and practised.		
144UDPV	Treatment and distribution of drinking water	Z,ZK	7
	The subject deals with the issue of water supply from the source, from raw water intake, treatment processes, accumulation and distribution of drinking water to the consumers, to its subsequent use by specific customers (eg. balneology and food production). The subject also includes the basics of hydrochemistry and hydrobiology of drinking water and water in the source.		
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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