Study plan

Name of study plan: Stavební inženýrství - pozemní stavby, specializace Statika pozemních staveb

Faculty/Institute/Others: Department: Branch of study guaranteed by the department: Welcome page Garantor of the study branch: Program of study: Civil Engineering - Building Engineering Type of study: Follow-up master full-time Required credits: 90 Elective courses credits: 0 Sum of credits in the plan: 90 Note on the plan: platí pro nástup od akad. roku 2023/24

Name of the block: Compulsory courses Minimal number of credits of the block: 42 The role of the block: Z

Code of the group: NC20230102

Name of the group: Statika pozemních staveb, 1. semestr Requirement credits in the group: In this group you have to gain at least 21 credits Requirement courses in the group: In this group you have to complete at least 5 courses Credits in the group: 21 Note on the group:

note on the group						
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
101MAPS	Mathematics PS Jana Nosková, Michal Zdražil, Iva Malechová, Jozef Bobok Jana Nosková Jana Nosková (Gar.)	Z,ZK	3	2P+1C	Z	Z
124PS4C	Building Structures 4 Vladimír Z ára, Hana Gattermayerová, Tomáš ejka, Ctislav Fiala Vladimír Ž ára Vladimír Ž ára (Gar.)	Z,ZK	4	2P+2C	Z	Z
132NAK	Numerical Analysis of Structures Bo ek Patzák, Martin Horák, Tomáš Krej í Bo ek Patzák Bo ek Patzák (Gar.)	Z,ZK	5	2P+2C	z	Z
133B03C	Concrete Structures 3C Jan Vítek, Lukáš Vráblík, Jan Vesecký Lukáš Vráblík Jan Vítek (Gar.)	Z,ZK	5	2P+2C	Z	Z
134O02C	Steel Structures 2C Martina Eliášová Martina Eliášová Martina Eliášová (Gar.)	Z,ZK	4	2P+2C	Z	Z

Characteristics of the courses of this group of Study Plan: Code=NC20230102 Name=Statika pozemních staveb, 1. semestr

101MAPS	Mathematics PS	Z,ZK	3			
Focused on basic and r	nore advanced statistical and probabilistic methods of data analysis as well as on hypothesis testing and regression.					
124PS4C	Building Structures 4	Z,ZK	4			
132NAK	Numerical Analysis of Structures	Z,ZK	5			
Variational principles of mechanics. Method of weighted residuals, conditions of convergence (continuity, integrity). Principles of FEM. Isoparametric elements, area coordinates,						
numerical integration. A	pplication of method to selected 1D and 2D problems (Elasticity, heat transfer, consolidation). Algorithmic aspects of the met	hod.				
133B03C	Concrete Structures 3C	Z,ZK	5			
Extension of knowledge	in the design of prestressed concrete structures. Introduction to special hybrid and thin-walled structures. Modern materials	and design solutio	ns for the future.			
134O02C	Steel Structures 2C	Z,ZK	4			
Deepening of knowledg	e received from courses 133NNK and 134OK01. Amplifying of theoretical knowledge in the field of steel grade selection, tough	ness, global analy	sis of structures,			
buckling of structural sy	stems, joint classification, and high strength steel and demanding composite steel and concrete structures. Complementation	of knowledge fro	m fire resistance			
of steel and composite structures and detailed design of industrial buildings and crane girders. Design of masts, towers, chimneys, tanks, silos and pipelines, technological structures,						
pre-stressed steel struc	tures and basis of design from aluminium alloys and stainless steel, and cable and membrane structures.					

Code of the group: NC20230202

Name of the group: Statika pozemních staveb, 2. semestr

Requirement credits in the group: In this group you have to gain at least 21 credits

Requirement courses in the group: In this group you have to complete at least 5 courses Credits in the group: 21 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
135ZS02	Foundations 2 Josef Jettmar, Jan Masopust, Daniel Jirásko Jan Masopust Josef Jettmar (Gar.)	Z,ZK	4	2P+2C	L	Z
132DY01	Dynamics of structures 1 Tomáš Krej í, Ji í Máca, Karel Pohl, Kristian D'Amico Ji í Máca Ji í Máca (Gar.)	Z,ZK	5	2P+2C	L	Z
132EADC	Experimental Analysis and Diagnostics C Michal Polák, Robert Jára, Pavel Padev t, Pavel Tesárek, Tomáš Plachý Michal Polák Michal Polák (Gar.)	KZ	3	1P+2C	L	Z
133B04C	Concrete Structures 4C Martin Pet ik, Petr Štemberk Petr Štemberk (Gar.)	Z,ZK	5	2P+2C	L	Z
134DK02	Timber Structures 2 Karel Mikeš, Lukáš Velebil Jakub Dolejš Karel Mikeš (Gar.)	Z,ZK	4	2P+1C	L	Z

Characteristics of the courses of this group of Study Plan: Code=NC20230202 Name=Statika pozemních staveb, 2. semestr

135ZS02	Foundations 2	Z,ZK	4
The course deepens the	e knowledge from the previous course ZS1. It covers design principles, risks associated with the foundation of structures, de	eper design of flat	foundations,
deeper design of deep	foundations, negative casing friction of drilled piles, grouting (calculations and execution), construction pits, improvement of fo	oundation soils.	
132DY01	Dynamics of structures 1	Z,ZK	5
Principles of theory of v	ibration, dynamic loading. Free and forced vibration of single-degree-of-freedom systems. Damped vibration. Methods of dyn	amic analysis of	
muti-degreee-of-freeed	om systems.		
132EADC	Experimental Analysis and Diagnostics C	KZ	3
Experiments focused or	n monitoring of the amount of climatic loads on building and engineering structures (wind, snow, temperature loads), diagnos	tics of building an	d engineering
structures, tests carried	out on physical models of building and engineering structures (model similarity laws, seismic simulations on shake tables, w	ind tunnel simulat	tions of wind
effects, static load tests	on physical models), monitoring of building and engineering structures, static load tests (building structures, engineering structures)	uctures, bridges),	dynamic load
tests and experimental	modal analysis (building structures, engineering structures, bridges, footbridges), effects of technical seismicity, evaluation of	adverse effects of	of vibration on
the human body, asses	sment of the influence of building vibrations on installed machines and devices).		
133B04C	Concrete Structures 4C	Z,ZK	5
Extension of knowledge	in the field of design of reinforced concrete structures, when the emphasis is put on development of engineering sense. With	nin the scope of th	his subject, the
student acquires ability	to estimate arrangement of reinforcement in RC slabs of general shape, ability to define basic strut-and-tie models for given	structural details,	ability to provide
optimum reinforcement	at general point of RC slabs and RC walls based on normal forces distributions obtained with common engineering software.	Also, the student	learns the basic
principles plastic design	n of RC structures and design of RC foundations.		
134DK02	Timber Structures 2	Z,ZK	4
Lectures on a design of	timber elements and structures - static action, choice of computational models and methods, design of details and joints, fire	e resistance	

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

Code of the group: NC20230102_2

Name of the group: Statika pozemních staveb, PV p edm ty, 1. semestr Requirement credits in the group: In this group you have to gain at least 4 credits Requirement courses in the group: In this group you have to complete at least 1 course Credits in the group: 4

Note on the group: V případě splnění některého předmětu v bakalářském studiu nelze tento předmět zapsat znovu.

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
102YFPL	Solid State Physics in Civil Engineering Ji í Konfršt Ji í Konfršt Ji í Konfršt (Gar.)	Z	2	1P+1C	Z	PV
122YTSD	Technology of Component Production Rostislav Šulc Rostislav Šulc Rostislav Šulc (Gar.)	Z	2	1P+1C	Z,L	PV
124YADO	Acoustics and Daylighting of Buildings Jaroslav Vychytil, Ji í Nová ek Ji í Nová ek Jaroslav Vychytil (Gar.)	Z	2	1P+1C	Z	PV
124YCPV	The Principles of Circular Economy in Building Construction Tereza Pavl Tereza Pavl Tereza Pavl (Gar.)	Z	2	1P+1C	Z	PV
124YDPH	Diagnosis and Surveying of Building Structures Eva Burgetová Eva Burgetová Eva Burgetová (Gar.)	Z	2	1P+1C	Z	PV
124YDSR	Demolitions of Buildings and Material Recycling Šárka Šilarová, Zuzana Rácová Šárka Šilarová Šárka Šilarová (Gar.)	Z	2	1P+1C	Z	PV

			1	· · · · · ·		
124YPBS	Principles of Building Fire Safety Vladimír Mózer Vladimír Mózer Vladimír Mózer (Gar.)	ZK	2	1P+1C	Z	PV
124YPRS	Failures, Deterioration, Renovations Radek Zigler Radek Zigler Radek Zigler (Gar.)	Z	2	1P+1C	Z	PV
125OZE1	Renewable Energy Sources Michal Kabrhel Michal Kabrhel (Gar.)	ZK	3	2P	Z,L	PV
132PRPM	Deformation and Failure of Materials Milan Jirásek, Petr Havlásek, Lenka Dohnalová Milan Jirásek Milan Jirásek (Gar.)	Z,ZK	5	2P+2C	Z	PV
132YKPA	Statics for Architecture Aleš Jíra	Z	2	1P+1C	Z,L	PV
132YMMO	Modern Methods of Optimization Mat j Lepš, Jan Zeman Mat j Lepš (Mat j Lepš (Gar.)	Z	2	1P+1C	Z	PV
132YSEI	Seismic Engineeering Ji í Máca Ji í Máca Ji í Máca (Gar.)	Z	2	1P+1C	Z	PV
132YSSK	Reliability of Structures Jaroslav Kruis Jaroslav Kruis (Gar.)	Z	2	1P+1C	Z	PV
133YBEX	Concrete under Extreme Conditions Petr Štemberk, Radek Štefan, Marek Foglar Radek Štefan Radek Štefan (Gar.)	Z	2	1P+1C	Z	PV
133YPRK	Failures and Rehabilitation of Concrete Structures Petr Štemberk, Jakub Žák Petr Štemberk Petr Štemberk (Gar.)	Z	2	1P+1C	Z	PV
134YDKM	Timber structures and bridges Anna Kuklíková Anna Kuklíková Anna Kuklíková (Gar.)	Z	2	1P+1C	Z	PV
134YROK	Extending the Life of Steel and Timber Structures Karel Mikeš Karel Mikeš Karel Mikeš (Gar.)	Z	2	1P+1C	Z	PV
134YSMK	Stability and modelling of steel structures Josef Machá ek, Michal Jandera Michal Jandera Josef Machá ek (Gar.)	Z	2	1P+1C	Z	PV
135YGSM	Geotechnical Software for Numerical modelling Jan Salák, Alena Zemanová, Daniel Turanský, Jan Ježek Alena Zemanová Alena Zemanová (Gar.)	Z	2	1P+1C	Z	PV
210YDSM	Diagnostics of Building Materials Properties Ji í Litoš Ji í Litoš Ji í Litoš (Gar.)	Z	2	1P+1C	Z	PV
210YSB	Special Concretes Pavel Reiterman, Vendula Kellnerová, Ond ej Hol apek Pavel Reiterman Pavel Reiterman (Gar.)	Z	2	2P	Z,L	PV

Characteristics of the courses of this group of Study Plan: Code=NC20230102_2 Name=Statika pozemních staveb, PV p edm ty, 1. semestr

102YFPL Solid State Physics in Civil En	gineering	Z	2
	lical bonds, dislocation disturbances, critical crack energy,vibration of masses, system	ns natural frequer	cy of vibration
	pes of fracture, electron microscopes, scanning tunneling microscope, atomic force		
methods, semiconductors, p-n junction, photovoltaic effect, sola	r cells, heat and moisture transport.		
122YTSD Technology of Component Pro	duction	Z	2
124YADO Acoustics and Daylighting of E	uildings	Z	2
	of selected topics in the field of daylighting and building acoustics that students may e	ncounter in future	design practice.
124YCPV The Principles of Circular Eco	nomy in Building Construction	Z	2
124YDPH Diagnosis and Surveying of B	uilding Structures	Z	2
Course sets out key consideratons and implications which requi	re structure assessment. The course provides an objective framework and methodica	al and systematic	approach to
surveying (structural diagnosis, preliminary and comprehensive	survey, visual inspection, site inspections, laboratory tests, investigation kits, types of	defects and dama	ges, symptoms,
manifestation, significance, criticality, reason for failures case st	udies)		
124YDSR Demolitions of Buildings and M	Aaterial Recycling	Z	2
The use of construction waste from demolitions from the produc	tion of building materials and from other sectors in the construction industry with the	aim of: significant	ly reducing the
volumes of landfilled materials, reducing the consumption of pri	nary raw materials, a new perspective on the design of buildings and structures in a	cordance with a c	losed life cycle.
Legislation, levels of recycling in developed countries, recycling	in CR, possibilities of recycling buildings and structures, design of structures from th	e point of view of	sustainable
development, minimization of landfills, examples and demonstra	tions of recycling technologies, low-waste technologies		
124YPBS Principles of Building Fire Safe	ety	ZK	2
	e most important concepts and principles of fire safety in buildings. Attention is paid to	o all the main com	ponents of fire
safety design that are important for the protection of life and hea	Ith, property, the environment and other assets. The course is intended for students	of non-fire discipli	nes and should
enable them to take into account aspects of fire safety from the	initial stages of project preparation of buildings.		
124YPRS Failures, Deterioration, Renov	ations	Z	2
The course is focused on the current issue of restoration, recon	struction and modernization of buildings (residential, industrial, etc.), on historical stru	ictures and mater	als, the issue of
degradation and aging of structures and materials of historical bui	dings, their residual life and failures of historical buildings and their parts. An integral par	t is the issue of str	uctural-technical
and historical surveys, diagnostics and assessment of the struc	tural-technical condition and remaining service life.		
125OZE1 Renewable Energy Sources		ZK	3
Renewable sources are becoming increasingly important source	s of energy for buildings. Understanding their characteristics is key to the proper desig	n and operation of	these systems.
The course therefore looks in detail at renewable sources and the	neir applications.		
132PRPM Deformation and Failure of Ma	terials	Z,ZK	5
Viscoelasticity, models for concrete creep. Theory of plasticity, p	rinciples of limit and incremental analysis. Fracture mechanics. Damage mechanics.	,	
132YKPA Statics for Architecture		Z	2
			2
132YMMO Modern Methods of Optimizat	on	Z	2
	ON thods applicable not only in the Civil Engineering area. The emphasis is put more on th	Z	2
	thods applicable not only in the Civil Engineering area. The emphasis is put more on the	Z	2
The course is aimed at an overview of numerical optimization me	thods applicable not only in the Civil Engineering area. The emphasis is put more on the	Z	2

132YSSK	Reliability of Structures	Z	2			
The course is devoted t	o the reliability of elements and systems. Element reliability is time dependent while the reliability of systems is of type streng	th-load. Complica	ated cases are			
solved by the FORM me	ethod. Two simulation methods are introduced: Monte Carlo and LHS.					
133YBEX	Concrete under Extreme Conditions	Z	2			
The course is focused of	n concrete and concrete structures under extreme conditions.					
133YPRK	Failures and Rehabilitation of Concrete Structures	Z	2			
The course focuses on the description of failures of concrete structures, explanation of the causes of these failures and the design of remedial measures. Methods of strengthening						
existing concrete struct	ures are also discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of b	ending moment ar	nd shear, and			
foundation structures a	re discussed. The course appropriately combines theoretical approaches with common practice.					
134YDKM	Timber structures and bridges	Z	2			
Timber structures focus	ed to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges.	Repairing and stre	engthtening. Fire			
design. Production, prot	tection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature and in fire.					
134YROK	Extending the Life of Steel and Timber Structures	Z	2			
Materials used for bearing	, g structures. Developments in the area of regulations and standardization. Causes of defects, malfunctions, survey of objects, st	atic assumptions of	of reconstruction.			
Possibilities of strengthe	ening, strengthening of steel and timber structures and strengthening of connections. Using of computers in reconstructions	and development	of numerical			
models.						
134YSMK	Stability and modelling of steel structures	Z	2			
Subject YSMK covers to	wo parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel fran	ne structures. In t	he first part the			
historic collapses of ste	el structures are analysed including the importance of imperfections for a design of thin plated structures. Presented are prin	ciples of theory of	i buckling, linear			
and nonlinear theory of	buckling of thin plates. The results are applied to the 4th class cross sections in harmony with Eurocode. Buckling due to not	mal, shear and lo	cal loadings			
e e e e e e e e e e e e e e e e e e e	tion is analysed in a detail. In the end the application of the results is shown together with design of necessary stiffeners. The					
	ossible global analysis methods are presented together with methods for compression and bending interaction for slender m	embers. In detail,	specific cases			
	ling are explained including also tapered members.					
135YGSM	Geotechnical Software for Numerical modelling	Z	2			
	d with the Finite Element Method, the currently dominant tool for numerical modeling in Geotechnics. Emphasis is placed on					
	od and their subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of fi		° I			
	odels suitable for the description of soil deformation, and selected specifics associated with numerical modeling in geotechnics	3. This knowledge i	s further applied			
<u>_</u>	dation, embedded walls, and stability problems.					
210YDSM	Diagnostics of Building Materials Properties	Z	2			
	erials, mechanical, thermal, chemical and other influences on the development of failures of building materials. Diagnostics of					
1 ·	nent and instrumentation of tested elements and structures. Theory of experiment, measurement and processing of results. T	•				
	instruments. Destructive testing of mechanical properties. Non-destructive test methods. Test methodology for various mater	rials (concrete, mo	ortar, metallic			
	plastics, composites and others).					
210YSB	Special Concretes	Z	2			
	expanding knowledge in the field of special concretes and composites for specific applications. The core of the course is to a					
	f the production, testing and use of special concretes, as well as the applicable legislative framework for individual types of special concretes.	pecial concretes.	Specific practical			
applications and experi-	ences are also presented within the course.					

Code of the group: NC20230202_2

Name of the group: Statika pozemních staveb, PV p edm ty, 2. semestr Requirement credits in the group: In this group you have to gain at least 4 credits Requirement courses in the group: In this group you have to complete at least 1 course Credits in the group: 4 Note on the group: V případě splnění některého předmětu v bakalářském studiu

V případě splnění některého předmětu v bakalářském studiu nelze tento předmět zapsat znovu.

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
101YFAV	Introduction to Functional Analysis and Variational Methods Jozef Bobok, Petr Ku era Aleš Nekvinda Aleš Nekvinda (Gar.)	KZ	2	1P+1C	Z,L	PV
101YMCD	Methods of Time Discretization Petr Mayer František Bubeník František Bubeník (Gar.)	Z	2	1P+1C	L	PV
101YMST	Mathematical statistics for technicians Daniela Jarušková Jana Nosková Daniela Jarušková (Gar.)	Z	2	1P+1C	L	PV
101YNUM	Numerical Methods Ivana Pultarová, Martin Ladecký, Liya Gaynutdinova Ivana Pultarová Ivana Pultarová (Gar.)	Z	2	1P+1C	L	PV
123YMPU	Materials for Coatings Miloš Jerman Miloš Jerman Miloš Jerman (Gar.)	Z	2	1P+1C	L	PV
124YHVK	Long Span Structures Vladimír Ž ára	Z	2	1P+1C	L	PV
124YKHK	Building Quality Complex Assessment Martin Volf Martin Volf (Gar.)	Z	2	1P+1C	L	PV
124YMOB	Modelling of Buildings - BIM Zdenko Malík Zdenko Malík Zdenko Malík (Gar.)	Z	2	1P+1C	L	PV
124YPFS	Precast concrete structures Radek Zigler, Ji í Witzany Radek Zigler Radek Zigler (Gar.)	Z	2	1P+1C	L	PV
124YPS5	Prefabricated structures Tomáš ejka Tomáš ejka Tomáš ejka (Gar.)	Z	2	1P+1C	L	PV

124YRHS	Reconstruction of Historical Building Structures Tomáš ejka, Radek Zigler, Ji í Witzany Ji í Witzany Ji í Witzany (Gar.)	Z	2	1P+1C	L	PV
125YTCH	Technological Equipment of Buildings Ilona Koubková, Hana Kabrhelová, Pavla Hoíbauer Pechová Ilona Koubková Ilona Koubková (Gar.)	Z	2	2P	L	PV
126YBVE	BIM in Public Investments Stanislav Vitásek Stanislav Vitásek (Gar.)	Z	2	2P	L	PV
126YPDV	Development Project Kate ina Eklová Kate ina Eklová (Gar.)	Z	2	2C	L	PV
132YNAK	Nonlinear Analysis of Materials and Structures Bo ek Patzák, Petr Kabele, Daniel Rypl Daniel Rypl (Gar.)	Z	2	1P+1C	L	PV
132YNA2	Numerical Analysis of Structures 2 Bo ek Patzák Bo ek Patzák Bo ek Patzák (Gar.)	Z,ZK	4	2P+1C	L	PV
132YPM2	Computer Analysis of Structures 2 Ji í Máca, Petr Fajman Ji í Máca Petr Fajman (Gar.)	Z	2	1P+1C	L	PV
132YSHK	Statics and Reconstruction of Historical Structures Petr Faiman Petr Faiman Petr Faiman (Gar.)	Z	2	1P+1C	L	PV
132YUPM	General Principles of Mechanics Milan Jirásek Milan Jirásek Milan Jirásek (Gar.)	Z,ZK	4	2P+1C	L	PV
133YATK	Applied Theory of Structures Lukáš Vráblík, Radek Hájek Lukáš Vráblík Lukáš Vráblík (Gar.)	Z,ZK	4	2P+1C	L	PV
133YMVB	Concrete and Masonry Structures 1 Tomáš Trtík, Petr Bílý, Josef Novák Petr Bílý Petr Bílý (Gar.)	Z	2	1P+1C	L	PV
133YPNB	Fire desgn og concrete and mnsory structures Radek Štefan, Martin Benýšek Radek Štefan Radek Štefan (Gar.)	Z	2	1P+1C	L	PV
133YVHB	Ultrahigh Performance Concretes Josef Fládr Josef Fládr Josef Fládr (Gar.)	Z	2	1P+1C	L	PV
134YHNK	Stainless steel and aluminium structures František Wald, B etislav Židlický František Wald František Wald (Gar.)	Z	2	1P+1C	L	PV
134YNDK	Load-bearing timber roof constructions Karel Mikeš Karel Mikeš Karel Mikeš (Gar.)	Z	2	1P+1C	L	PV
134YNSK	Design of Glass Structures Martina Eliášová Martina Eliášová Martina Eliášová (Gar.)	Z,ZK	2	1P+1C	L	PV
134YPMK	Design of Membrane Structures Svitlana Kalmykova Svitlana Kalmykova (Gar.)	Z	2	1P+1C	L	PV
134YPOD	Fire Resistance of Steel and Timber Structures Zden k Sokol Zden k Sokol Zden k Sokol (Gar.)	Z	2	1P+1C	L	PV
134YSOD	Connections of steel and timber structures Robert Jára, František Wald Robert Jára František Wald (Gar.)	Z	2	1P+1C	L	PV
134YSOK	Special steel structures Jakub Dolejš Jakub Dolejš (Gar.)	Z	2	1P+1C	L	PV
135YVPZ	Computer analysis in underground structures Daniel Turanský, Jan Ježek, Jan Pruška, Matouš Hilar Jan Pruška Jan Pruška (Gar.)	Z	2	1P+1C	L	PV

Characteristics of the courses of this group of Study Plan: Code=NC20230202_2 Name=Statika pozemních staveb, PV p edm ty, 2. semestr

101YFAV	Introduction to Functional Analysis and Variational Methods	KZ	2	
101YMCD	Methods of Time Discretization	Z	2	
The course is devoted to	o a universal and very effective method for solving problems involving time, the so-called evolutionary problems, especially for	partial differentia	al equations with	
a time variable. This me	thod represents a modern approach to modeling and solving engineering tasks. These problems, both linear and non-linear, r	nodel events in m	any engineering	
fields, such as heat con	duction, oscillations, also in rheology and other parts.			
101YMST	Mathematical statistics for technicians	Z	2	
Inferential statistics. The	ory of probability. Random variables and its characteristics. Basic methods of mathematical statistics.	·		
101YNUM	Numerical Methods	Z	2	
Numerical computing in	applied mathematics: course for beginners.	'		
123YMPU	Materials for Coatings	Z	2	
Students will gain an ov	erview of how to protect building structures from corrosion and other harmful influences such as UV radiation, acid rain, etc.	Students will also	learn about	
methods and technologi	es of surface treatment. The course consists of 6 lectures and 6 exercises. In the lectures, students will learn about both histor	ical and more imp	ortantly modern	
surface treatments for d	ifferent types of structures. In the exercises, students will perform a surface treatment on a fragment of a structure and will be	able to check the	e quality of the	
work done by themselve	es in the last exercise by means of a tear-off test.			
124YHVK	Long Span Structures	Z	2	
The subject deals with th	e analysis of structural solutions applied in building designs by the world's best architects. Although attention will be focused ma	inly on the solution	n of load-bearing	
structures, we will also p	bay attention to the wider context of the design. Reading existing constructions is a natural way to learn the principles of their	design. And natur	ally we will learn	
from the best. An extens	ive database of completed buildings, including more than 5,000 buildings, will enable us to take a trip into history and the pre	sent on all the wo	orld's continents.	
124YKHK	Building Quality Complex Assessment	Z	2	
Students will gain an ov	erview of design strategies in green architecture and sustainable building and learn how to conduct assessments to achieve	high quality buildi	ngs. In addition,	
they will learn basic info	rmation on life cycle assessment of materials and buildings.			
124YMOB	Modelling of Buildings - BIM	Z	2	
The course is designed	to introduce the phenomenon of parametric design, which is becoming very widespread in today's world. It is the connection	of 3D models and	d BIM models	
with visual programming	g. Instead of writing code in a classical programming language, Nodes are connected, and the resulting script can be created	visually and with	out knowledge	
of the programming lane	guage. These scripts can be used primarily for: - creating parametric geometry, - working with data in a BIM model, - structura	al and physical an	alysis, design	
optimization. Thematically, the course covers two main areas of parametric modeling, replicating two software platforms: Revit + Dynamo (JaVe) Rhino + Grasshopper (ZdMa)				

124YPFS	Precast concrete structures	Z	2
Residential houses mad	e of precast conrete panels, of which approx. 82 thousand were built in the period 1960-1995 do not meet the required exter	nt of the current d	ynamically
	n many cases require the implementation of regeneration and modernization interventions enabling their full use. The course		
	n and modernization of precast houses, modernization of apartments in precast houses, on the issue of freeing parterres of p		-
	etc. Renovation, modernization, or regenerations require the removal of functionally inadequate completion structures, techn nanding interventions in supporting structures. As part of the construction of communication networks, modernization of urban		
	but partial or complete demolition of a precast panel building. As part of the regeneration of precast panel housing estates, a	-	-
-	buses. The implementation of the mentioned plans requires a survey and diagnostics of supporting and peripheral structures		
	al condition and an assessment of the residual life of precast panel structures and buildings.		
124YPS5	Prefabricated structures	Z	2
124YRHS	Reconstruction of Historical Building Structures	Z	2
	cond half of the 19th century by 1960, more than 250 thousand of two- to five-story brick apartment (mainly rental) houses in	n traditional brick	
constructed in the Czecl	n Republic. Brick buildings from this period were built according to regulations, building codes and laws from the turn of the 19	th and 20th centu	ries. Multi-storey
brick tenement houses of	to not meet the current thermal, acoustic and other requirements, the requirements of a dynamically developing society to the	ne required extent	, and in many
	on and modernization interventions, including the replacement of non-compliant and out-of-date structures and equipment ena	-	
	issue of renewal, reconstruction and modernization of brick multi-storey rental apartment buildings, on historical structures and		-
	and materials of historic brick residential buildings, their residual life, failures and reconstruction of historical buildings and the	-	
these buildings.	of improving the well-being of the internal environment, the replacement of finishing structures, opening fillings, etc. as an int	legral part of the r	nouernization of
125YTCH	Technological Equipment of Buildings	Z	2
	en technology, elevators, technology swimming pools, heat pumps, heat source and technological system, technology cooling	1	
126YBVE	BIM in Public Investments	Z	2
126YPDV	Development Project	Z	2
132YNAK	Nonlinear Analysis of Materials and Structures	7	2
	inted with the concepts of linear stability and calculation of elastoplastic load capacity. Linear stability - evaluation of the criti	-	_
	cording to the 2nd order theory - equilibrium conditions on a deformed structure, initial stress matrix. Elastoplastic analysis of		
	n of internal forces at the limit state - static incremental method, kinematic method. Solving stability and elastoplasticity probler		
finite element program.			
132YNA2	Numerical Analysis of Structures 2	Z,ZK	4
Advanced course on fini	te element method. Formulation of plate elements suitable for thin and thick plates, plates on elastic foundation. Introduction t	o nonlinear proble	ems: geometrical
and material nonlinearity	/, solution methods, implementation aspects.		
132YPM2	Computer Analysis of Structures 2	Z	2
	ability analysis of structures. Second order theory. Beams and gridwork girders on elastic foundation. Plate and wall structure	es. Dynamic analy	sis of structures.
Verification of results.		_	
132YSHK	Statics and Reconstruction of Historical Structures	Z	2
	cal vaults and roof trusses. Static behaviour and most frequent causes of failure. Methods of reconstruction, changes in four	ndation conditions	included. Most
	e of panel buildings. Visit to the historical part of Prague Castle.		
		7 71/	4
132YUPM	General Principles of Mechanics	Z,ZK	4
Tensors, differential ope	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and	nonlinear statics	, energy and
Tensors, differential ope duality. Principle of virtu	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contir	nonlinear statics	, energy and
Tensors, differential ope duality. Principle of virtua beams, frames, plates, v	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contir valls and three-dimensional bodies.	nonlinear statics nuous and discret	, energy and e models of
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contir valls and three-dimensional bodies. Applied Theory of Structures	nonlinear statics nuous and discret	, energy and e models of 4
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contir valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for t	nonlinear statics nuous and discret	, energy and e models of 4
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to t	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to continvalls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try.	nonlinear statics nuous and discret	, energy and e models of 4
Tensors, differential ope duality. Principle of virtu beams, frames, plates, v 133YATK Detailed introduction to t structures, stability theo 133YMVB	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contir valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for t	nonlinear statics nuous and discret Z,ZK he analysis of thin Z	, energy and e models of 4 -walled concrete 2
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to t structures, stability theo 133YMVB The content of the subje	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contin valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try. Concrete and Masonry Structures 1	nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin	, energy and e models of 4 -walled concrete 2 ear modeling of
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to t structures, stability theo 133YMVB The content of the subje	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contin valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for tr ry. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro	nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin	, energy and e models of 4 -walled concrete 2 ear modeling of
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to t structures, stability theo 133YMVB The content of the subje- reinforced concrete stru	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contin valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for tr ry. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro	nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin	, energy and e models of 4 -walled concrete 2 ear modeling of
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused of	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contin valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal	nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of Z	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused of design methods, material	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contin valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures.	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of Z analysis, loads, d	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 esign principles,
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subje reinforced concrete stru structures. 133YPNB The course is focused o design methods, materia 133YVHB	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contin valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the ry. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of Z analysis, loads, d	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subje reinforced concrete stru structures. 133YPNB The course is focused o design methods, materia 133YVHB The aim of the course is	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contin valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the ry. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the structures is the selected to be selected for the selected program to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the to present a special type of concrete that achieves great strength and high durability.	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of Z analysis, loads, d Z hin structures. The	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subje reinforced concrete stru structures. 133YPNB The course is focused o design methods, materia 133YVHB The aim of the course is high performance concr	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contin valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the ry. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the ete are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of Z analysis, loads, d Z hin structures. Tho ted to the compo	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subje reinforced concrete stru structures. 133YPNB The course is focused o design methods, materia 133YVHB The aim of the course is high performance concrete, to	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to continvalls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures n fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very ti ete are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo he composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of Z analysis, loads, d Z hin structures. Tho ted to the compo	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subje reinforced concrete stru structures. 133YPNB The course is focused o design methods, materia 133YVHB The aim of the course is high performance concrete, t theoretical knowledge in	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contin valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the ry. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures n fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the tet are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo the composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use.	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of Z analysis, loads, d Z hin structures. The oted to the compo students can expe	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subje reinforced concrete stru structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concrete, to theoretical knowledge in 134YHNK	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contri- valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for ti- ty. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the tete are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo the composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design analysis, loads, d Z hin structures. The oted to the compo students can expe	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subje reinforced concrete stru structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contri- valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very ti tete are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo the composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures o parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 oys: Introduction
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subje reinforced concrete stru structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contri- valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for ti- ty. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the tete are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo the composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 loys: Introduction tainless steels
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subje reinforced concrete stru structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contri- valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for tr ry. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures n fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the te are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo the composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures o parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of real	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S espect to low-carb	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 loys: Introduction tainless steels ion steels is
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subje reinforced concrete stru structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contir valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the ry. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures n fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the et are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo the composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures of aluminium structures. Structures from aluminium alloys, the second deals with stainless steel structures. Structures of aluminium structures of stainless steel: Evolution of stainless steel materials/structures and examples of real e described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with re at and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection an	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S espect to low-carb	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 loys: Introduction tainless steels ion steels is
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused on design methods, materia 133YVHB The aim of the course is high performance concre- performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and described for both ultimar members are described 134YNDK	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contir valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and the main officement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes that achieves great strength and high durability, which enables the realization of very the tere are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo the composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures of aluminium structures of stainless steel materials/structures and examples of real e described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with reat and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection an an exviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection an an advice provide and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection an adviceability limit states. In the end the possibilities	A nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of analysis, loads, d Z hin structures. The oted to the compo students can expe z s of aluminium all lized structures. S espect to low-carb d installation of st Z	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 oys: Introduction tainless steels ion steels is ainless steel 2
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concre- performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and described for both ultimar members are described 134YNDK System of roofs structure	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contrivialls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and masory structures n fire resistance of concrete and masory structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures o parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of aluminium structures. Dissimilarities in assessments of members under common loadings with re ate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection an Load-bearing timber roof constructions as. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures Load-bearing timber roof constructions	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S espect to low-carb d installation of st Z ures. Analysis of th	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 oys: Introduction tainless steels ion steels is ainless steel 2 he static function
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concre- performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and described for both ultima members are described 134YNDK System of roofs structure and behaviour of main in	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contrivalls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and masonry structures in fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very ti te are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo he composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures for aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of real e described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with re at ear serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection an an earlier and serviceability limit states. In the end the possibilities concerning connections for main different roof systems and struct individual elements and their design. Historic struc	d nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S espect to low-carb d installation of st Z ures. Analysis of th	, energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 oys: Introduction tainless steels ion steels is ainless steel 2 he static function
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concre- performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and described for both ultimar members are described 134YNDK System of roofs structure and behaviour of main in also using modern meth	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contir valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very th te are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo the composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures o parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of aluminium structures of stainless steel: Evolution of stainless steel materials/structures and examples of real e described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with re ate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection an as. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and stru	a nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S espect to low-carb d installation of st Z ures. Analysis of the carpentry joints.	e energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 oys: Introduction tainless steels oon steels is ainless steel 2 he static function We will discuss
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concre- performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and described for both ultima members are described 134YNDK System of roofs structure and behaviour of main in also using modern mettr 134YNSK	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to continvalls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- tructures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures: oncrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very to the acomposition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures of aluminium structures of stainless steel: Evolution of stainless steel materials/structures and examples of real concerning timber roof constructions as. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structure dividual elements and their properties. Dissimilarities in assessments of main different roof systems and structure dividual elements and their properties. Dissimilarities in assessments of main different roof systems and structure dividual elements and their properties. Dissimilarities in assessments of members under common loadings with r	a nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of Z analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S espect to low-carb d installation of st Z ures. Analysis of th n carpentry joints. Z,ZK	e energy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 loys: Introduction tainless steels ion steels is ainless steel 2 he static function We will discuss
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concre- performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and described for both ultimar members are described 134YNDK System of roofs structure and behaviour of main in also using modern mettr 134YNSK The subject is intended	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contrivials and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devo to be composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures g of aluminium structures from aluminium alloys, the second deals with stainless steel structures. Structure g of aluminium structures. In the end the possibilities concerning connections of stainless steel members, erection an tate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection an Load-bearing timber roof constructions as. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structure as dividual elements of timber structures. Design of Glass Structures Design of Glass Structures Design of Glass Structures Dividual elements of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134	A nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S espect to low-carb d installation of st Z ures. Analysis of th carpentry joints.	e nergy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 loys: Introduction tainless steels ion steels is ainless steel 2 he static function We will discuss 2 powledge in the
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused o design methods, materia 133YVHB The aim of the course is high performance concre- performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and described for both ultimar members are described 134YNDK System of roofs structure and behaviour of main in also using modern mett 134YNSK The subject is intended field of stability of glass	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to continvalls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- tructures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures: oncrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very to the acomposition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures of aluminium structures of stainless steel: Evolution of stainless steel materials/structures and examples of real concerning timber roof constructions as. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structure dividual elements and their properties. Dissimilarities in assessments of main different roof systems and structure dividual elements and their properties. Dissimilarities in assessments of main different roof systems and structure dividual elements and their properties. Dissimilarities in assessments of members under common loadings with r	A nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S espect to low-carb d installation of st Z ures. Analysis of th carpentry joints.	e nergy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 loys: Introduction tainless steels ion steels is ainless steel 2 he static function We will discuss 2 powledge in the
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused o design methods, materia 133YVHB The aim of the course is high performance concre- performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and described for both ultimar members are described 134YNDK System of roofs structure and behaviour of main in also using modern mett 134YNSK The subject is intended field of stability of glass	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contir valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro- ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures in fire resistance of concrete and masonry structures concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very the e composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures of aluminium structures. Structures of stainless steel structures and examples of real e described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with re ta and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection an Load-bearing timber roof constructions as. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structur dividual elements and their design. Historic structures and their reconstruction. Designing typical structure details based on ods of joining elements of timber structures. Design of Glas	A nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of analysis, loads, d Z analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S espect to low-carb d installation of st ures. Analysis of th n carpentry joints.	e nergy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 loys: Introduction tainless steels ion steels is ainless steel 2 ne static function We will discuss 2 bowledge in the ation of material
Tensors, differential ope duality. Principle of virtu- beams, frames, plates, v 133YATK Detailed introduction to to structures, stability theo 133YMVB The content of the subjer reinforced concrete stru- structures. 133YPNB The course is focused of design methods, materia 133YVHB The aim of the course is high performance concre- performance concrete, to theoretical knowledge in 134YHNK Subject YHNK covers tw and practice in designin suitable for structures and described for both ultima members are described 134YNDK System of roofs structur- and behaviour of main in also using modern meth 134YNSK The subject is intended field of stability of glass properties of glass, safe	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to contir valls and three-dimensional bodies. Applied Theory of Structures heoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for try. Concrete and Masonry Structures 1 ct will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Intro ctures. Preparation of input data for numerical models. Design of structures using MATLAB. Presentation of selected program Fire desgn og concrete and mnsory structures n fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal al properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures. Ultrahigh Performance Concretes to present a special type of concrete that achieves great strength and high durability, which enables the realization of very ti ate are presented and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the practical use. Stainless steel and aluminium structures g of aluminium structures of structures of stainless steel structures and examples of read g of aluminium structures. The method of masons steel: Evolution of stainless steel materials/structures and examples of read g of aluminium structures. Instructures s. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structur Load-bearing timber roof constructions s. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structur dividual elements and their design. Historic structures and their reconstruction. Designing typical structural details based on ods of joining	A nonlinear statics nuous and discret Z,ZK he analysis of thin Z oduction to nonlin ns for the design of analysis, loads, d Z hin structures. The oted to the compo students can expe Z es of aluminium all lized structures. S espect to low-carb d installation of st Z ures. Analysis of th carpentry joints.	e nergy and e models of 4 -walled concrete 2 ear modeling of of concrete 2 lesign principles, 2 e components of nents of high erience the 2 loys: Introduction tainless steels ion steels is ainless steel 2 he static function We will discuss 2 powledge in the

134YSOD	Connections of steel and timber structures	Z	2
The subject allows in	sight and ability to apply the knowledge related to structural connections and its application by software.		
134YSOK	Special steel structures	Z	2
Crane supporting stru	ctures - actions, design, detailing. Silos - actions, behaviour, silos with rigid and non-rigid section. Masts - division, detiling, de	sign. Cable roofs	- procedure of
Crane supporting structure calculation.	ctures - actions, design, detailing. Silos - actions, behaviour, silos with rigid and non-rigid section. Masts - division, detiling, de	sign. Cable roofs	- procedure of
	ctures - actions, design, detailing. Silos - actions, behaviour, silos with rigid and non-rigid section. Masts - division, detiling, de	sign. Cable roofs	- procedure of

Name of the block: Povinn volitelné p edm ty, doporu ení S1 Minimal number of credits of the block: 40 The role of the block: S1

Code of the group: NC20230102_1

Name of the group: Statika pozemních staveb, projekt, 1. semestr

Requirement credits in the group: In this group you have to gain at least 5 credits

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

Credits in the group: 5

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
132P03C	Structural Design 3C Pavel Tesárek, Jan Zeman, Petr Kabele, Ji í N me ek, Aleš Jíra, Michal Šejnoha, Jan Sýkora, Michael Somr Aleš Jíra	КZ	5	4C	z	S1
133P03C	Structural Design 3C Iva Broukalová Jitka Vašková (Gar.)	KZ	5	4C	Z	S1
134P03C	Structural Design 3C Michal Jandera Michal Jandera (Gar.)	KZ	5	4C	Z	S1
135P03C	Structural Design 3C Jan Salák, Jan Pruška, Jan Kos Jan Pruška	KZ	5	4C	Z	S1

Characteristics of the courses of this group of Study Plan: Code=NC20230102_1 Name=Statika pozemních staveb, projekt, 1. semestr

132P03C	Structural Design 3C	KZ	5
Students develop indivi	Jual projects under supervision of teachers from the Department of Mechanics. Project topics are presented at the departme	nt website. Studer	nts may propose
own topics - in this case	e, suitability of the topic and feasibility of the project will be evaluated by the project supervisor.		
133P03C	Structural Design 3C	KZ	5
The subject is focused	on concrete and masonry structures. The assignment can be: elaboration of the structural design documentation, the analysi	s of the given pro	olem requiring
subject matter search a	nd literature retrieval, the numerical analysis of the selected element or part of the structure, the preparation, execution and	evaluation of expe	riments, etc.
Collaboration of several	students on one assignments is also possible. Consultation with participating departments K124 and K135 is not mandatory	for all students. T	he extent of
outputs depends on the	type of assignment and the decision of the leading teacher.		
134P03C	Structural Design 3C	KZ	5
Design of steel / timber	boad bearing building structure according to external requirements in relation to interaction of load bearing and final completion	on structural elem	ents. The project
is assigned by the semi	nar leader.		
135P03C	Structural Design 3C	KZ	5
Design, static calculation	n and drawing documentation of the building substructure	- -	

Code of the group: NC20230202_1

Name of the group: Statika pozemních staveb, projekt, 2. semestr Requirement credits in the group: In this group you have to gain at least 5 credits Requirement courses in the group: In this group you have to complete at least 1 course Credits in the group: 5

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
132P04C	Structural Design 4C Bo ek Patzák, Martin Horák, Pavel Padev t, Pavel Tesárek, Jan Zeman, Petr Fajman, Ji í N me ek, Aleš Jíra, Michal Šejnoha, Aleš Jíra	КZ	5	4C	L	S1
133P04C	Structural Design 4C Jitka Vašková	KZ	5	4C	L	S1
134P04C	Structural Design 4C Michal Jandera Michal Jandera (Gar.)	KZ	5	4C	L	S1
135P04C	Structural Design 4C Jan Pruška Jan Salák (Gar.)	KZ	5	4C	L	S1

Characteristics of the courses of this group of Study Plan: Code=NC20230202_1 Name=Statika pozemních staveb, projekt, 2. semestr

132P04C Structural Design 4C	KZ	5			
Students develop individual projects under supervision of teachers from the Department of Mechanics. Project topics are presented at the departme	nt website. Studer	nts may propose			
own topics - in this case, suitability of the topic and feasibility of the project will be evaluated by the project supervisor.					
133P04C Structural Design 4C	KZ	5			
The subject is focused on concrete and masonry structures. The assignment can be: elaboration of the structural design documentation, the analysi	s of the given pro	olem requiring			
subject matter search and literature retrieval, the numerical analysis of the selected element or part of the structure, the preparation, execution and	evaluation of expe	riments, etc.			
Collaboration of several students on one assignments is also possible. Consultation with participating departments K124 and K135 is not mandatory	for all students. T	The extent of			
outputs depends on the type of assignment and the decision of the leading teacher.					
134P04C Structural Design 4C	KZ	5			
Design of steel / timber load bearing building structure according to external requirements in relation to interaction of load bearing and final completion	on structural elem	ents. The project			
is assigned by the seminar leader.					
135P04C Structural Design 4C	KZ	5			
Design, static calculation and drawing documentation of the building substructure					

Code of the group: NC20230300

Name of the group: Stavební inženýrství - pozemní stavby, diplomová práce 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 1 course 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
124DPM	Diploma Thesis Tomáš ejka, Tomáš Vlach, Ji í Pazderka, Kate ina Mertenová, Martin Jiránek, Marek Pokorný Ji í Pazderka Ji í Pazderka (Gar.)	Z	30	24C	Z	S1
132DPM	Diploma Thesis Bo ek Patzák, Martin Horák, Ji í Máca, Karel Pohl, Michal Polák, Pavel Padev t, Pavel Tesárek, Tomáš Plachý, Milan Jirásek, Aleš Jíra	Z	30	24C	Z	S1
133DPM	Diploma Thesis Martin Tipka	Z	30	24C	Z	S1
134DPM	Diploma Thesis Jakub Dolejš Jakub Dolejš (Gar.)	Z	30	24C	Z	S1
135DPM	Diploma Thesis Jan Masopust, Jan Pruška Jan Pruška (Gar.)	Z	30	24C	Z	S1

Characteristics of the courses of this group of Study Plan: Code=NC20230300 Name=Stavební inženýrství - pozemní stavby, diplomová práce

prace					
124DPM	Diploma Thesis	Z	30		
The topics of diploma the	neses are based on the needs of practice or the scientific research activity of the department, the scope and difficulty corresp	onds to the stude	nt's knowledge		
acquired during the ma	ster's studies. The supervisor of the thesis can designate additional consultants to the student.				
132DPM	Diploma Thesis	Z	30		
In accordance with the	thesis proposal.	·			
133DPM	Diploma Thesis	Z	30		
In accordance with a th	esis proposal.				
134DPM	Diploma Thesis	Z	30		
Design of steel / timber	load bearing building structure according to external requirements in relation to interaction of load bearing and final completion	on structural elem	nents. A study		
focused on research of	load bearing structures may be also the topic of the the project. The project is assigned by a final project superisor individual	ly.			
135DPM	Diploma Thesis	Z	30		
In the diploma thesis, the student deals with a topic chosen by the department from those regularly announced by the department. It addresses, for example, problems related to the					
design and construction	design and construction of geotechnical structures, civil engineering structures, special foundations for industrial, transport, housing and water management structures, earth and rock				
structures in complex c	ases and waste disposal structures. The thesis builds on and develops the findings of the thesis project.				

List of courses of this pass:

Code	Name of the course	Completion	Credits		
101MAPS	Mathematics PS	Z,ZK	3		
	Focused on basic and more advanced statistical and probabilistic methods of data analysis as well as on hypothesis testing and re	gression.			
101YFAV	Introduction to Functional Analysis and Variational Methods	KZ	2		
101YMCD	Methods of Time Discretization	Z	2		
The course is devo	The course is devoted to a universal and very effective method for solving problems involving time, the so-called evolutionary problems, especially for partial differential equations with				
a time variable. This	time variable. This method represents a modern approach to modeling and solving engineering tasks. These problems, both linear and non-linear, model events in many engineering				
	fields, such as heat conduction, oscillations, also in rheology and other parts.				

101YMST	Mathematical statistics for technicians	Z	2
	Inferential statistics. Theory of probability. Random variables and its characteristics. Basic methods of mathematical statistic	S.	1
101YNUM	Numerical Methods	Z	2
	Numerical computing in applied mathematics: course for beginners.	1	1
102YFPL	Solid State Physics in Civil Engineering	Z	2
Solids, crystal stru	. cture, atomic shell theory, valence layer chemical bonds, dislocation disturbances, critical crack energy, vibration of masses, systems	natural frequency	of vibration
and damped vibrat	ion, basics concepts of fracture mechanics, types of fracture, electron microscopes, scanning tunneling microscope, atomic force mic	roscope, diffraction	n, diffraction
	methods, semiconductors, p-n junction, photovoltaic effect, solar cells, heat and moisture transport.	_	
122YTSD	Technology of Component Production	Z	2
123YMPU	Materials for Coatings	Z	2
-	n an overview of how to protect building structures from corrosion and other harmful influences such as UV radiation, acid rain, etc. S		
	ologies of surface treatment. The course consists of 6 lectures and 6 exercises. In the lectures, students will learn about both historical s for different types of structures. In the exercises, students will perform a surface treatment on a fragment of a structure and will be a		-
Sunace treatments	work done by themselves in the last exercise by means of a tear-off test.		uality of the
124DPM	Diploma Thesis	Z	30
	ma theses are based on the needs of practice or the scientific research activity of the department, the scope and difficulty correspon	1	1
	acquired during the master's studies. The supervisor of the thesis can designate additional consultants to the student.		-
124PS4C	Building Structures 4	Z,ZK	4
124YADO	Acoustics and Daylighting of Buildings	Z	2
The course focuses	s on a more detailed explanation and practice of selected topics in the field of daylighting and building acoustics that students may enco	, ounter in future des	ign practice.
124YCPV	The Principles of Circular Economy in Building Construction	Z	2
124YDPH	Diagnosis and Surveying of Building Structures	Z	2
Course sets out	key consideratons and implications which require structure assessment. The course provides an objective framework and methodical	and systematic ap	proach to
surveying (structur	al diagnosis, preliminary and comprehensive survey, visual inspection, site inspections, laboratory tests, investigation kits, types of def	ects and damages	, symptoms,
	manifestation, significance, criticality, reason for failures case studies)	1	1
124YDSR	Demolitions of Buildings and Material Recycling	Z	2
	iction waste from demolitions from the production of building materials and from other sectors in the construction industry with the air		-
	ed materials, reducing the consumption of primary raw materials, a new perspective on the design of buildings and structures in accounts of recycling in developed countries, recycling in CR, possibilities of recycling buildings and structures, design of structures from the		-
	development, minimization of landfills, examples and demonstrations of recycling technologies, low-waste technologies		JSIGINADIE
124YHVK	Long Span Structures	Z	2
	ith the analysis of structural solutions applied in building designs by the world's best architects. Although attention will be focused mainly	-	
-	also pay attention to the wider context of the design. Reading existing constructions is a natural way to learn the principles of their des		-
	xtensive database of completed buildings, including more than 5,000 buildings, will enable us to take a trip into history and the preser		
124YKHK	Building Quality Complex Assessment	Z	2
Students will gain a	an overview of design strategies in green architecture and sustainable building and learn how to conduct assessments to achieve hig	h quality buildings.	In addition,
	they will learn basic information on life cycle assessment of materials and buildings.		
124YMOB	Modelling of Buildings - BIM	Z	2
	signed to introduce the phenomenon of parametric design, which is becoming very widespread in today's world. It is the connection o		
	mming. Instead of writing code in a classical programming language, Nodes are connected, and the resulting script can be created vi		-
	ng language. These scripts can be used primarily for: - creating parametric geometry, - working with data in a BIM model, - structural nematically, the course covers two main areas of parametric modeling, replicating two software platforms: Revit + Dynamo (JaVe) Rhi		-
124YPBS	Principles of Building Fire Safety	ZK	2
_	sed on the presentation and acquisition of the most important concepts and principles of fire safety in buildings. Attention is paid to a		1
	are important for the protection of life and health, property, the environment and other assets. The course is intended for students of r		
	enable them to take into account aspects of fire safety from the initial stages of project preparation of buildings.		
124YPFS	Precast concrete structures	Z	2
	ses made of precast conrete panels, of which approx. 82 thousand were built in the period 1960-1995 do not meet the required exten	t of the current dy	1
developing society	and in many cases require the implementation of regeneration and modernization interventions enabling their full use. The course is	focused on the cu	rrent issues
	ruction and modernization of precast houses, modernization of apartments in precast houses, on the issue of freeing parterres of preca		-
	ters, etc. Renovation, modernization, or regenerations require the removal of functionally inadequate completion structures, technica		
	n demanding interventions in supporting structures. As part of the construction of communication networks, modernization of urban de arry out partial or complete demolition of a precast panel building. As part of the regeneration of precast panel housing estates, an e		
	ast houses. The implementation of the mentioned plans requires a survey and diagnostics of supporting and peripheral structures, jo		
	of the structural-technical condition and an assessment of the residual life of precast panel structures and buildings.		
124YPRS	Failures, Deterioration, Renovations	Z	2
	sed on the current issue of restoration, reconstruction and modernization of buildings (residential, industrial, etc.), on historical structu	res and materials,	1
degradation and ag	ing of structures and materials of historical buildings, their residual life and failures of historical buildings and their parts. An integral part is	the issue of structu	ral-technical
	and historical surveys, diagnostics and assessment of the structural-technical condition and remaining service life.		
124YPS5	Prefabricated structures	Z	2
124YRHS	Reconstruction of Historical Building Structures	Z	2
	he second half of the 19th century by 1960, more than 250 thousand of two- to five-story brick apartment (mainly rental) houses in tra-		
	Czech Republic. Brick buildings from this period were built according to regulations, building codes and laws from the turn of the 19th a		-
	puses do not meet the current thermal, acoustic and other requirements, the requirements of a dynamically developing society to the	-	-
	neration and modernization interventions, including the replacement of non-compliant and out-of-date structures and equipment enabli Irrent issue of renewal, reconstruction and modernization of brick multi-storey rental apartment buildings, on historical structures and ma	-	
	ures and materials of historic brick residential buildings, their residual life, failures and reconstruction of historical buildings and their j		-
	ssue of improving the well-being of the internal environment, the replacement of finishing structures, opening fillings, etc. as an integr		
	these buildings.		

1250ZE1	Renewable Energy Sources	ZK	3
Renewable source	s are becoming increasingly important sources of energy for buildings. Understanding their characteristics is key to the proper design a	nd operation of the	se systems.
	The course therefore looks in detail at renewable sources and their applications.		1
125YTCH	Technological Equipment of Buildings	Z	2
	kitchen technology, elevators, technology swimming pools, heat pumps, heat source and technological system, technology cooling, fire		
126YBVE	BIM in Public Investments	Z	2
126YPDV	Development Project	Z	2
132DPM	Diploma Thesis	Z	30
	In accordance with the thesis proposal.		
132DY01	Dynamics of structures 1	Z,ZK	5
Principles	of theory of vibration, dynamic loading. Free and forced vibration of single-degree-of-freedom systems. Damped vibration. Methods of	f dynamic analysis	s of
	muti-degreee-of-freeedom systems.		-
132EADC	Experimental Analysis and Diagnostics C	KZ	3
	ised on monitoring of the amount of climatic loads on building and engineering structures (wind, snow, temperature loads), diagnostic	-	
	carried out on physical models of building and engineering structures (model similarity laws, seismic simulations on shake tables, win d tests on physical models), monitoring of building and engineering structures, static load tests (building structures, engineering struct		
	nental modal analysis (building structures, engineering structures, bridges, footbridges), effects of technical seismicity, evaluation of a	• • • •	
	the human body, assessment of the influence of building vibrations on installed machines and devices).		
132NAK	Numerical Analysis of Structures	Z,ZK	5
-	iples of mechanics. Method of weighted residuals, conditions of convergence (continuity, integrity). Principles of FEM. Isoparametric e	,	
	nerical integration. Application of method to selected 1D and 2D problems (Elasticity, heat transfer, consolidation). Algorithmic aspects		, an latee,
132P03C	Structural Design 3C	KZ	5
	ndividual projects under supervision of teachers from the Department of Mechanics. Project topics are presented at the department w		
	own topics - in this case, suitability of the topic and feasibility of the project will be evaluated by the project supervisor.		
132P04C	Structural Design 4C	KZ	5
	ndividual projects under supervision of teachers from the Department of Mechanics. Project topics are presented at the department w		
	own topics - in this case, suitability of the topic and feasibility of the project will be evaluated by the project supervisor.		
132PRPM	Deformation and Failure of Materials	Z,ZK	5
	iscoelasticity, models for concrete creep. Theory of plasticity, principles of limit and incremental analysis. Fracture mechanics. Damage		I
132YKPA	Statics for Architecture	Z	2
132YMMO	Modern Methods of Optimization	Z	2
	d at an overview of numerical optimization methods applicable not only in the Civil Engineering area. The emphasis is put more on the in		g principles,
	however, practical applications in MATLAB environment are also conducted during exercises.		
132YNA2	Numerical Analysis of Structures 2	Z,ZK	4
Advanced course of	on finite element method. Formulation of plate elements suitable for thin and thick plates, plates on elastic foundation. Introduction to no		geometrical
	and material nonlinearity, solution methods, implementation aspects.		
132YNAK	Nonlinear Analysis of Materials and Structures	Z	2
	ne acquainted with the concepts of linear stability and calculation of elastoplastic load capacity. Linear stability - evaluation of the critic		
-	res according to the 2nd order theory - equilibrium conditions on a deformed structure, initial stress matrix. Elastoplastic analysis of stru		
load capacity, distr	ibution of internal forces at the limit state - static incremental method, kinematic method. Solving stability and elastoplasticity problems b	y means of a gene	eral-purpose
400)/DM0	finite element program.		•
132YPM2	Computer Analysis of Structures 2	Z	2
Limit state of frame	es. Stability analysis of structures. Second order theory. Beams and gridwork girders on elastic foundation. Plate and wall structures. D Verification of results.	ynamic analysis o	f structures.
122/051		7	2
132YSEI	Seismic Engineeering	Z Z	2
	principles of design of earthquake resistant structures. Methods of calculating the response of structures to earthquake loads accordi		2
132YSHK	Statics and Reconstruction of Historical Structures historical vaults and roof trusses. Static behaviour and most frequent causes of failure. Methods of reconstruction, changes in founda	Z	2
Short overview of	frequent causes of failure of panel buildings. Visit to the historical part of Prague Castle.		
132YSSK	Reliability of Structures	Z	2
	roted to the reliability of elements and systems. Element reliability is time dependent while the reliability of systems is of type strength-		
	solved by the FORM method. Two simulation methods are introduced: Monte Carlo and LHS.	loud. Complicated	
132YUPM	General Principles of Mechanics	Z,ZK	4
	tial operators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and r		1
	of virtual work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to continu		
	beams, frames, plates, walls and three-dimensional bodies.		
133B03C	Concrete Structures 3C	Z,ZK	5
	ledge in the design of prestressed concrete structures. Introduction to special hybrid and thin-walled structures. Modern materials and		1
133B04C	Concrete Structures 4C	Z,ZK	5
	vledge in the field of design of reinforced concrete structures, when the emphasis is put on development of engineering sense. Within	·	1
student acquires a	bility to estimate arrangement of reinforcement in RC slabs of general shape, ability to define basic strut-and-tie models for given stru-	ctural details, abilit	ty to provide
optimum reinforcer	ment at general point of RC slabs and RC walls based on normal forces distributions obtained with common engineering software. Als	o, the student lear	ns the basic
	principles plastic design of RC structures and design of RC foundations.		
133DPM	Diploma Thesis	Z	30
	In accordance with a thesis proposal.		1
133P03C	Structural Design 3C	KZ	5
-	sused on concrete and masonry structures. The assignment can be: elaboration of the structural design documentation, the analysis o		
-	earch and literature retrieval, the numerical analysis of the selected element or part of the structure, the preparation, execution and ev	-	
Collaboration of	several students on one assignments is also possible. Consultation with participating departments K124 and K135 is not mandatory fi	or all students. The	extent of
	outputs depends on the type of assignment and the decision of the leading teacher.		

-	Structural Design 4C	KZ	5
	ised on concrete and masonry structures. The assignment can be: elaboration of the structural design documentation, the analysis o	1 1	-
aubject matter se	arch and literature retrieval, the numerical analysis of the selected element or part of the structure, the preparation, execution and eva		
Collaboration of s	everal students on one assignments is also possible. Consultation with participating departments K124 and K135 is not mandatory fo	or all students. The	extent of
	outputs depends on the type of assignment and the decision of the leading teacher.		
133YATK	Applied Theory of Structures	Z,ZK	4
	n to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a		-
	structures, stability theory.	,	
133YBEX	Concrete under Extreme Conditions	Z	2
TOOTDEX	The course is focused on concrete and concrete structures under extreme conditions.		2
133YMVB	Concrete and Masonry Structures 1	Z	2
	subject will be selected problems from the following areas: Reinforcement of discontinuities of reinforced concrete structures. Introdu	. – .	
	subject will be selected proteins from the following areas. Neurorement of discontinuities of remoticed contracte structures. Introduction of selected programs		•
	ste suddures. Treparation of input data for numerical models. Design of structures using MATEAD. Tresentation of selected program. structures.	is for the design of	CONCIECE
		7	
133YPNB	Fire desgn og concrete and mnsory structures	. – .	2
I ne course is focus	ed on fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal ana		n principies,
	design methods, material properties of concrete and steel reinforcement at high temperatures, fire design of masonry structur		
133YPRK	Failures and Rehabilitation of Concrete Structures	Z	2
	s on the description of failures of concrete structures, explanation of the causes of these failures and the design of remedial measure		0 0
existing concrete	structures are also discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of bene	ding moment and	shear, and
	foundation structures are discussed. The course appropriately combines theoretical approaches with common practice.		
133YVHB	Ultrahigh Performance Concretes	Z	2
The aim of the coul	se is to present a special type of concrete that achieves great strength and high durability, which enables the realization of very thin s	structures. The cor	nponents of
high performance	concrete are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devote	ed to the componer	nts of high
performance cor	crete, the composition and the method of manufacturing, which are subsequently accompanied by laboratory exercises, where the s	students can experi	ence the
	theoretical knowledge in practical use.		
134DK02	Timber Structures 2	Z,ZK	4
	on a design of timber elements and structures - static action, choice of computational models and methods, design of details and jo	· · ·)
134DPM	Diploma Thesis	Z	30
-	mber load bearing building structure according to external requirements in relation to interaction of load bearing and final completion	. – .	
-	used on research of load bearing structures may be also the topic of the the project. The project is assigned by a final project superis		io. / i oludy
134O02C	Steel Structures 2C	Z,ZK	4
		1 ' 1	-
	edge received from courses 133NNK and 134OK01. Amplifying of theoretical knowledge in the field of steel grade selection, toughness		
	al systems, joint classification, and high strength steel and demanding composite steel and concrete structures. Complementation of k site structures and detailed design of industrial buildings and crane girders. Design of masts, towers, chimneys, tanks, silos and pipel		
	pre-stressed steel structures and basis of design from aluminium alloys and stainless steel, and cable and membrane structur		i siruciures,
4040000			
134P03C	Structural Design 3C	KZ	5
Design of steel / tim	ber load bearing building structure according to external requirements in relation to interaction of load bearing and final completion st	tructural elements.	The project
	is assigned by the seminar leader.	. <u></u>	
134P04C	Structural Design 4C	KZ	5
Design of steel / tim	ber load bearing building structure according to external requirements in relation to interaction of load bearing and final completion st	tructural alamanta	
	is assigned by the seminar leader.	siluciulai elements.	
134YDKM	Timber structures and bridges	Z	
	Timber structures and bridges	Z	The project
	-	Z pairing and strength	The project
	ocused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep	Z pairing and strength	The project
Timber structures for 134YHNK	bcused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep design. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature	Z pairing and strength and in fire. Z	The project 2 ntening. Fire 2
Timber structures for 134YHNK Subject YHNK cove	bcused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep design. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures	Z bairing and strength and in fire. Z f aluminium alloys:	The project 2 ntening. Fire 2 Introduction
Timber structures for 134YHNK Subject YHNK cover and practice in dea	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep design. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of	Z bairing and strength and in fire. Z f aluminium alloys: ed structures. Stain	The project 2 ntening. Fire 2 Introduction less steels
Timber structures for 134YHNK Subject YHNK cove and practice in des suitable for struct	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep design. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of signing of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize	Z bairing and strength and in fire. Z of aluminium alloys: ed structures. Stain spect to low-carbor	The project 2 ntening. Fire 2 Introduction less steels n steels is
Timber structures for 134YHNK Subject YHNK cove and practice in des suitable for struct	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep design. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of signing of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with res	Z bairing and strength and in fire. Z of aluminium alloys: ed structures. Stain spect to low-carbor	The project 2 ntening. Fire 2 Introduction less steels n steels is
Timber structures for 134YHNK Subject YHNK cove and practice in de suitable for struct described for both	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep design. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of signing of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with res o ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described.	Z bairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stair	The project 2 atening. Fire 2 Introduction less steels o steels is less steel
Timber structures for 134YHNK Subject YHNK cove and practice in de- suitable for struct described for both 134YNDK	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep design. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of signing of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with res in ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions	Z bairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stair	The project 2 atening. Fire 2 Introduction less steels is a steels is iless steel 2
Timber structures for 134YHNK Subject YHNK cove and practice in de: suitable for struct described for both 134YNDK System of roofs struct	Decused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep design. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of signing of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with res in ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions rctures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures	Z bairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta	The project 2 Intening. Fire 2 Introduction less steels is iless steel 2 atic function
Timber structures for 134YHNK Subject YHNK cove and practice in de: suitable for struct described for both 134YNDK System of roofs struct	Decused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep design. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of signing of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with res in ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions for unterical models for assessment of internal forces and deformations for main different roof systems and structures nain individual elements and their design. Historic structures and their reconstruction. Designing typical structural details based on ca	Z bairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta	The project 2 Intening. Fire 2 Introduction less steels is iless steel 2 atic function
Timber structures for 134YHNK Subject YHNK cove and practice in des suitable for struct described for both 134YNDK System of roofs struct and behaviour of m	Decused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Rep design. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of signing of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with res in ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions for unterical models for assessment of internal forces and deformations for main different roof systems and structures also using modern methods of joining elements of timber structures.	Z bairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We	The project 2 atening. Fire 2 Introduction less steels is a steels is alless steel 2 atic function will discuss
Timber structures for 134YHNK Subject YHNK cove and practice in des suitable for struct described for bott 134YNDK System of roofs stru- and behaviour of m 134YNSK	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Represented as a construction, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a stainless steel and aluminium structures structures of stainless steel and aluminium alloys, the second deals with stainless steel structures. Structures of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest on ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions for main different roof systems and structures and in individual elements and their design. Historic structures and their reconstruction. Designing typical structural details based on ca also using modern methods of joining elements of timber structures. Design of Glass Structures	Z and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z. S. Analysis of the st arpentry joints. We	The project 2 Attening. Fire 2 Introduction less steels a steels is a steels is a steels is a steels of 2 attic function will discuss 2
Timber structures for 134YHNK Subject YHNK cove and practice in des suitable for struct described for bott 134YNDK System of roofs struct and behaviour of m 134YNSK The subject is inter	Decused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Represented as a construction, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a stainless steel and aluminium structures structures of stainless steel and aluminium alloys, the second deals with stainless steel structures. Structures of stigning of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest on ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions tures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures and using modern methods of joining elements of timber structures. Design of Glass Structures Design of Glass Structures nded for students of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134YNKS. Extension of	Z aaring and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle	The project 2 Attening. Fire 2 Introduction less steels a steels is a steels is a steels is a steels of a steels
Timber structures for 134YHNK Subject YHNK cove and practice in des suitable for struct described for bott 134YNDK System of roofs struct and behaviour of m 134YNSK The subject is inter	Decused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Represented as a construction, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a stainless steel and aluminium structures The steel and aluminium structures The first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of stigning of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest on ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions tures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures also using modern methods of joining elements of timber structures. Design of Glass Structures Inded for students of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134YNKS. Extension of lass beams, columns and walls. Principles of designing structural elements made of glass according to normative documents, experi-	Z aaring and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle	The project 2 Attening. Fire 2 Introduction less steels a steels is a steels is a steels is a steels of a steels
Timber structures for 134YHNK Subject YHNK cove and practice in des suitable for struct described for bott 134YNDK System of roofs struct and behaviour of m 134YNSK The subject is inter field of stability of g	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Representation of production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a stainless steel and aluminium structures The first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of stigning of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest on ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and imembers are described. Load-bearing timber roof constructions tures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures also using modern methods of joining elements of timber structures. Design of Glass Structures nded for students of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134YNKS. Extension of lass beams, columns and walls. Principles of designing structural elements made of glass according to normative documents, experiences of glass, safety glass, use of software support for designing.	Z aaring and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification	The project 2 Attening. Fire 2 Introduction less steels a steels is a steels is a steels is a steels is a steels on a steels
Timber structures for 134YHNK Subject YHNK cover and practice in des- suitable for struct described for both 134YNDK System of roofs stru- and behaviour of m 134YNSK The subject is inter field of stability of generative 134YPMK	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Representation of production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest outimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions recurses. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures and so using modern methods of joining elements of timber structures. Design of Glass Structures nded for students of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134YNKS. Extension of lass beams, columns and walls. Principles of designing structural elements made of glass according to normative documents, experiences of glass, safety glass, use of software support for designing. Design of Membrane Structures	Z aairing and strength and in fire. Z if aluminium alloys: ed structures. Stain spect to low-carbor installation of stain S. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification Z	The project 2 Attening. Fire 2 Introduction less steels a steels is alless steel 2 atic function will discuss 2 adge in the of material 2
Timber structures for 134YHNK Subject YHNK cove and practice in des suitable for struct described for bott 134YNDK System of roofs struct and behaviour of m 134YNSK The subject is inter field of stability of g	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Reputed becaused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Reputed because of brown of bridges, roofs structures in normal temperature of stainless steel and aluminium structures The first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of signing of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest or ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and imembers are described. Load-bearing timber roof constructions tures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures also using modern methods of joining elements of timber structures. Design of Glass Structures Med for students of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134YNKS. Extension of lass beams, columns and walls. Principles of designing structural elements made of glass according to normative documents, experimenter of glass, safety glass, use of software support for designing. Design of Membrane Structures Fire Resistance of Steel and Timber Structures Fire Resistance of Steel and Timber Structures	Z aairing and strength and in fire. Z if aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification Z Z	The project 2 Attening. Fire 2 Introduction less steels a steels is a steels is a steels is a steels is a steels on a steels
Timber structures for 134YHNK Subject YHNK cove and practice in de- suitable for struc- described for both 134YNDK System of roofs stru- and behaviour of m 134YNSK The subject is inter field of stability of g 134YPMK 134YPOD	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Representation of production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures . Structures of stigning of aluminium structures. Structures from aluminium alloys, the second deals with stainless steel structures. Structures of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest on ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and imembers are described. Load-bearing timber roof constructions ctures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures also using modern methods of joining elements of timber structures. Design of Glass Structures nded for students of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134YNKS. Extension of lass beams, columns and walls. Principles of designing structural elements made of glass according to normative documents, experimented of glass, safety glass, use of software support for designing. Design of Membrane Structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures are spice of steel and Timber Structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures are spice of steel and Timber Structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures 	Z pairing and strength and in fire. Z if aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification Z elements.	The project 2 atening. Fire 2 Introduction less steels a steels is alless steel 2 atic function will discuss 2 adge in the of material 2 2 2 2 2 2 2 2 2 2 2 2 2
Timber structures for 134YHNK Subject YHNK cove and practice in des suitable for struct described for both 134YNDK System of roofs struct and behaviour of m 134YNSK The subject is inter field of stability of g 134YPMK 134YPOD 134YROK	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Replation of production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures The first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and imembers are described. Load-bearing timber roof constructions tures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures and using modern methods of joining elements of timber structures. Design of Glass Structures Design of Glass Structures Design of Membrane Structures Fire Resistance of Steel and Timber Structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures Extending the Life of Steel and Timber Structures	Z aairing and strength and in fire. Z if aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification Z elements. Z	The project 2 atening. Fire 2 Introduction less steels a steels is aless steel 2 atic function will discuss 2 adge in the of material 2 2 2 2 2 2 2 2 2 2 2 2 2
Timber structures for 134YHNK Subject YHNK cove and practice in des- suitable for structure described for both 134YNDK System of roofs structure and behaviour of m 134YNSK The subject is inter field of stability of g 134YPMK 134YPOD 134YROK Materials used for b	Decused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Replation of production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a stainless steel and aluminium structures structures of stainless steel and aluminium alloys, the second deals with stainless steel structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest on ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and imembers are described. Load-bearing timber roof constructions tures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures also using modern methods of joining elements of timber structures. Design of Glass Structures nded for students of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134YNKS. Extension of lass beams, columns and walls. Principles of designing structural elements made of glass according to normative documents, experime properties of glass, safety glass, use of software support for designing. Design of Membrane Structures Fire Resistance of Steel and Timber Structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures earing structures. Developments in the area of regulations and standardization. Causes of defects, malfunctions, survey of objects, static	Z aairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification Z elements. Z assumptions of rec	The project 2 atening. Fire 2 Introduction less steels a steels is alless steel 2 atic function will discuss 2 adge in the of material 2 2 construction.
Timber structures for 134YHNK Subject YHNK cove and practice in des- suitable for struct described for both 134YNDK System of roofs struct and behaviour of m 134YNSK The subject is inter field of stability of g 134YPMK 134YPOD 134YROK Materials used for b	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Replation of production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures The first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of signing of aluminium structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest outimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and imembers are described. Load-bearing timber roof constructions totures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures and using modern methods of joining elements of timber structures. Design of Glass Structures Design of Glass Structures Design of Membrane Structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures earing structures. Developments in the area of regulations and standardization. Causes of defects, malfunctions, survey of objects, static engthening, strengthening of steel and timber structures and structures and structures are interviewed and timber structures and structures are of regulations and standardization. Causes of defects, malfunctions, survey of objects, static engthening, strengthening of steel and timber structures and structures and structures area of regulations and standardization. Causes of defects, malfunctions, survey of objects, static en	Z aairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification Z elements. Z assumptions of rec	The project 2 atening. Fire 2 Introduction less steels a steels is alless steel 2 atic function will discuss 2 adge in the of material 2 2 construction.
Timber structures for 134YHNK Subject YHNK cove and practice in des- suitable for structure described for both 134YNDK System of roofs structure and behaviour of m 134YNSK The subject is inter field of stability of g 134YPMK 134YPOD 134YROK Materials used for b Possibilities of structure Possibilities of structure Possibilities of structure Network Structure 134YROK	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Reputedesign. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature at Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of stigning of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with res n ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions tcures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures alao using modern methods of joining elements of timber structures. Design of Glass Structures Design of Glass Structures Design of Membrane Structures Fire Resistance of Steel and Timber Structures The class gives introduction to fire modeling, fire safety glass, use of software support for designing. Extending the Life of Steel and Timber Structures Extending the Life of Steel and Timber Structures aring structures. Developments in the area of regulations and standization. Causes of defects, malfunctions, survey of objects, static engthening, strengthening of steel and timber structures and structures.	Z aairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification Z elements. Z elements.	The project 2 Attening. Fire 2 Introduction less steels a steels is aless steel 2 atic function will discuss 2 adge in the of material 2 2 construction. numerical
Timber structures for 134YHNK Subject YHNK cove and practice in des- suitable for struct described for both 134YNDK System of roofs struct and behaviour of m 134YNSK The subject is inter field of stability of g 134YPMK 134YPOD 134YROK Materials used for b	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Replation of production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature a Stainless steel and aluminium structures The first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of signing of aluminium structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest outimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and imembers are described. Load-bearing timber roof constructions totures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures and using modern methods of joining elements of timber structures. Design of Glass Structures Design of Glass Structures Design of Membrane Structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures earing structures. Developments in the area of regulations and standardization. Causes of defects, malfunctions, survey of objects, static engthening, strengthening of steel and timber structures and structures and structures are interviewed and timber structures and structures are of regulations and standardization. Causes of defects, malfunctions, survey of objects, static engthening, strengthening of steel and timber structures and structures and structures area of regulations and standardization. Causes of defects, malfunctions, survey of objects, static en	Z aairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification Z elements. Z assumptions of rec	The project 2 atening. Fire 2 Introduction less steels a steels is alless steel 2 atic function will discuss 2 adge in the of material 2 2 construction.
Timber structures for 134YHNK Subject YHNK cove and practice in der suitable for struct described for both 134YNDK System of roofs struct and behaviour of m 134YNSK The subject is inter field of stability of g 134YPOD 134YPOD 134YROK Materials used for b Possibilities of struct 134YSMK	becused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Reputedesign. Production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature at Stainless steel and aluminium structures rs two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures of stigning of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with res n ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions tcures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures alao using modern methods of joining elements of timber structures. Design of Glass Structures Design of Glass Structures Design of Membrane Structures Fire Resistance of Steel and Timber Structures The class gives introduction to fire modeling, fire safety glass, use of software support for designing. Extending the Life of Steel and Timber Structures Extending the Life of Steel and Timber Structures aring structures. Developments in the area of regulations and standization. Causes of defects, malfunctions, survey of objects, static engthening, strengthening of steel and timber structures and structures.	Z aairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification Z elements. Z assumptions of rec and development of Z	The project 2 Attening. Fire 2 Introduction less steels a steels is a steels
Timber structures for 134YHNK Subject YHNK cove and practice in dea suitable for struct described for both 134YNDK System of roofs struct and behaviour of m 134YNSK The subject is inter field of stability of g 134YPMK 134YPOD 134YROK Materials used for b Possibilities of struct 134YSMK Subject YSMK cov historic collapses of	acused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Replation of production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature at stainless steel and aluminium structures in structures of structures form aluminium alloys, the second deals with stainless steel structures. Structures of stainless steel is assessments of members under common loadings with respective and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and members are described. Load-bearing timber roof constructions torus of aluments and their design. Historic structures and their reconstruction. Designing typical structures and structures and serviceability limit states. In the end the possibilities concerning connections for main different roof systems and structures are described. Load-bearing timber roof constructions torures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures are also using modern methods of joining elements of timber structures. Design of Glass Structures Design of Glass Structures Design of Membrane Structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures of steal end fire resistance of steel, steel-concrete composite and timber structures are models. Stability and modelling of steel and Timber Structures stability and strengthening of consections. Using of computers in reconstructions an models.	Z aairing and strength and in fire. Z f aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z s. Analysis of the sta arpentry joints. We Z,ZK f theoretical knowle imental verification Z elements. Z elements. Z sasumptions of rec and development of Z structures. In the files of theory of buc	The project 2 Attening. Fire 2 Introduction less steels a steels is iless steel 2 atic function will discuss 2 adge in the of material 2 construction. numerical 2 rst part the kling, linear
Timber structures for 134YHNK Subject YHNK cove and practice in dea suitable for struct described for both 134YNDK System of roofs struct and behaviour of m 134YNSK The subject is inter field of stability of g 134YPMK 134YPOD 134YROK Materials used for b Possibilities of struct 134YSMK Subject YSMK cov historic collapses of and nonlinear the	acused to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. Replation of production, protection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature at a Stainless steel and aluminium structures of structures for structures for aluminium structures. Structures of stainless steel and aluminium structures and examples of realize ures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with rest and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and imembers are described. Load-bearing timber roof constructions for main different roof systems and structures and their design. Historic structures and their reconstruction. Designing typical structural details based on ca also using modern methods of joining elements of timber structures. Design of Glass Structures no normative documents, experimentations, columns and walls. Principles of designing structural elements made of glass according to normative documents, experimentations, safety glass, use of software support for designing. Design of Membrane Structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures efficiency of beets, static, engthening, strengthening of steel and timber structures and structures and structures are of steel, steel-concrete composite and timber structures are structures and structures are structures are support for designing. Design of Membrane Structures The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structures are structures and structures are structures and structures are structures are structures and structures and structures are structures are structures and structures and structures are structures and structures are s	Z pairing and strength and in fire. Z if aluminium alloys: ed structures. Stain spect to low-carbor installation of stain Z is Analysis of the sta arpentry joints. We Z,ZK f theoretical knowled imental verification Z elements. Z assumptions of recond development of structures. In the files of theory of buc nal, shear and loca	The project 2 Attening. Fire 2 Introduction less steels a steels is iless steel 2 atic function will discuss 2 adge in the of material 2 construction. numerical 2 rst part the kling, linear I loadings

and structure stat	ility. Possible global analysis methods are presented together with methods for compression and bending interaction for slender mem	bers. In detail, spe	cific cases
	of lateral torsional buckling are explained including also tapered members.		
134YSOD	Connections of steel and timber structures	Z	2
	The subject allows insight and ability to apply the knowledge related to structural connections and its application by software) .	
134YSOK	Special steel structures	Z	2
Crane supporting	structures - actions, design, detailing. Silos - actions, behaviour, silos with rigid and non-rigid section. Masts - division, detiling, desig	n. Cable roofs - pro	ocedure of
	calculation.		
135DPM	Diploma Thesis	Z	30
In the diploma the	sis, the student deals with a topic chosen by the department from those regularly announced by the department. It addresses, for exa	mple, problems rel	lated to the
design and constru	iction of geotechnical structures, civil engineering structures, special foundations for industrial, transport, housing and water managem		rth and rock
	structures in complex cases and waste disposal structures. The thesis builds on and develops the findings of the thesis proje	ct.	
135P03C	Structural Design 3C	KZ	5
	Design, static calculation and drawing documentation of the building substructure		
135P04C	Structural Design 4C	KZ	5
	Design, static calculation and drawing documentation of the building substructure		
135YGSM	Geotechnical Software for Numerical modelling	Z	2
Students get acqua	ainted with the Finite Element Method, the currently dominant tool for numerical modeling in Geotechnics. Emphasis is placed on intro	ducing the basic r	principles of
the Finite Element	Method and their subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of finite	elements used in g	eotechnical
applications, mater	rial models suitable for the description of soil deformation, and selected specifics associated with numerical modeling in geotechnics. Th	s knowledge is fur	ther applied
	in the modeling of foundation, embedded walls, and stability problems.		
135YVPZ	Computer analysis in underground structures	Z	2
Numerical meth	nods in CAD/CAM in geomechanics. Basic types of constitutive models of soil and rock mass behavior. Summary of PC geotechnical	oftware both in the	e field of
	conventional methods and in numerical modelling domain. Practical solutions of selected geotechnical problems.		
135ZS02	Foundations 2	Z,ZK	4
The course deep	ens the knowledge from the previous course ZS1. It covers design principles, risks associated with the foundation of structures, deep	er design of flat for	undations,
deeper de	esign of deep foundations, negative casing friction of drilled piles, grouting (calculations and execution), construction pits, improvemer	t of foundation soi	ls.
210YDSM	Diagnostics of Building Materials Properties	Z	2
Failures of build	ing materials, mechanical, thermal, chemical and other influences on the development of failures of building materials. Diagnostics of	their occurrence.	3asics of
experimental mea	surement and instrumentation of tested elements and structures. Theory of experiment, measurement and processing of results. Testi	ng machines and e	equipment.
Deformation mea	asuring instruments. Destructive testing of mechanical properties. Non-destructive test methods. Test methodology for various material	s (concrete, morta	ır, metallic
	elements, wood, glass, plastics, composites and others).		
210YSB	Special Concretes	Z	2
	ned at expanding knowledge in the field of special concretes and composites for specific applications. The core of the course is to acc	•	
technological aspe	cts of the production, testing and use of special concretes, as well as the applicable legislative framework for individual types of special	al concretes. Speci	ific practical
	applications and experiences are also presented within the course.		

For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 2025-07-27, time 15:54.