

# Study plan

**Name of study plan: Stavební inženýrství, specializace P íprava, realizace a provoz staveb**

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 do 2023/2024

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	<b>Constructive Geometry</b> Iva K ívková, Iva Malechová, Michal Zdražil, Iva Slámová, Hana Lakomá, Petra Vacková, Jana ápová, Jozef Bobok <b>Jana ápová</b> Iva K ívková (Gar.)	Z,ZK	5	2P+2C	Z,L	z
101MA01	<b>Mathematics 1</b> Iva Malechová, Iva Slámová, Petra Vacková, Jana ápová, Jozef Bobok, Michal Beneš, Ivana Pultarová, Ond ej Zindulka, Jan Chlebon, ..... <b>Aleš Nekvinda</b> Aleš Nekvinda (Gar.)	Z,ZK	6	2P+3C	Z,L	z
105SVAI	<b>Social Sciences and Architecture</b> Josef Záruba Pfeffermann, Bo ivoj Marek, Rudolf Pošva, Dana ímanová, Jana Hrbková <b>Josef Záruba Pfeffermann</b> Josef Záruba Pfeffermann (Gar.)	Z,ZK	5	4P+1C	L	z
123CHE	<b>Chemistry</b> Jana Ná b íková, Martin Keppert, Milena Pavlíková <b>Milena Pavlíková</b> Milena Pavlíková (Gar.)	Z,ZK	4	3P+1C	L	z
132SM01	<b>Structural Mechanics 1</b> Michal Polák, Daniel Rypl, Mat j Lepš, Jan Sýkora, Tomáš Koudelka, Aleš Palí ka, Karel Pohl, Tomáš Plachý, Martin Válek, ..... <b>Mat j Lepš</b> Michal Polák (Gar.)	Z,ZK	6	2P+2C	Z,L	z
135GM01	<b>Geomechanics 1</b> Kate ína Ková ová, Jan Jelínek, Svatoslav Chamra, Richard Malát <b>Kate ína Ková ová</b> Kate ína Ková ová (Gar.)	Z	3	2P+1C	L	z

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

101KG01	Constructive Geometry	Z,ZK	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 groups 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
<a href="https://mat.fsv.cvut.cz/bubenik/mat1detail.htm">https://mat.fsv.cvut.cz/bubenik/mat1detail.htm</a>			
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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
101MA02	<b>Mathematics 2</b> <i>Iva Malechová, Iva Slámová, Hana Lakomá, Petra Vacková, Jana Šápová, Jozef Bobok, Michal Beneš, Ivana Pultarová, Ondřej Zindulka, ..... Ivana Pultarová Ivana Pultarová (Gar.)</i>	Z,ZK	6	2P+3C	L,Z	z
102FYI	<b>Physics</b> <i>Pavel Novák, Tomáš Zbírál, Jiří Konfršt, Petr Pokorný, Jan Trejbal, Pavel Demo, Jiří Novák Pavel Novák Pavel Novák (Gar.)</i>	Z,ZK	4	3P+1C	L	z
123SH01	<b>Building Materials</b> <i>Alena Vimmrová, Eva Vejmelková, Miloš Jerman Alena Vimmrová Alena Vimmrová (Gar.)</i>	Z,ZK	5	2P+2C	Z,L	z
126BIM1	<b>BIM</b> <i>Petr Matějka, Josef Žák Josef Žák Josef Žák (Gar.)</i>	Z	1	1P+1C	Z	z
132SM02	<b>Structural Mechanics 2</b> <i>Michal Polák, Daniel Rypl, Matěj Lepš, Jan Sýkora, Tomáš Koudelka, Aleš Palička, Martin Válek, Jitka Němečková, Šimon Glanc, ..... Michal Polák Michal Polák (Gar.)</i>	Z,ZK	6	2P+2C	L,Z	z
154SG01	<b>Land Surveying in Civil Engineering</b> <i>Rudolf Urban, Martin Štroner Rudolf Urban Rudolf Urban (Gar.)</i>	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 <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
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
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
154SG01	Land Surveying in Civil Engineering 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	Z,ZK	6

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
101MA03	<b>Mathematics 3</b> <i>Iva Malechová, Jozef Bobok, Michal Beneš, Ondřej Zindulka, Petr Kuera, Zdeněk Skalák, Martin Hála, Martin Soukenka, Petr Mayer, ..... Michal Beneš Michal Beneš (Gar.)</i>	Z,ZK	6	3P+2C	Z,L	z
124PSI1	<b>Building Structures 11</b> <i>Čtislav Fiala, Jan Růžka, Petr Hájek, Jaroslav Vychytil, Běla Stibrková Jan Růžka Petr Hájek (Gar.)</i>	Z	4	2P+1C	Z	z
132PRPE	<b>Strength of Materials</b> <i>Petr Kabele, Michal Šejnoha, Milan Jirásek, Jan Vorel, Eva Novotná, Martin Doškál, Martin Horák, Martin Lebeda, Barbora Hálková, ..... Milan Jirásek Petr Kabele (Gar.)</i>	Z,ZK	6	3P+2C	Z,L	z
135GM2I	<b>Geomechanics 2I</b> <i>Jan Salák, Jiří Košťál, Martin Vaníček, Ivan Vaníček Ivan Vaníček Jan Salák (Gar.)</i>	Z,ZK	5	2P+1C	Z	z
141HYA	<b>Hydraulics</b> <i>Michal Dohnal, Aleš Havlík, Tomáš Píček, Václav Matoušek, Petr Sklenář, Martin Fencel, Anna Špačková, Jakub Novotný, Vojtěch Bareš, ..... Václav Matoušek Michal Dohnal (Gar.)</i>	Z,ZK	5	2P+2C	Z,L	z
142VIZP	<b>Water and Environmental Engineering</b> <i>Aleš Havlík, Martin Fencel, Michal Šejnoha, Petr Nowak, Tomáš Dostál, Martin Doškál, Martin Šanda, Pavel Fošumpaur, Bohumil Šastry, ..... Martin Horský Ladislav Satrapa (Gar.)</i>	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 <a href="https://mat.fsv.cvut.cz/vyuuka/bakalari/eng/zs/">https://mat.fsv.cvut.cz/vyuuka/bakalari/eng/zs/</a>	Z,ZK	6
124PSI1	Building Structures 11 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
132PRPE	Strength of Materials 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
135GM2I	Geomechanics 2I 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	Z,ZK	5
141HYA	Hydraulics 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.	Z,ZK	5
142VIZP	Water and Environmental Engineering 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.	Z,ZK	4

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
124PSI2	<b>Building Structures 2I</b> <i>Čtislav Fiala, Petr Hájek, Malířka Noori, Veronika Kačírková, Jaroslav Vychytil, Tereza Pavl, Jiří Pazderka, Jiří Nováček Jiří Pazderka Jiří Pazderka (Gar.)</i>	Z,ZK	4	2P+1C	L	z
126EKMN	<b>Economics and Management</b> <i>Eduard Hromada, Martin Šašenský, Božena Kadeřáková, Petr Kaláb, Pavlína Píchová, Pavlína Píchová Eduard Hromada Eduard Hromada (Gar.)</i>	Z,ZK	7	4P+2C		z
132SM3	<b>Structural Mechanics 3</b> <i>Tomáš Koudelka, Petr Kabele, Michal Šejnoha, Milan Jirásek, Jan Vorel, Eva Novotná, Martin Horák, Michal Šmejkal, Tomáš Krejčí, ..... Aleš Jíra Petr Kabele (Gar.)</i>	Z,ZK	5	2P+2C	L,Z	z

133NNKB	<b>Fundamentals of Structural Design - Concrete</b> <i>Martin Tipka, Radek Štefan, Jitka Vašková <b>Martin Tipka</b> Martin Tipka (Gar.)</i>	Z,ZK	4	2P+1C	L,Z	z
134NNKO	<b>Design of Supporting StructuresI - Steel</b> <i>František Wald, Michal Jandera, Martina Eliášová <b>Martina Eliášová</b> Martina Eliášová (Gar.)</i>	Z,ZK	3	2P+1C	L	z
136DSUZ	<b>Transport Structures and Urban Planning</b> <i>Ludvík Vébr, František Pospíšil, Ondřej Bret <b>František Pospíšil</b> Ludvík Vébr (Gar.)</i>	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: 102

The role of the block: P

Code of the group: BL202005

Name of the group: Stavební inženýrství, specializace P íprava, realizace a provoz staveb, 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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
122TS01	<b>Construction Technology 01</b> <i>Václav Pospíšal, Rostislav Šulc, Pavel Neumann, Tomáš Váchal, Mária Párová <b>Rostislav Šulc</b> Václav Pospíšal (Gar.)</i>	Z,ZK	7	3P+3C	Z	P
124SF01	<b>Building Physics</b> <i>Jaroslav Vychytil, Jiří Nováček <b>Jiří Nováček</b> Zbyněk Svoboda (Gar.)</i>	Z,ZK	6	3P+2C	Z	P
133RBZS	<b>Construction of Concrete and Masonry Structures</b> <i>Iva Broukalová, Petr Bílý, Michaela Frantová <b>Iva Broukalová</b> Iva Broukalová (Gar.)</i>	Z,ZK	6	3P+2C	Z	P
134ROD	<b>Steel and Timber Structures Construction</b> <i>Michal Netušil, Karel Mikeš <b>Michal Netušil</b> Michal Netušil (Gar.)</i>	Z,ZK	6	3P+2C	Z	P
135ZSVT	<b>Foundations</b> <i>Josef Jettmar, Jan Masopust, Jan Kos <b>Jan Masopust</b> Jan Kos (Gar.)</i>	Z,ZK	5	2P+2C	Z	P

**Characteristics of the courses of this group of Study Plan: Code=BL202005 Name=Stavební inženýrství, specializace P íprava, realizace a provoz staveb, 5. semestr**

122TS01	Construction Technology 01	Z,ZK	7
Division of processes, construction participants. Principles and drives of construction machines, efficiency, acquisition, deployment and use of machines. Earthworks, rock mining classes, excavation types. Machines for preparatory and earthworks. machine assemblies, flow charts. Arming - principles, individual types, procedures, construction and dismantling. Backfills, embankments, embankments, compaction, drainage. Machines for adjusting, profiling and improving the plain (scrapers, graders, ground stabilization cutters, compaction machines, asphalt finishers and cookers), machines for special foundation, machines for transport. Traditional and system formwork, application of formwork, shots, dimensioning principles. Placement of reinforcement. Placement of fresh concrete, compaction and treatment of fresh concrete. Central and local concrete production, primary and secondary transport. Lifting devices, tower and car cranes, elevators, turnstiles, footbridges. Assembly work, assembly methods. Construction of masonry structures, production and transport of mortars on the construction site Scaffolding, fencing, retaining structures.			
124SF01	Building Physics	Z,ZK	6
Thermal performance of buildings Basic course on building physics. The first part of the course (lectures 1, 2) introduces basic principles of heat, air and moisture transfer in buildings and building components as a necessary background for further studies. The second part of the course (lectures 3 to 6) provides an introduction into the design and construction of buildings and building components with respect to building physics related issues. Typical tasks of building design and construction process related with the topics of the course will be presented as well as methods for their solution. A short information on selected diagnostic used for assessment of thermal performance of buildings methods will be presented. Lighting technology deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirements and what are the options for verifying the time of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the assessment of daylight mainly in the interiors of buildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. In acoustics, the listener is first introduced to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The propagation of sound in the free and diffuse field, the propagation of sound through an obstacle or in the ear canal is also discussed. When assessing or designing the interiors of buildings, knowledge regarding sound absorption structures and sound insulation properties of dividing structures will be applied.			
133RBZS	Construction of Concrete and Masonry Structures	Z,ZK	6
The subject is focused on the practical designing of basic concrete structural elements, relations of the design and behaviour of structural members, reinforcing and construction technology and execution. The principles of structural design are presented with an emphasis on simplified and empirical methods. The subject also includes designing of masonry structures, an introduction to the design of bridges and engineering structures, and the basic principles of prestressed concrete elements design.			
134ROD	Steel and Timber Structures Construction	Z,ZK	6
The subject is aimed on the basis of the design of steel and timber structures and their construction. Subject increases the knowledge the previous subject aimed on the basic design of elementary structural members.			
135ZSVT	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 shoring of construction pits Principles for the design and assessment of shoring structures, earth pressure, water effect Calculation of shoring structures, pressure dependent methods Dewatering of construction pits Protection of foundation structures against the effects of aggressive environments			

Code of the group: BL202006

Name of the group: Stavební inženýrství, specializace P íprava, realizace a provoz staveb, 6. semestr

Requirement credits in the group: In this group you have to gain at least 24 credits

Requirement courses in the group: In this group you have to complete at least 4 courses

Credits in the group: 24

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
122PR01	<b>Project Design L01</b> <i>Iva Broukalová, Tomáš Trtík, Tomáš Váchal, Lucie Dobiášová, Ilona Koubková, Luboš Musil, Roman Chylík, Karel Polák <b>Tomáš Váchal</b> Václav Pospíchal (Gar.)</i>	KZ	5	4C	L	P
122TES2	<b>Construction Technology 02</b> <i>Rostislav Šulc, Pavel Neumann, Jan Konvalinka, Pavel Svoboda, Jaroslav Synek <b>Rostislav Šulc</b> Rostislav Šulc (Gar.)</i>	Z,ZK	8	4P+2C	L	P
125TZ01	<b>Building services systems 1</b> <i>Stanislav Frolík, Karel Kabele <b>Karel Kabele</b> Karel Kabele (Gar.)</i>	Z,ZK	5	2P+2C	L	P
126KNL	<b>Costing and Bidding L</b> <i>Renáta Schneiderová Heralová, Stanislav Vitásek, Lucie Brožová <b>Lucie Brožová</b> Renáta Schneiderová Heralová (Gar.)</i>	Z,ZK	6	2P+2C	L	P

**Characteristics of the courses of this group of Study Plan: Code=BL202006 Name=Stavební inženýrství, specializace P íprava, realizace a provoz staveb, 6. semestr**

122PR01	Project Design L01	KZ	5
According to the assigned study of a simpler building (at the level of the project for the zoning decision), the design of the supporting structure of the building in details for the execution of the building.			
122TES2	Construction Technology 02	Z,ZK	8
125TZ01	Building services systems 1	Z,ZK	5
Basic course in building services systems - water supply, drainage, gas supply and heating systems.			
126KNL	Costing and Bidding L	Z,ZK	6
The aim of the subject is to teach the student to use basic calculation techniques and procedures, to use normative and database. Another goal of the course is to teach the student pricing methods for tenders, to create a bill of quantities and a detailed estimate. Price, factors influencing price, types of prices, legislation. Valuation of building production in all stages of the project, data for valuation. Estimating, estimating basis. Hourly billing rates, bidding, software for costs estimation. Fees of project and engineering activities. Life cycle cost calculation (LCC) Data and bases for cost calculation - consumption of work and material, standards in construction. Wages and salaries. Costs and their classification, cost breakdown, common calculation methods and techniques, calculation bases. Dynamization of calculation, calculation of machine costs, individual cost calculation, calculation schema, content of individual cost components. Costs Controlling.			

Code of the group: BL202007

Name of the group: Stavební inženýrství, specializace P íprava, realizace a provoz staveb, 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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
122MKST	<b>Quality Management System in Construction Company</b> <i>Tomáš Váchal, Pavel Svoboda, Linda Veselá Tomáš Váchal Pavel Svoboda (Gar.)</i>	Z,ZK	6	2P+3C	Z	P
122PR02	<b>Project Design L02</b> <i>Václav Pospíchal, Pavel Neumann, Tomáš Váchal, Miloslava Popenková Rostislav Šulc Václav Pospíchal (Gar.)</i>	KZ	5	4C	Z	P
122PSBL	<b>Facility Management</b> <i>Pavel Neumann, Ondřej Štrup, Stanislav Smugala, Martin Václavík Rostislav Šulc Pavel Svoboda (Gar.)</i>	Z,ZK	6	2P+3C	Z	P
122TS03	<b>Construction Technology 03</b> <i>Pavel Neumann Rostislav Šulc Václav Pospíchal (Gar.)</i>	Z,ZK	7	3P+3C	Z	P
126STMN	<b>Construction Management</b> <i>Renáta Schneiderová Heralová, Zita Prostějovská, Dana Měšanová, Jaroslava Tománková, Václav Tatýrek Martin Ásenský Zita Prostějovská (Gar.)</i>	Z,ZK	6	3P+2C	Z,L	P
100ODPR	<b>Industrial Training (3 weeks)</b> <i>Jan Růžka, Petr Hájek, Kateřina Sojková Michal Jandera Michal Jandera (Gar.)</i>	Z	0	6C	Z,L	P

**Characteristics of the courses of this group of Study Plan: Code=BL202007 Name=Stavební inženýrství, specializace P íprava, realizace a provoz staveb, 7. semestr**

122MKST	Quality Management System in Construction Company	Z,ZK	6
Current world trends in the field of quality management: quality management system (SMK) according to EN ISO 9001, Total Quality Management (TQM) and re-engineering in application to a construction company. Analysis of quality management system processes. Forms of familiarization with the subject on specific cases based on practical experience, namely: management of the organization so that quality management and assurance is reflected in the implementation of construction meeting customer requirements that are defined in the contract continuous improvement of the effectiveness of SMK and training in the principles of quality policy, such as: Continuous satisfaction of external and internal customer requirements; execution of works; active involvement of all staff in quality improvement; creation of conditions by the management of the organization for flawless performance of all staff; application of the latest trends in achieving high quality processes and products; effective communication and teamwork in applying the process approach of the quality management system in the organisation; all-round training of employees in order to capture the current world trend; motivation of employees by management and differentiated remuneration for the results achieved in the performance of work tasks; growth of culture in the organisation, economic prosperity and the resulting social approach of management to employees.			
122PR02	Project Design L02	KZ	5
. Technological scheme: division into objects, sections, shots, technological stages, determination of the directions of construction procedures of staged processes. . List of main constructions in individual technological stages. . Determination of the main coefficients of the work queue for the main objects. . Design and assessment of lifting equipment . Part of the technological analysis sheet according to the statement of dimensions or budget with the calculation of labor for the 0th - 4th stage process. . Technological analysis, including decisive mechanisms, design of work crews with determination of their size, decisive materials (for transport) at the level of partial construction processes (manually with the transfer of items of the technological analysis sheet for the 0th - 4th stage process of the decisive object, hereinafter referred to as partial construction processes for remaining 5th - 9th stage process) . Analysis of transport processes. . Time plan - schedule in the structure of partial construction processes, according to the processed technological analysis. . Operational (detailed) space-time graph in the structure of partial construction processes . A complex space-time graph in the structure of stage processes . Graph of the deployment of workers and the need for specified materials over time, graph of the need for decisive machines and mechanisms. . Dimensioning of social and operational ZS. . Construction site equipment drawings (according to the assignment: for the construction phase), including a technical report at the level of project documentation for a building permit (part of the ZOV) and sizing for the specified stages (e.g. excavations, supporting structure, rough internal work and surface treatment and the end of construction); DIO, DIR. . The situation of wider relations with the assessment of transport routes . Technological procedure for the agreed construction process/ including: on determining construction readiness on the implementation description about the machine deployment plan (specific data from the rental company, etc.) o the deployment plan of decisive platoons o a detailed material supply plan (specifically, a list of all materials according to reality with comparison with calculations) o a detailed list of the necessary tools and auxiliary structures (in detail) o a quality control and measurement plan with reference to SN or ISO with citation of decisive articles about documents or measurements that must be delivered or carried out with the delivery of a specific construction o winter measures (if necessary) o OSH risks to the process and measures to eliminate them about the environmental aspects of the process and the possibility of minimizing their negative effects on the ŽP			
122PSBL	Facility Management	Z,ZK	6
122TS03	Construction Technology 03	Z,ZK	7
Construction of the building and investment complex - basic terms. Production process of building and object. Spatial structure of object and complex building process. Technological and time structure of object and complex construction process. Technological stages for congruent and incongruent objects. Modeling construction production. Construction technology project and its main documents, analysis and risk detection. Quality control of construction production. Environmental and health and safety plans. Public hearing of the building. Preparation and management of the construction of investment units. Designing principles of construction organization respecting the basic principles of project management. Realization of construction. Handing over and taking over the construction site, construction manager, foreman and their duties. Basic principles of the theory of flow construction, its application in practice. Modeling the construction progress using spatio-temporal graphs. Simulation of the construction process using network graphs, construction technology network graph. The use of computers in the modeling of building construction. Principles of designing construction site equipment for a building and an investment unit. Information modeling of buildings, principles and principles of BIM, use for building construction			
126STMN	Construction Management	Z,ZK	6
Overview of selected concepts. Methods to support project management. Legal standards, SN and ISO standards. The essential aspects of Project Management. Construction as a project product. 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.			

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: BL202008

Name of the group: Stavební inženýrství, specializace P íprava, realizace a provoz staveb, 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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
122BPS	<b>BOZP at work in construction company</b> <i>Tomáš Váchal, Pavel Svoboda, Petr Kube ek Tomáš Váchal Pavel Svoboda (Gar.)</i>	Z,ZK	7	4P+2C	L	P
122ITSL	<b>IT ( Information Technology) L</b> <i>Pavel Neumann, Tomáš Váchal, Jaroslav Synek, Miroslav Vy ítal, Vja eslav Usmanov, Michal Ková ík, Petr Zavadil Michal Ková ík en k Jarský (Gar.)</i>	Z,ZK	5	2P+2C	L	P
124KKL	<b>Completing Constructions L</b> <i>Lenka Hanzalová, Vladimír Ž ára, Hana Gattermayerová, Pavel Kopecký, Šárka Šilarová Šárka Šilarová Šárka Šilarová (Gar.)</i>	Z,ZK	6	2P+3C	L	P

**Characteristics of the courses of this group of Study Plan: Code=BL202008 Name=Stavební inženýrství, specializace P íprava, realizace a provoz staveb, 8. semestr**

122BPS	BOZP at work in construction company	Z,ZK	7
The safety of work on the construction site is key in the conditions of the modern construction industry and precisely in relation to our integration into EU structures. Within this subject, students are introduced to the application of OSH for a specific industry, namely the construction industry, to the obligations of employers and employees, to the performance of state professional supervision, to the issue of occupational accidents (processes of their registration, investigation and compensation), to the creation of a safe workplace, categorization of work , occupational medical care, occupational risks (obligations of the employer, identification and assessment of risks, measures to minimize them), with personal protective work equipment. Furthermore, they are familiarized with the basic requirements for health and safety during the implementation of construction activities, with the performance of the health and safety coordinator during the preparation and implementation of constructions, health and safety during the use and operation of construction machinery, technical equipment and dedicated technical equipment, with risks associated with construction activities, with fire risks during implementation buildings, with the application of OSH in the design of buildings and the design of their implementation, with transport on the construction site, OSH training.			
122ITSL	IT ( Information Technology) L	Z,ZK	5
BIM in construction, basic documents (CDE, BEP), data standard (SNIM), BIM protocol BIM and legislation in the Czech Republic, BIM and its use in the world Geometric model of construction, input data without modelling - scanning, point clouds, mixed reality N-D models and BIM (4D surveys and valuations, 5D scheduling, higher order n-D models) Working with building information model, documentation management systems in a common data environment BIM and quality control, submodel and linked model, model data control, spatial coordination of documentation Quality management and tools, construction operation management, quality control on BIM models, IT tools Modelling and simulation and their use in the BIM model, environmental and health and safety plans, , Machine control using BIM models, industrialisation and prefabrication using 3D construction model Acceptance and data transfer using information models, facility management Logistics and subcontractor management in a BIM environment, construction supply and supply chain management Industrialization and prefabrication using 3D models Digitalisation trends in the construction industry, software			
124KKL	Completing Constructions L	Z,ZK	6
In the first part, the subject deals with the complex design of indoor and high-rise buildings, especially the influence of marginal conditions on the choice of material and structural variants and with an emphasis on envelope structures. In the second, more extensive part, the principles of solutions for roofs, perimeter walls, opening fillings and internal completion structures for various types of buildings are clearly discussed.			

Name of the block: Povinná t lesná 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 t lesná výchova

Requirement credits in the group:

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

Credits in the group: 0

Note on the group:

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

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

TV1	Physical Education	Z	0
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TV2	Physical Education	Z	0
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Name of the block: Compulsory elective courses

Minimal number of credits of the block: 6

The role of the block: S

Code of the group: BL202006\_1

Name of the group: Stavební inženýrství, specializace P íprava, realizace a provoz staveb, povinn volitelné p edm ty

Requirement credits in the group: In this group you have to gain at least 6 credits

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

Credits in the group: 6

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
122YTP	<b>Technology of preparatory processes</b> Václav Pospíchal, Pavel Neumann, Tomáš Váchal, Mária Párová, Karel Polák, Pavel Svoboda, Stanislav Smugala <b>Václav Pospíchal</b> Václav Pospíchal (Gar.)	Z,ZK	6	3P+3C	L	s
122YZS	<b>Special construction and technology</b> Václav Neumann, Michal Procházka, Michal Kovářík <b>Michal Kovářík</b> Václav Pospíchal (Gar.)	Z,ZK	6	3P+3C	L	s
126YMFL	<b>Managament in Construction Company</b> Martin ásenský, Aleš Tomek, Radan Tomek <b>Martin ásenský</b> Martin ásenský (Gar.)	Z,ZK	6	3P+3C	L	s
134YDK	<b>Additional timber and metal structures</b> Jakub Dolejš <b>Jakub Dolejš</b> Jakub Dolejš (Gar.)	Z,ZK	6	3P+3C	L	s

**Characteristics of the courses of this group of Study Plan: Code=BL202006\_1 Name=Stavební inženýrství, specializace P íprava, realizace a provoz staveb, povinn volitelné p edm ty**

122YTP	Technology of preparatory processes	Z,ZK	6
Technology of the preparatory process in the offer phase. Calculation of decisive works. Production of technological procedures. Supplier documentation. Provision of collection points, seizures, primary and secondary transport. TPP during construction - passporting, marking, quality control. OHS and PO. Environmental aspects, reduction of noise, dust, vibrations, traffic pollution, green protection. Tests, revisions, inspections during construction. Work in protective zones, work during operation. Auxiliary processes - production of reinforcement. Production of fresh concrete. Production and transport of mortars, putty, adhesives, PSV production plant.			
122YZS	Special construction and technology	Z,ZK	6
Progressive technological procedures resulting from the latest construction research. Introduction to modern technologies used in the construction of non-traditional buildings and in meeting demanding customer requirements. Special methods of production of monolithic, prefabricated and combined silicate load-bearing structures. Current technologies of monolithic structures. Special technologies of erection of steel structures. Special technologies used in the construction of new buildings as well as in the reconstruction of buildings and the protection of monuments. Progressive materials and technological procedures for interior and finishing works resulting from the latest developments in construction research.			
126YMFL	Managament in Construction Company	Z,ZK	6
The course provides a general overview of the problems of a business in the construction industry . The student is familiar and works actively with concepts strategy , strategic analysis , management - top , middle and operational; planning at all levels and implementation plans , organizational structure , management levels in the company , controlling, human resources management , marketing, process and project management , risk management in the company .			
134YDK	Additional timber and metal structures	Z,ZK	6
The course introduces students to the basics of design and use of steel, timber and aluminum members and structures with emphasis on temporary structures. The course is dedicated to the scaffolding, also timber and aluminum temporary structures.			

Name of the block: Jazyky

Minimal number of credits of the block: 3

The role of the block: J

Code of the group: BF20190201\_J

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

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

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

Credits in the group: 1

Note on the group:



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

**Characteristics of the courses of this group of Study Plan: Code=BF20190201\_J Name=Povinn volitelný jazyk, 2. semestr**

104YCA1	English 1	Z	1
English 1 Course code: 104YCA1 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			

Code of the group: BF20190302\_J

Name of the group: Povinn volitelný jazyk, 3. semestr

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

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

Credits in the group: 2

Note on the group:

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

**Characteristics of the courses of this group of Study Plan: Code=BF20190302\_J Name=Povinn volitelný jazyk, 3. semestr**

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

Name of the block: Povinn volitelné předměty, doporučení S1

Minimal number of credits of the block: 12

The role of the block: S1

Code of the group: BL202008\_1

Name of the group: Stavební inženýrství, specializace Příprava, realizace a provoz staveb, 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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
122BAPL	<b>Bachelor Thesis</b> <i>Miloslava Popenková, Pavel Svoboda Tomáš Váchal Václav Pospíchal (Gar.)</i>	Z	12	10C	L,Z	S1
126BAPL	<b>Bachelor Thesis</b> <i>Eduard Hromada Daniel Macek (Gar.)</i>	Z	12	10C	L,Z	S1

**Characteristics of the courses of this group of Study Plan: Code=BL202008\_1 Name=Stavební inženýrství, specializace P íprava, realizace a provoz staveb, bakalá ská práce**

122BAPL	Bachelor Thesis	Z	12
126BAPL	Bachelor Thesis	Z	12

The bachelor thesis finishes the bachelor study. A student proves that he/she is able to apply the knowledge acquired in the study on the real project. The bachelor thesis connects to the chosen subjects of the study curricula. The partial results are further evaluated and appropriate conclusions are drawn. Min. 4 continuous consultations with the head of bachelor study, where the student submits bachelor study in progress. For students of branch L.

### List of courses of this pass:

Code	Name of the course	Completion	Credits
100ODPR	Industrial Training (3 weeks) 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.	Z	0
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
122BAPL	Bachelor Thesis	Z	12

122BPS	BOZP at work in construction company	Z,ZK	7
The safety of work on the construction site is key in the conditions of the modern construction industry and precisely in relation to our integration into EU structures. Within this subject, students are introduced to the application of OSH for a specific industry, namely the construction industry, to the obligations of employers and employees, to the performance of state professional supervision, to the issue of occupational accidents (processes of their registration, investigation and compensation), to the creation of a safe workplace, categorization of work , occupational medical care, occupational risks (obligations of the employer, identification and assessment of risks, measures to minimize them), with personal protective work equipment. Furthermore, they are familiarized with the basic requirements for health and safety during the implementation of construction activities, with the performance of the health and safety coordinator during the preparation and implementation of constructions, health and safety during the use and operation of construction machinery, technical equipment and dedicated technical equipment, with risks associated with construction activities, with fire risks during implementation buildings, with the application of OSH in the design of buildings and the design of their implementation, with transport on the construction site, OSH training.			
122ITSL	IT ( Information Technology) L	Z,ZK	5
BIM in construction, basic documents (CDE, BEP), data standard (SNIM), BIM protocol BIM and legislation in the Czech Republic, BIM and its use in the world Geometric model of construction, input data without modelling - scanning, point clouds, mixed reality N-D models and BIM (4D surveys and valuations, 5D scheduling, higher order N-D models) Working with building information model, documentation management systems in a common data environment BIM and quality control, submodel and linked model, model data control, spatial coordination of documentation Quality management and tools, construction operation management, quality control on BIM models, IT tools Modelling and simulation and their use in the BIM model, environmental and health and safety plans, , Machine control using BIM models, industrialisation and prefabrication using 3D construction model Acceptance and data transfer using information models, facility management Logistics and subcontractor management in a BIM environment, construction supply and supply chain management Industrialization and prefabrication using 3D models Digitalisation trends in the construction industry, software			
122MKST	Quality Management System in Construction Company	Z,ZK	6
Current world trends in the field of quality management: quality management system (SMK) according to EN ISO 9001, Total Quality Management (TQM) and re-engineering in application to a construction company. Analysis of quality management system processes. Forms of familiarization with the subject on specific cases based on practical experience, namely: management of the organization so that quality management and assurance is reflected in the implementation of construction e meeting customer requirements that are defined in the contract continuous improvement of the effectiveness of SMK and training in the principles of quality policy, such as: Continuous satisfaction of external and internal customer requirements; execution of works; active involvement of all staff in quality improvement; creation of conditions by the management of the organization for flawless performance of all staff; application of the latest trends in achieving high quality processes and products; effective communication and teamwork in applying the process approach of the quality management system in the organisation; all-round training of employees in order to capture the current world trend; motivation of employees by management and differentiated remuneration for the results achieved in the performance of work tasks; growth of culture in the organisation, economic prosperity and the resulting social approach of management to employees.			
122PR01	Project Design L01	KZ	5
According to the assigned study of a simpler building (at the level of the project for the zoning decision), the design of the supporting structure of the building in details for the execution of the building.			
122PR02	Project Design L02	KZ	5
. Technological scheme: division into objects, sections, shots, technological stages, determination of the directions of construction procedures of staged processes. . List of main constructions in individual technological stages. . Determination of the main coefficients of the work queue for the main objects. . Design and assessment of lifting equipment . Part of the technological analysis sheet according to the statement of dimensions or budget with the calculation of labor for the 0th - 4th stage process. . Technological analysis, including decisive mechanisms, design of work crews with determination of their size, decisive materials (for transport) at the level of partial construction processes (manually with the transfer of items of the technological analysis sheet for the 0th - 4th stage process of the decisive object, hereinafter referred to as partial construction processes for remaining 5th - 9th stage process) . Analysis of transport processes. . Time plan - schedule in the structure of partial construction processes, according to the processed technological analysis. . Operational (detailed) space-time graph in the structure of partial construction processes . A complex space-time graph in the structure of stage processes . Graph of the deployment of workers and the need for specified materials over time, graph of the need for decisive machines and mechanisms. . Dimensioning of social and operational ZS. . Construction site equipment drawings (according to the assignment: for the construction phase), including a technical report at the level of project documentation for a building permit (part of the ZOV) and sizing for the specified stages (e.g. excavations, supporting structure, rough internal work and surface treatment and the end of construction); DIO, DIR. . The situation of wider relations with the assessment of transport routes . Technological procedure for the agreed construction process/ including: on determining construction readiness on the implementation description about the machine deployment plan (specific data from the rental company, etc.) o the deployment plan of decisive platoons o a detailed material supply plan (specifically, a list of all materials according to reality with comparison with calculations) o a detailed list of the necessary tools and auxiliary structures (in detail) o a quality control and measurement plan with reference to SN or ISO with citation of decisive articles about documents or measurements that must be delivered or carried out with the delivery of a specific construction o winter measures (if necessary) o OSH risks to the process and measures to eliminate them about the environmental aspects of the process and the possibility of minimizing their negative effects on the ŽP			
122PSBL	Facility Management	Z,ZK	6
122TES2	Construction Technology 02	Z,ZK	8
122TS01	Construction Technology 01	Z,ZK	7
Division of processes, construction participants. Principles and drives of construction machines, efficiency, acquisition, deployment and use of machines. Earthworks, rock mining classes, excavation types. Machines for preparatory and earthworks. machine assemblies, flow charts. Arming - principles, individual types, procedures, construction and dismantling. Backfills, embankments, embankments, compaction, drainage. Machines for adjusting, profiling and improving the plain (scrapers, graders, ground stabilization cutters, compaction machines, asphalt finishers and cookers), machines for special foundation, machines for transport. Traditional and system formwork, application of formwork, shots, dimensioning principles. Placement of reinforcement. Placement of fresh concrete, compaction and treatment of fresh concrete. Central and local concrete production, primary and secondary transport. Lifting devices, tower and car cranes, elevators, turnstiles, footbridges. Assembly work, assembly methods. Construction of masonry structures, production and transport of mortars on the construction site Scaffolding, fencing, retaining structures.			
122TS03	Construction Technology 03	Z,ZK	7
Construction of the building and investment complex - basic terms. Production process of building and object. Spatial structure of object and complex building process. Technological and time structure of object and complex construction process. Technological stages for congruent and incongruent objects. Modeling construction production. Construction technology project and its main documents, analysis and risk detection. Quality control of construction production. Environmental and health and safety plans. Public hearing of the building. Preparation and management of the construction of investment units. Designing principles of construction organization respecting the basic principles of project management. Realization of construction. Handing over and taking over the construction site, construction manager, foreman and their duties. Basic principles of the theory of flow construction, its application in practice. Modeling the construction progress using spatio-temporal graphs. Simulation of the construction process using network graphs, construction technology network graph. The use of computers in the modeling of building construction. Principles of designing construction site equipment for a building and an investment unit. Information modeling of buildings, principles and principles of BIM, use for building construction			
122YTP	Technology of preparatory processes	Z,ZK	6
Technology of the preparatory process in the offer phase. Calculation of decisive works. Production of technological procedures. Supplier documentation. Provision of collection points, seizures, primary and secondary transport. TPP during construction - passporting, marking, quality control. OHS and PO. Environmental aspects, reduction of noise, dust, vibrations, traffic pollution, green protection. Tests, revisions, inspections during construction. Work in protective zones, work during operation. Auxiliary processes - production of reinforcement. Production of fresh concrete. Production and transport of mortars, putty, adhesives, PSV production plant.			
122YZS	Special construction and technology	Z,ZK	6
Progressive technological procedures resulting from the latest construction research. Introduction to modern technologies used in the construction of non-traditional buildings and in meeting demanding customer requirements. Special methods of production of monolithic, prefabricated and combined silicate load-bearing structures. Current technologies of monolithic			

structures. Special technologies of erection of steel structures. Special technologies used in the construction of new buildings as well as in the reconstruction of buildings and the protection of monuments. Progressive materials and technological procedures for interior and finishing works resulting from the latest developments in construction research.			
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. Classification of the materials. Structure of materials. Main properties of materials. Application of materials in building constructions. Introduction to material testing.			
124KKL	Completing Constructions L	Z,ZK	6
In the first part, the subject deals with the complex design of indoor and high-rise buildings, especially the influence of marginal conditions on the choice of material and structural variants and with an emphasis on envelope structures. In the second, more extensive part, the principles of solutions for roofs, perimeter walls, opening fillings and internal completion structures for various types of buildings are clearly discussed.			
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.			
124SF01	Building Physics	Z,ZK	6
Thermal performance of buildings Basic course on building physics. The first part of the course (lectures 1, 2) introduces basic principles of heat, air and moisture transfer in buildings and building components as a necessary background for further studies. The second part of the course (lectures 3 to 6) provides an introduction into the design and construction of buildings and building components with respect to building physics related issues. Typical tasks of building design and construction process related with the topics of the course will be presented as well as methods for their solution. A short information on selected diagnostic used for assessment of thermal performance of buildings methods will be presented. Lighting technology deals with two main parts, sun exposure and daylighting. In the first part, the listener will learn which objects are subject to requirements and what are the options for verifying the time of insolation. This part also includes the connection of the results with possible boundary conditions. The second part deals with the assessment of daylight mainly in the interiors of buildings with regard to the gradation of sky brightness, shading conditions and the characteristics of the room and the lighting opening. In acoustics, the listener is first introduced to the concepts of sound and noise, sound perception, basic quantities, sound sources and corresponding limits. The propagation of sound in the free and diffuse field, the propagation of sound through an obstacle or in the ear canal is also discussed. When assessing or designing the interiors of buildings, knowledge regarding sound absorption structures and sound insulation properties of dividing structures will be applied.			
125TZ01	Building services systems 1	Z,ZK	5
Basic course in building services systems - water supply, drainage, gas supply and heating systems.			
126BAPL	Bachelor Thesis	Z	12
The bachelor thesis finishes the bachelor study. A student proves that he/she is able to apply the knowledge acquired in the study on the real project. The bachelor thesis connects to the chosen subjects of the study curricula. The partial results are further evaluated and appropriate conclusions are drawn. Min. 4 continuous consultations with the head of bachelor study, where the student submits bachelor study in progress. For students of branch L.			
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.			
126KNL	Costing and Bidding L	Z,ZK	6
The aim of the subject is to teach the student to use basic calculation techniques and procedures, to use normative and database. Another goal of the course is to teach the student pricing methods for tenders, to create a bill of quantities and a detailed estimate. Price, factors influencing price, types of prices, legislation. Valuation of building production in all stages of the project, data for valuation. Estimating, estimating basis. Hourly billing rates, bidding, software for costs estimation. Fees of project and engineering activities. Life cycle cost calculation (LCC) Data and bases for cost calculation - consumption of work and material, standards in construction. Wages and salaries. Costs and their classification, cost breakdown, common calculation methods and techniques, calculation bases. Dynamization of calculation, calculation of machine costs, individual cost calculation, calculation schema, content of individual cost components. Costs Controlling.			
126STMN	Construction Management	Z,ZK	6
Overview of selected concepts. Methods to support project management. Legal standards, SN and ISO standards. The essential aspects of Project Management. Construction as a project product. 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.			
126YMFL	Management in Construction Company	Z,ZK	6
The course provides a general overview of the problems of a business in the construction industry. The student is familiar and works actively with concepts strategy, strategic analysis, management - top, middle and operational; planning at all levels and implementation plans, organizational structure, management levels in the company, controlling, human resources management, marketing, process and project management, risk management in the company.			
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).			
133RBZS	Construction of Concrete and Masonry Structures	Z,ZK	6
The subject is focused on the practical designing of basic concrete structural elements, relations of the design and behaviour of structural members, reinforcing and construction technology and execution. The principles of structural design are presented with an emphasis on simplified and empirical methods. The subject also includes designing of masonry structures, an introduction to the design of bridges and engineering structures, and the basic principles of prestressed concrete elements design.			
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.			
134ROD	Steel and Timber Structures Construction	Z,ZK	6
The subject is aimed on the basis of the design of steel and timber structures and their construction. Subject increases the knowledge the previous subject aimed on the basic design of elementary structural members.			
134YDK	Additional timber and metal structures	Z,ZK	6
The course introduces students to the basics of design and use of steel, timber and aluminum members and structures with emphasis on temporary structures. The course is dedicated to the scaffolding, also timber and aluminum temporary structures.			
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			
135ZSVT	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 shoring of construction pits Principles for the design and assessment of shoring structures, earth pressure, water effect Calculation of shoring structures, pressure dependent methods Dewatering of construction pits Protection of foundation structures against 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.			
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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