Study plan

Name of study plan: Stavební Inženýrství - konstrukce a dopravní stavby, specializace Dopravní stavby a geotechnika

Faculty/Institute/Others: Department: Branch of study guaranteed by the department: Welcome page Garantor of the study branch: Program of study: Civil Engineering - Structural and Transportation 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: 18 The role of the block: Z

Code of the group: NK20230100

Name of the group: Stavební Inženýrství - konstrukce a dopravní stavby, spole ná ást, 1. semestr Requirement credits in the group: In this group you have to gain at least 14 credits Requirement courses in the group: In this group you have to complete at least 3 courses Credits in the group: 14

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
101NRDR	Numerical Solution of Differential Equations Petr Mayer, Ivana Pultarová, Jozef Bobok Petr Mayer Ivana Pultarová (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
135GET	Geotechnics Jan Pruška, Jan Kos, Matouš Hilar, Alexandr Butovi , Jan Masopust Jan Pruška Jan Pruška (Gar.)	Z,ZK	5	2P+2C	Z	Z

Characteristics of the courses of this group of Study Plan: Code=NK20230100 Name=Stavební Inženýrství - konstrukce a dopravní stavby, spole ná ást, 1. semestr

101NRDR	Numerical Solution of Differential Equations	Z,ZK	4
After elementary tools of	f linear algebra (matrix, determinant, Gaussian elimination) are recalled, iterative methods for solving systems of linear algel	oraic equations ar	e in the focus.
Then, the finite difference	e method and the finite element method are presented and their applications to problems based on differential equations ar	e shown. Attentior	n is also paid to
basic methods for solvir	ng initial value problems in ordinary differential equations.		
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 co	oordinates,
numerical integration. A	pplication of method to selected 1D and 2D problems (Elasticity, heat transfer, consolidation). Algorithmic aspects of the met	hod.	
135GET	Geotechnics	Z,ZK	5
Familiarization with spe	clic issues of building foundation, mastering the basic methods of technology of implementation of individual elements and s	tructures and the	use of methods
of their static assessme	nt.		

Code of the group: NK20230200

Name of the group: Stavební Inženýrství - konstrukce a dopravní stavby, spole ná ást, 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:

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
132EANK	Experimental Analysis and Diagnostics K Michal Polák Michal Polák Michal Polák (Gar.)	KZ	4	1P+2C	L	Z

Characteristics of the courses of this group of Study Plan: Code=NK20230200 Name=Stavební Inženýrství - konstrukce a dopravní stavby, spole ná ást, 2. semestr

132EANK	Experimental Analysis and Diagnostics K	KZ	4
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 simula	tions of wind
effects, static load tests	on physical models), monitoring of building and engineering structures, static load tests (building structures, engineering str	uctures, bridges),	dynamic load
tests and experimental	nodal analysis (building structures, engineering structures, bridges, footbridges), effects of technical seismicity, evaluation o	f adverse effects of	of vibration on
the human body, assess	ment of the influence of building vibrations on installed machines and devices).		

Name of the block: Compulsory courses in the specialization Minimal number of credits of the block: 32 The role of the block: PS

Code of the group: NK20230102

Name of the group: specializace Dopravní stavby a geotechnika, 1. semestr Requirement credits in the group: In this group you have to gain at least 14 credits Requirement courses in the group: In this group you have to complete at least 3 courses Credits in the group: 14

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
135DYGK	Dynamics of geotechnical structures Jan Pruška Jan Pruška Jan Pruška (Gar.)	Z,ZK	4	2P+1C	Z	PS
136S03D	Road construction 3D Michal Uhlík Michal Uhlík (Michal Uhlík (Gar.)	Z,ZK	5	2P+2C	Z	PS
137Z02D	Railway structures 2D Lenka Lomoz, Leoš Horní ek, Hana Krej i íková Lenka Lomoz Leoš Horní ek (Gar.)	Z,ZK	5	2P+2C	Z	PS

Characteristics of the courses of this group of Study Plan: Code=NK20230102 Name=specializace Dopravní stavby a geotechnika, 1. semestr

135DYGK Dynamics of geotechnical structures	Z,ZK	4
The course builds on the knowledge acquired by students of the Dynamics of Building Structures course. The student will get acquainted with the determ	mination of the	loading of
geotechnical structures from natural and technical seismicity, will get an overview of the properties of dynamically loaded soils and rocks, including the properties of dynamically loaded so	procedures for	determining
these properties. In addition, the student will learn the basic procedures for assessing the effects of technical seismicity and earthquakes on selected ged	eotechnical str	uctures (slab
foundations, frame and retaining walls, embankments, slopes, tunnels).		
136S03D Road construction 3D	Z,ZK	5
Introduction to urban engineering, solutions in built-up areas - reconstruction. Parking - solution methods, technical parameters and requirements, garages	es. Bus station	s and bus stops.
Public mass transport and its preferences. Pedestrian and bicycle traffic. Traffic signs. Adaptations for the blind and partially sighted, barrier-free adaptation	tions. Utilities.	
137Z02D Railway structures 2D	Z,ZK	5
Track design of individual types of railway stations, structural elements of railway stations, equipment for passenger and freight transport, connection to the	the European	railway network,
modernisation and optimisation of railway lines, design of tram and metro lines, ecological impacts of rail transport.		

Code of the group: NK20230202

Name of the group: specializace Dopravní stavby a geotechnika, 2. semestr Requirement credits in the group: In this group you have to gain at least 18 credits Requirement courses in the group: In this group you have to complete at least 4 courses Credits in the group: 18

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
133B03D	Concrete Structures 3D Jitka Vašková, Roman Lenner Roman Lenner Roman Lenner (Gar.)	Z,ZK	5	2P+2C	L	PS
134O02D	Steel Structures 2D Martina Eliášová Martina Eli ášová Martina Eliášová (Gar.)	Z,ZK	5	2P+2C	L	PS

136S04D	Road construction 4D Petr Mondschein, Jan Valentin Jan Valentin (Gar.)	Z,ZK	4	2P+1C	L	PS
137Z03D	Railway Structures 3D Vít Lojda, Leoš Horní ek Vít Lojda Vít Lojda (Gar.)	Z,ZK	4	2P+1C	L	PS

Characteristics of the courses of this group of Study Plan: Code=NK20230202 Name=specializace Dopravní stavby a geotechnika, 2. semestr

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133B03D	Concrete Structures 3D	Z,ZK	5			
Concrete structures wit	h a focus on infrastructure					
134O02D	Steel Structures 2D	Z,ZK	5			
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. Complementatior	n 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 r	pipelines, technolo	ogical structures,			
pre-stressed steel struc	tures and basis of design from aluminium alloys and stainless steel, and cable and membrane structures.					
136S04D	Road construction 4D	Z,ZK	4			
Course 13604D is the fi	nal professional course for students who have chosen to specialization in road construction. The course deepens the knowled	dge previously ac	quired in the field			
of technologies and tec	hnical solutions of road structures including pavements and extends it to other special or otherwise specific technologies. The	e student will be i	ntroduced to key			
technologies for asphal	pavements, concrete pavements, stone paved pavements and bridge pavements.					
137Z03D	Railway Structures 3D	Z,ZK	4			
The subject is aimed at	a detailed introduction to the construction and maintenance of railway lines. Students are introduced to working procedures	and mechanizatic	on tools that are			
used for the construction	used for the construction of the railway bottom and top and for the establishment and maintenance of the geometrical position of the track.					

Name of the block: Compulsory elective courses Minimal number of credits of the block: 6 The role of the block: PV

Code of the group: NK20230100_1

Name of the group: Stavební Inženýrství - konstrukce a dopravní stavby, PV p edm ty, 1. semestr Requirement credits in the group: In this group you have to gain at least 2 credits Requirement courses in the group: In this group you have to complete at least 1 course Credits in the group: 2 povinně volitelný předmět

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Note on the group	J. povinite voliten	ly preumer				
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 Konfrš t Ji í Konfršt (Gar.)	Z	2	1P+1C	Z	PV
132YDDS	Dynamics of Transport Structures Michal Polák Michal Polák Michal Polák (Gar.)	Z	2	1P+1C	Z	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 Radek Štefan, Petr Štemberk, Marek Foglar Radek Štefan Radek Štefan (Gar.)	Z	2	1P+1C	Z	PV
133YBM2	Concrete Bridges 2 Jan Vitek Jan Vítek Jan Vítek (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 Ježek, Daniel Turanský, Jan Salák, Alena Zemanová Alena Zemanová Alena Zemanová (Gar.)	Z	2	1P+1C	Z	PV
135YZAL	Basics of mining Ji í Barták Ji í Barták	Z	2	1P+1C	Z	PV
136YEES	Environmental Aspects and Esthetics of Road Structures Ludvík Vébr, Karel Horní ek Michal Uhlík Karel Horní ek (Gar.)	Z	2	1P+1C		PV
136YLET	Airports Petr Pánek Petr Pánek (Gar.)	Z	2	1P+1C	Z	PV
137YDKP	Diagnostics of rail transport construction Hana Krej i íková Lenka Lomoz Hana Krej i íková (Gar.)	Z	2	1P+1C	Z	PV

220YLPG	Geotechnical laboratory Jií Svoboda, Jií Šástka, Radek Vaší ek Radek Vaší ek Jií Svoboda (Gar.)	Z	2	2C	Z	PV
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Characteristics of stavby, PV p edm	the courses of this group of Study Plan: Code=NK20230100_1 Name=Stavební Inženýrství tv. 1. semestr		e a dopravni
102YFPL	Solid State Physics in Civil Engineering	Z	2
-	atomic shell theory, valence layer chemical bonds, dislocation disturbances, critical crack energy, vibration of masses, system	_	-
	basics concepts of fracture mechanics, types of fracture, electron microscopes, scanning tunneling microscope, atomic force i	-	-
methods, semiconducte	ors, p-n junction, photovoltaic effect, solar cells, heat and moisture transport.		
132YDDS	Dynamics of Transport Structures	Z	2
	oblems of the Dynamics of transport structures (especially of road bridges, railway bridges and footbridges), explanation of exp		
1	ement of an experiment "in situ?, monitored parameters, measuring line, modal analysis, the monitoring systems for observat	-	-
	flow characteristics, numerical methods for solving dynamical interaction between building structure and moving load, modell	ing of structures,	traffic flow and
	wind effects, practical examples.	7	2
132YMMO	Modern Methods of Optimization an overview of numerical optimization are overview of numerical optimization methods applicable not only in the Civil Engineering area. The emphasis is put more on the	Z a introduction of c	
	cations in MATLAB environment are also conducted during exercises.		inving principies,
132YSEI	Seismic Engineeering	Z	2
	gn of earthquake resistant structures. Methods of calculating the response of structures to earthquake loads according to Eur		
132YSSK	Reliability of Structures	Z	2
	o the reliability of elements and systems. Element reliability is time dependent while the reliability of systems is of type streng	_	1
	ethod. Two simulation methods are introduced: Monte Carlo and LHS.		
133YBEX	Concrete under Extreme Conditions	Z	2
The course is focused	on concrete and concrete structures under extreme conditions.		I
133YBM2	Concrete Bridges 2	Z	2
Extension of the field of	concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individual struct	ural systems.	Į.
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 meas	ures. Methods of	strengthening
-	ures are also discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of be	nding moment a	nd shear, and
	re discussed. The course appropriately combines theoretical approaches with common practice.		
134YDKM	Timber structures and bridges	Z	2
	ed to national strategy of sustainable development. New timber-based materials. Structural systeme of houses and bridges. F	Repairing and stre	engthtening. Fire
	tection, erection and maintenance. Design and evaluation of bridges, roofs structures in normal temperature and in fire.	7	
134YROK	Extending the Life of Steel and Timber Structures	Z	2
	ng structures. Developments in the area of regulations and standardization. Causes of defects, malfunctions, survey of objects, sta ening, strengthening of steel and timber structures and strengthening of connections. Using of computers in reconstructions a	-	
1 033ibilities of strength	כוווות, סובותנוובוווות טו סנבבו מות נוווטבו סנותנונבס מות סנובותנובווות טו נטווובטנטוס. ססוות טו נטווטענבוס וו ובטטוסנותנוטוס מ		
models.			or numerical
models. 134YSMK			
134YSMK	Stability and modelling of steel structures	Z	2
134YSMK Subject YSMK covers t		Z ne structures. In t	2 he first part the
134YSMK Subject YSMK covers t historic collapses of ste	Stability and modelling of steel structures wo parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel fram	Z ne structures. In t ciples of theory o	2 he first part the f buckling, linear
134YSMK Subject YSMK covers t historic collapses of ste and nonlinear theory of including their combina	Stability and modelling of steel structures wo parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel fram el structures are analysed including the importance of imperfections for a design of thin plated structures. Presented are print buckling of thin plates. The results are applied to the 4th class cross sections in harmony with Eurocode. Buckling due to nor tion is analysed in a detail. In the end the application of the results is shown together with design of necessary stiffeners. The s	Z ne structures. In t ciples of theory o mal, shear and lo econd part is foc	2 he first part the f buckling, linear ocal loadings used on member
134YSMK Subject YSMK covers t historic collapses of ste and nonlinear theory of including their combina and structure stability.	Stability and modelling of steel structures wo parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel fram el structures are analysed including the importance of imperfections for a design of thin plated structures. Presented are print buckling of thin plates. The results are applied to the 4th class cross sections in harmony with Eurocode. Buckling due to nor tion is analysed in a detail. In the end the application of the results is shown together with design of necessary stiffeners. The s possible global analysis methods are presented together with methods for compression and bending interaction for slender methods.	Z ne structures. In t ciples of theory o mal, shear and lo econd part is foc	2 he first part the f buckling, linear ocal loadings used on member
134YSMK Subject YSMK covers t historic collapses of ste and nonlinear theory of including their combina and structure stability. F of lateral torsional buck	Stability and modelling of steel structures wo parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel fram el structures are analysed including the importance of imperfections for a design of thin plated structures. Presented are prind buckling of thin plates. The results are applied to the 4th class cross sections in harmony with Eurocode. Buckling due to nor tion is analysed in a detail. In the end the application of the results is shown together with design of necessary stiffeners. The s Possible global analysis methods are presented together with methods for compression and bending interaction for slender me ling are explained including also tapered members.	Z ne structures. In t ciples of theory o mal, shear and lo econd part is foc embers. In detail,	2 he first part the f buckling, linear ical loadings used on member specific cases
134YSMK Subject YSMK covers t historic collapses of ste and nonlinear theory of including their combina and structure stability. F of lateral torsional buck 135YGSM	Stability and modelling of steel structures wo parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel frame el structures are analysed including the importance of imperfections for a design of thin plated structures. Presented are print buckling of thin plates. The results are applied to the 4th class cross sections in harmony with Eurocode. Buckling due to norm tion is analysed in a detail. In the end the application of the results is shown together with design of necessary stiffeners. The s Possible global analysis methods are presented together with methods for compression and bending interaction for slender me ling are explained including also tapered members. Geotechnical Software for Numerical modelling	Z ne structures. In t ciples of theory o mal, shear and lo econd part is foc embers. In detail, Z	2 he first part the f buckling, linear ical loadings used on member specific cases 2
134YSMK Subject YSMK covers t historic collapses of ste and nonlinear theory of including their combina and structure stability. F of lateral torsional buck 135YGSM Students get acquainte	Stability and modelling of steel structures wo parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel framel structures are analysed including the importance of imperfections for a design of thin plated structures. Presented are prind buckling of thin plates. The results are applied to the 4th class cross sections in harmony with Eurocode. Buckling due to nor standysed in a detail. In the end the application of the results is shown together with design of necessary stiffeners. The spossible global analysis methods are presented together with methods for compression and bending interaction for slender mething are explained including also tapered members. Geotechnical Software for Numerical modelling d d with the Finite Element Method, the currently dominant tool for numerical modeling in Geotechnics. Emphasis is placed on it	Z ne structures. In t ciples of theory o mal, shear and lo econd part is foc embers. In detail, Z ntroducing the ba	2 he first part the f buckling, linear ical loadings used on member specific cases 2 asic principles of
134YSMK Subject YSMK covers t historic collapses of ste and nonlinear theory of including their combina and structure stability. F of lateral torsional buck 135YGSM Students get acquainte the Finite Element Meth	Stability and modelling of steel structures wo parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel framel structures are analysed including the importance of imperfections for a design of thin plated structures. Presented are prind buckling of thin plates. The results are applied to the 4th class cross sections in harmony with Eurocode. Buckling due to nor standysed in a detail. In the end the application of the results is shown together with design of necessary stiffeners. The spossible global analysis methods are presented together with methods for compression and bending interaction for slender mething are explained including also tapered members. Geotechnical Software for Numerical modelling d d with the Finite Element Method, the currently dominant tool for numerical modeling in Geotechnics. Emphasis is placed on i tood and their subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of finite of the subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of finite of the subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of finite of the subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of finite of the subsequent application to selected problems of the subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of finite of the subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of finite of the subsequent application to selected problems of the selected problems o	Z ne structures. In t ciples of theory o mal, shear and lo econd part is foc embers. In detail, Z ntroducing the ba ite elements use	2 he first part the f buckling, linear ical loadings used on member specific cases 2 asic principles of d in geotechnical
134YSMK Subject YSMK covers t historic collapses of ste and nonlinear theory of including their combina and structure stability. F of lateral torsional buck 135YGSM Students get acquainte the Finite Element Meth applications, material m	Stability and modelling of steel structures wo parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel framel structures are analysed including the importance of imperfections for a design of thin plated structures. Presented are prind buckling of thin plates. The results are applied to the 4th class cross sections in harmony with Eurocode. Buckling due to nor tion is analysed in a detail. In the end the application of the results is shown together with design of necessary stiffeners. The second buckling are explained including also tapered members. Geotechnical Software for Numerical modelling d d with the Finite Element Method, the currently dominant tool for numerical modeling in Geotechnics. Emphasis is placed on i tood and their subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of finite subsequent application of soil deformation, and selected specifics associated with numerical modeling in geotechnics	Z ne structures. In t ciples of theory o mal, shear and lo econd part is foc embers. In detail, Z ntroducing the ba ite elements use	2 he first part the f buckling, linear ical loadings used on member specific cases 2 asic principles of d in geotechnical
134YSMK Subject YSMK covers t historic collapses of ste and nonlinear theory of including their combina and structure stability. F of lateral torsional buck 135YGSM Students get acquainte the Finite Element Meth applications, material m in the modeling of four	Stability and modelling of steel structures wo parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel framel structures are analysed including the importance of imperfections for a design of thin plated structures. Presented are prind buckling of thin plates. The results are applied to the 4th class cross sections in harmony with Eurocode. Buckling due to norm to in analysed in a detail. In the end the application of the results is shown together with design of necessary stiffeners. The second plate in a detail analysis methods are presented together with methods for compression and bending interaction for slender mething are explained including also tapered members. Geotechnical Software for Numerical modelling d with the Finite Element Method, the currently dominant tool for numerical modeling in Geotechnics. Emphasis is placed on i nod and their subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of finiodels suitable for the description of soil deformation, and selected specifics associated with numerical modeling in geotechnics dation, embedded walls, and stability problems.	Z ne structures. In t ciples of theory o mal, shear and lo econd part is foci embers. In detail, Z ntroducing the ba ite elements use This knowledge	2 he first part the f buckling, linear ical loadings used on member specific cases 2 asic principles of d in geotechnical is further applied
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Name of the group: Stavební Inženýrství - konstrukce a dopravní stavby, 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

povinně volitelné	é předměty				
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
Methods of Time Discretization	Z	2	1P+1C	L	PV
Mathematical statistics for technicians	Z	2	1P+1C	L	PV
Numerical Methods Ivana Pultarová, Martin Ladecký, Liya Gaynutdinova Ivana Pultarová Ivana Pultarová (Gar.)	Z	2	1P+1C	L	PV
Building Information Modelling - Fundamentals Petr Mat ika, Robert Bouška Robert Bouška Petr Mat ika (Gar.)	Z	2	2C	L	PV
Diagnostics of Building Structures	Z	2	1P+1C	L	PV
Micromechanics of Cement-Based Composites	Z	2	1P+1C	L	PV
Nonlinear Analysis of Materials and Structures	Z	2	1P+1C	L	PV
Numerical Analysis of Structures 2	Z,ZK	4	2P+1C	L	PV
Computer Analysis of Structures 2	Z	2	1P+1C	L	PV
General Principles of Mechanics	Z,ZK	4	2P+1C	L	PV
Applied Theory of Structures	Z,ZK	4	2P+1C	L	PV
Parametric Bridge Design	Z	2	2C	L	PV
Fire desgn og concrete and mnsory structures	Z	2	1P+1C	L	PV
	Z	2	1P+1C	L	PV
Ultrahigh Performance Concretes	Z	2	1P+1C	L	PV
Stainless steel and aluminium structures	Z	2	1P+1C	L	PV
Load-bearing timber roof constructions	Z	2	1P+1C	L	PV
Design of Glass Structures	Z.ZK	2	1P+1C	L	PV
Design of Membrane Structures					PV
Svitlana Kalmykova Svitlana Kalmykova Svitlana Kalmykova (Gar.) Fire Resistance of Steel and Timber Structures					PV
Zden k Sokol Zden k Sokol Zden k Sokol (Gar.) Connections of steel and timber structures					PV
František Wald, Robert Jára Robert Jára František Wald (Gar.) Special steel structures					PV
Jakub Dolejš Jakub Dolejš Jakub Dolejš (Gar.)					
Jan Záleský Jan Záleský Jan Záleský (Gar.)	2	2	IF+IC	L	PV
Jan Pruška, Alexandr Butovi , Ji í Barták Alexandr Butovi Jan Pruška (Gar.)	Z	2	1P+1C	L	PV
Ivan Vaní ek, Martin Vaní ek Ivan Vaní ek Ivan Vaní ek (Gar.)	Z	2	1P+1C	L	PV
Pavement mechanics Ludvík Vébr Ludvík Vébr (Gar.)	Z	2	1P+1C	L	PV
Intersection Highway Design Jaromíra Ježková Jaromíra Ježková (Gar.)	КZ	2	2C	L	PV
Project - Progressive application of substructure	KZ	2	2C	L	PV
Ecological Aspects of Transport	Z	2	1P+1C	L	PV
	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.) Methods of Time Discretization Petr Mayer František Bubenik (Fanthišek Bubenik (Gar.) Mathematical statistics for technicians Daniela Jarušková Jana Nosková Daniela Jarušková (Gar.) Numerical Methods Namerical Methods Pate Jakar, Robert Bouška Pot Matijka (Gar.) Building Information Modelling - Fundamentals Putarová (Gar.) Diagnostics of Building Structures Michal Polák Michal Polák Michal Polák (Gar.) Micromechanics of Cement-Based Composites Vit Smilaury Vit Smilaury (Gar.) Numerical Analysis of Materials and Structures De ek Patzák, Petr Kabele, Daniel Rypl Daniel Rypl (Gar.) Numerical Analysis of Structures 2 Do ek Patzák Bo ek Patzák Mo ek Patzák (Gar.) Computer Analysis of Structures 2 J I Maca, Petr Fajman J I Máca Petr Fajman (Gar.) General Principles of Mechanics Milan Jirásek Milan Jirásek Milan Jirásek (Gar.) Applied Theory of Structures Radek Hajek, Lukás Vráblik Lukás Vráblik Lukás Vráblik Lukás Vráblik (Gar.) Parametric Bridge Design Vladimir P ibramský Vladimir P ibramský Vladimir P ibramský (Gar.) Reconstruction and strengthening of bridges Michal Drahorád Michal Drahorád (Gar.) Staf Eds Jasef Fládr Josef Fládr (Gar.)	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Completion Tutors, authors and guarantors (gar.) Completion Tutors, authors and guarantors (gar.) Z Mathematical statistics for technicians Daniels Januskowa Jana Noxkowi Daniela Januškowa (Gar.) Z Numerical Methods Z Numerical Methods Z Building Information Modelling - Fundamentals Z Puttravid (Gar.) Z Building Information Modelling - Fundamentals Z Puttravid (Gar.) Z Micromechanics of Cement-Based Composites Z Vit Smilauer Wit Smilauer Wit Smilauer (Gar.) Z Numerical Analysis of Materials and Structures 2 Z,ZK Bo ek Patzák Bo ek Patzák Bo ek Patzák (Gar.) Z Numerical Analysis of Structures 2 Z,ZK Bo ek Patzák Bo ek Patzák Mian Jirásek (Gar.) Z,ZK Computer Analysis of Structures 2 Z,ZK Brie Adsense Milan Jirásek Mian Jirásek (Gar.) Z,ZK Parametric Bridge Design Z Mather Mian Jirásek Mian Jirásek (Gar.) Z Parametric Bridge Design	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Completion Credits Tutors, authors and guarantors (gar.) Z 2 Methods of Time Discretization Z 2 Daniela Janušková Jana Nosková Daniela Jarušková (Gar.) Z 2 Numerical Methods Ibana Pultarová Ivana Z 2 Daniela Jarušková Jana Nosková Daniela Jarušková (Gar.) Z 2 Numerical Methods Ibana Pultarová Ivana Z 2 Pultarová (Gar.) Z 2 2 Diagnostics of Building Structures Z 2 2 Nonlinear Analysis of Materials and Structures Z 2 2 Nonlinear Analysis of Structures 2 Z 2 2 Numerical Analysis of Structures 2 Z 2 2 Numerical Nalysis of Structures 2 Z 2 2 I Maka, Park Bole N Atzák Bo ek Patzák (Gar.) Z 2 2 Rober Atzák Bo ek Patzák Bo ek Patzák (Gar.) Z 2 2 Parametric Eridge Design <td< td=""><td>Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Completion Credits Scope Tutors, authors and guarantors (gar.) Z 2 1P+1C Methods of Time Discretization Z 2 1P+1C Numerical Methods Statients (Gar.) Z 2 1P+1C Daniels Januäková Jana Nosková Daniels Jarušková (Gar.) Z 2 1P+1C Numerical Methods Name Nosková Daniels Jarušková (Gar.) Z 2 1P+1C Building Information Modelling - Fundamentals Z 2 1P+1C Vitr Smilauer VI Smilauer (Gar.) Z 2 1P+1C Noninear Analysis of Structures Z 1P+1C 1P+1C Numerical Manie Noikk Mick (Gar.) Z 2 1P+1C Numerical Analysis of Structures 2 Z 1P+1C 2 1P+1C Numerical Mais Methol Noikk (Gar.) Z 2 1P+1C Numerical Mais Methol Noikk (Mick (Gar.) Z 2 1P+1C Numerical Mana Noik Analysis of Structures 2 Z 1P+1C <!--</td--><td>Name of the course (Name of the group of courses (in case of groups of courses the list of codes of their members) Completion Credits Scope Semester Tutors, authors and guarantors (gar.) Z 1P+1C L Mathematical statistics for technicians Z 2 1P+1C L Daried audstow Jana Noskow Danielo Jaruśkow (Gar.) Z 2 1P+1C L Daried audstow Jana Noskow Danielo Jaruśkow (Gar.) Z 2 1P+1C L Daried audstow Jana Noskow Danielo Jaruśkow (Gar.) Z 2 1P+1C L Building Information Modelling - Fundamentals Per Mar Jan. Ander Dolak Michael Polak Polakel Polakel Polakel Polakel Polakel Polakel Polak</td></td></td<>	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Completion Credits Scope Tutors, authors and guarantors (gar.) Z 2 1P+1C Methods of Time Discretization Z 2 1P+1C Numerical Methods Statients (Gar.) Z 2 1P+1C Daniels Januäková Jana Nosková Daniels Jarušková (Gar.) Z 2 1P+1C Numerical Methods Name Nosková Daniels Jarušková (Gar.) Z 2 1P+1C Building Information Modelling - Fundamentals Z 2 1P+1C Vitr Smilauer VI Smilauer (Gar.) Z 2 1P+1C Noninear Analysis of Structures Z 1P+1C 1P+1C Numerical Manie Noikk Mick (Gar.) Z 2 1P+1C Numerical Analysis of Structures 2 Z 1P+1C 2 1P+1C Numerical Mais Methol Noikk (Gar.) Z 2 1P+1C Numerical Mais Methol Noikk (Mick (Gar.) Z 2 1P+1C Numerical Mana Noik Analysis of Structures 2 Z 1P+1C </td <td>Name of the course (Name of the group of courses (in case of groups of courses the list of codes of their members) Completion Credits Scope Semester Tutors, authors and guarantors (gar.) Z 1P+1C L Mathematical statistics for technicians Z 2 1P+1C L Daried audstow Jana Noskow Danielo Jaruśkow (Gar.) Z 2 1P+1C L Daried audstow Jana Noskow Danielo Jaruśkow (Gar.) Z 2 1P+1C L Daried audstow Jana Noskow Danielo Jaruśkow (Gar.) Z 2 1P+1C L Building Information Modelling - Fundamentals Per Mar Jan. Ander Dolak Michael Polak Polakel Polakel Polakel Polakel Polakel Polakel Polak</td>	Name of the course (Name of the group of courses (in case of groups of courses the list of codes of their members) Completion Credits Scope Semester Tutors, authors and guarantors (gar.) Z 1P+1C L Mathematical statistics for technicians Z 2 1P+1C L Daried audstow Jana Noskow Danielo Jaruśkow (Gar.) Z 2 1P+1C L Daried audstow Jana Noskow Danielo Jaruśkow (Gar.) Z 2 1P+1C L Daried audstow Jana Noskow Danielo Jaruśkow (Gar.) Z 2 1P+1C L Building Information Modelling - Fundamentals Per Mar Jan. Ander Dolak Michael Polak Polakel Polakel Polakel Polakel Polakel Polakel Polak

Characteristics of the courses of this group of Study Plan: Code=NK20230200_1 Name=Stavební Inženýrství - konstrukce a dopravní stavby, PV p edm ty, 2. semestr

101YMCD			
The course is devoted	Methods of Time Discretization	Z	2
The course is devoted	. o a universal and very effective method for solving problems involving time, the so-called evolutionary problems, especially for	or partial differentia	al equations with
	thod represents a modern approach to modeling and solving engineering tasks. These problems, both linear and non-linear,	model events in m	any engineering
fields, such as heat cor	duction, oscillations, also in rheology and other parts.		
101YMST	Mathematical statistics for technicians	Z	2
	eory of probability. Random variables and its characteristics. Basic methods of mathematical statistics.		
101YNUM	Numerical Methods	Z	2
	applied mathematics: course for beginners.	_	
126YBIM	Building Information Modelling - Fundamentals	Z	2
	ling Information Modeling (BIM) topic as with the modern tool for management and operation of construction projects. It is or	-	
	rit, Autodesk Navisworks) and especially to understanding meaning of BIM in current construction business and its future an	a importance in sp	becific phases of
construction projects.	Disgraphics of Duilding Chrysterros	7	2
132YDSK	Diagnostics of Building Structures	Z	2
132YMCK	Micromechanics of Cement-Based Composites	Z	2
	m the basis of today's civilization and construction industry; traditional concrete is now the most produced material in the work of the produced material in the	-	
	ar. The properties of these composites can be changed in a wide range according to needs - compressive strength up to 800 aces or the formation of cracks. The subject presents a multi-scale description of these cement composites, from the atomic	-	-
	of experimental methods used to identify properties, analytical and numerical methods for modeling hydration, heat transfer, e		-
	tion. The subject is supplemented by a whole range of engineering applications on which these methods have been successful		-
	ictures (arches with cooling, foundation blocks, guide faces of dams), cement concrete highway covers with extended durability,	, ,	
	calcium sulphide binders, innovative crack-resistant materials, alkali-activated fly ash. Most of the used numerical models h		-
open-source software	OFEM, which you can freely use, for example, for your prediction of temperatures during hydration, stress and crack analys	is including the inf	luence of
reinforcement and bou	dary conditions.		
132YNAK	Nonlinear Analysis of Materials and Structures	Z	2
Students become acqu	ainted with the concepts of linear stability and calculation of elastoplastic load capacity. Linear stability - evaluation of the crit	tical load and buck	ling shape.
Analysis of structures a	ccording to the 2nd order theory - equilibrium conditions on a deformed structure, initial stress matrix. Elastoplastic analysis c	of structures - evalu	uation of the limit
	n of internal forces at the limit state - static incremental method, kinematic method. Solving stability and elastoplasticity proble	ms by means of a	general-purpose
finite element program.			
132YNA2	Numerical Analysis of Structures 2	Z,ZK	4
Advanced course on fir	ite element method. Formulation of plate elements suitable for thin and thick plates, plates on elastic foundation. Introduction	to nonlinear proble	ems: geometrica
and material nonlineari	y, solution methods, implementation aspects.		
132YPM2	Computer Analysis of Structures 2	Z	2
Limit state of frames. S	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.			
132YUPM	General Principles of Mechanics	Z,ZK	4
Tensors, differential op	rators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear an	d nonlinear statics	, energy and
duality. Principle of virtu	al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to conti		
duality. Principle of virtu beams, frames, plates,	al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to conti walls and three-dimensional bodies.	inuous and discret	e models of
duality. Principle of virtu beams, frames, plates, 133YATK	al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to conti walls and three-dimensional bodies. Applied Theory of Structures	inuous and discret	e models of 4
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duality. Principle of virtu beams, frames, plates, 133YATK Detailed introduction to structures, stability the	al work (power), variational principles (Lagrange, Castigliano, Hellinger-Reissner, Hu-Washizu) and their application to conti walls and three-dimensional bodies. Applied Theory of Structures theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for ary.	inuous and discret	e models of 4 -walled concrete
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134YSOK	Special steel structures	7	2
	ures - actions, design, detailing. Silos - actions, behaviour, silos with rigid and non-rigid section. Masts - division, detiling, des	ian Cable roofs -	-
calculation.	מופי - מכווסוא, עפאקח, עפאקח, טווסא - מכווסוא, שרומיוסטו, אוסא אינוי חקוע מוע חסוריוקוע אבעוטוז. אימאט - טואסטה, עפעווויק, עפע	sign. Cable 10013 -	procedure or
		- 1	
135YGEM	Geotechnical monitoring	Z	2
-	and subsoil as a tool for confirmation of assumptions made at the design stage, selection of input data and reliability assura	nce. Relation betw	veen application
of sensors and gathere	d data for back analyses and modelling of field performance.		
135YMPK	Mechanics of underground structures	Z	2
The course is a continu	ation of the course Underground structures and rock mechanics, which is part of the Bachelor's degree programme. The cou	rse deepens the k	nowledge in the
field of underground co	nstruction and provides practical experience in the design and implementation of underground structures. The student tries ou	t the application of	of the knowledge
gained on a simple tunr	nel project. An integral part of the course is also an excursion to a completed underground construction in Prague.		
135YZKS	Soil structures	Z	2
Principles of soil structu	res design		
400\/\4\/7		_	-
136YMVZ	Pavement mechanics	Z	2
	Pavement mechanics of road pavement mechanics, fundamental data for designing, characteristics of traffic load, thermic and water relation of sub	۲ base,load-bearing	-
Rise and development			g capacity of
Rise and development of subgrade, road pavement	of road pavement mechanics, fundamental data for designing, characteristics of traffic load, thermic and water relation of sub		g capacity of
Rise and development of subgrade, road pavement	of road pavement mechanics, fundamental data for designing, characteristics of traffic load, thermic and water relation of sub ent materials, pavement design methods - partition, development and possibilities. Stress and transformation analysis on roac		g capacity of
Rise and development of subgrade, road pavement subgrade, pavement de 136YPPK	of road pavement mechanics, fundamental data for designing, characteristics of traffic load, thermic and water relation of sub ent materials, pavement design methods - partition, development and possibilities. Stress and transformation analysis on road sign specificity for different constructional types, road pavements with special loads.	l pavement constr KZ	g capacity of ruction and
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Rise and development of subgrade, road pavement subgrade, pavement de 136YPPK Design of interchange. 137YAZS	of road pavement mechanics, fundamental data for designing, characteristics of traffic load, thermic and water relation of sub ent materials, pavement design methods - partition, development and possibilities. Stress and transformation analysis on road sign specificity for different constructional types, road pavements with special loads. Intersection Highway Design Based on capacity assessment, evaluation of the most suitable form of interchange and its design processing. Roundabout d	KZ KZ KZ	g capacity of ruction and 2 2
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Name of the block: Povinn volitelné p edm ty, doporu ení S4 Minimal number of credits of the block: 4 The role of the block: S4

Code of the group: NK20230200_2

Name of the group: Stavební inženýrství - konstrukce a dopravní stavby, diplomový seminá 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	: xxxDISE Diplomo	ový seminář				
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
101DISE	Diploma Seminar Jozef Bobok, Jan Lama , Aleš Nekvinda Jozef Bobok Jozef Bobok (Gar.)	Z	4	4C	L	S4
132DISE	Diploma Seminar Martin Horák, Michal Polák, Tomáš Plachý, Mat j Lepš, Jan Zeman, Ji í Máca, Milan Jirásek, Martin Došká , Jan Vorel, Aleš Jíra	Z	4	4C	L	S4
133DISE	Diploma Seminar Lukáš Vráblík Lukáš Vráblík (Gar.)	Z	4	4C	L	S4
134DISE	Diploma Seminar Michal Jandera Pavel Ryjá ek (Gar.)	Z	4	4C		S4
135DISE	Diploma Seminar Jan Pruška	Z	4	4C	L	S4
136DISE	Diploma Seminar Petr Mondschein, Michal Uhlík, Jan Valentin, Ludvík Vébr, Petr Pánek, Jaromíra Ježková, Karel Fazekas, Jan Hradil, Tomáš Havlí ek Petr Mondschein Jaromíra Ježková (Gar.)	Z	4	4C		S4
137DISE	Diploma Seminar Vít Lojda, Lenka Lomoz, Leoš Horní ek, Hana Krej i íková, Ond ej Bret, Michal Petýrek, Martin Lidmila Lenka Lomoz Leoš Horní ek (Gar.)	Z	4	4C	L	S4
210DISE	Diploma Seminar	Z	4	4C		S4
220DISE	Diploma Seminar Ji í Svoboda, Radek Vaší ek, Jaroslav Pacovský Radek Vaší ek Jaroslav Pacovský (Gar.)	Z	4	4C		S4

Characteristics of the courses of this group of Study Plan: Code=NK20230200_2 Name=Stavební inženýrství - konstrukce a dopravní stavby, diplomový seminá

101DISE	Diploma Seminar	Z	4			
Please contact your teacher or guarantor of this subject.						
132DISE	Diploma Seminar	Z	4			
The course precedes th	The course precedes the thesis and prepares students for writing their future thesis. The assignment of the final thesis is always individual based on the agreement of the teacher and					
the student. The vast majority of assignments are connected with the scientific and research activities of the respective employee. The output of the solution may be a brief research						
study of the given proble	study of the given problem, experimental activity, programming and others according to the respective assignment.					

133DISE	Diploma Seminar	Z	4		
The topic of the assignr	nent is individual, mostly related to the expected topic of the Diploma Thesis.				
134DISE	Diploma Seminar	Z	4		
Semestral project of master study.					
135DISE	Diploma Seminar	Z	4		
Deepening of knowledge	e in the field according to the choice of the assignment as preparation for the Diploma Thesis, study of specialized literature and	knowledge from i	mplementations,		
preparation of theoretic	al research and variant solutions, or preparation for the implementation of an experimental program.				
136DISE	Diploma Seminar	Z	4		
Preparation of the basic	documents for the assignment of a master thesis and their processing. Lectures by experts from the practice (road design, co	onstruction techno	logy, information		
about new procedures a	and software)				
137DISE	Diploma Seminar	Z	4		
After agreement with the	e teacher, a preliminary thesis topic is determined. The student should responsibly prepare for the creation of the work itself by	, studying the doc	uments, creating		
research, and obtaining	background materials (e.g. maps). Furthermore, he should determine the outline of the work and master the work with any r	measuring technic	que, etc.		
210DISE	Diploma Seminar	Z	4		
Preparatory works on di	ploma thesis elaboration. Literature review, study on problematics to be solved - practical cases in geotechnical laboratory and	the Josef underg	round laboratory		
(http://ceg.fsv.cvut.cz).					
220DISE	Diploma Seminar	Z	4		
Preparatory works on di	ploma thesis elaboration. Literature review, study on problematics to be solved - practical cases in geotechnical laboratory and	the Josef underg	round laboratory		
(https://www.stolajosef.o	cz).				

Name of the block: Povinn volitelné p edm ty, doporu ení S1 Minimal number of credits of the block: 30 The role of the block: S1

Code of the group: NK20230300 Name of the group: Stavební Inženýrství - konstrukce a dopravní 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
101DPM	Diploma Thesis Daniela Jarušková, Michal Beneš, Milan Bo ík, Jakub Šolc, Jana Nosková Michal Beneš Daniela Jarušková (Gar.)	Z	30	24C	Z	S1
132DPM	Diploma Thesis Bo ek Patzák, Martin Horák, Michal Polák, Tomáš Plachý, Mat j Lepš, Jan Zeman, Ji í Máca, Petr Kabele, Petr Fajman, 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 Pruška, Jan Masopust Jan Pruška Jan Pruška (Gar.)	Z	30	24C	Z	S1
136DPM	Diploma Thesis Petr Mondschein Ludvík Vébr (Gar.)	Z	30	24C	Z	S1
137DPM	Diploma Thesis Leoš Horní ek, Hana Krej i íková Lenka Lomoz Leoš Horní ek (Gar.)	Z	30	24C	Z	S1
210DPM	Diploma Thesis Petr Konvalinka, Michal Mára, Jan Zatloukal, Radoslav Sovják, Jind ich Forn sek, Ji í Litoš, Pavel Reiterman, Karel Kolá, Petr Máca Ji í Litoš Ji í Litoš (Gar.)	Z	30	24C	Z	S1
220DPM	Diploma Thesis Ji í Svoboda, Radek Vaší ek, Jaroslav Pacovský Ji í Svoboda Ji í Svoboda (Gar.)	Z	30	24C	Z	S1

Characteristics of the courses of this group of Study Plan: Code=NK20230300 Name=Stavební Inženýrství - konstrukce a dopravní stavby, diplomová práce

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101DPM	Diploma Thesis	Z	30
Please contact your to	eacher or guarantor of this subject.		
132DPM	Diploma Thesis	Z	30
In accordance with th	thesis proposal.		
133DPM	Diploma Thesis	Z	30
In accordance with a	thesis proposal.		
134DPM	Diploma Thesis	Z	30
Design of steel / timb	er load bearing building structure according to external requirements in relation to interaction of load bearing and final completi	ion structural elen	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	lly.	

135DPM Diploma Thesis	7	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	evample problem	
design and construction of geotechnical structures, civil engineering structures, special foundations for industrial, transport, housing and water mana		
structures in complex cases and waste disposal structures. The thesis builds on and develops the findings of the thesis project.	igement structure:	s, earth and lock
	7	30
136DPM Diploma Thesis	<u> </u>	
The assigned topic of diploma theses can be a project, traffic surveys, research of selected issues with application in practice for various technical solu		
tests to verify the functionality of various materials for pavements, etc. In terms of design, the most common topics of theses are, for example, the design of the set of the s	•	
reconstruction of a selected section of a road (bypass, flyover), the design of a road network in a selected area of the city, the design of a new const		
intersections, the design of an airport, heliport, etc. In terms of pavement structures and road construction technologies, the most frequent topics of		
of different material solutions for asphalt or concrete pavements, including the relevant composite materials or input components (binders, aggregates,	etc.), assessment	of the behaviour
of a particular material or type of structure by laboratory methods, or carrying out simulations, etc.		
137DPM Diploma Thesis	Z	30
The diploma thesis is the final complex work prepared by students at the end of their university studies. The diploma thesis describes the given issue	in a broader cont	ext, in which the
student demonstrates the ability to work independently and an engineering approach. The diploma thesis takes the form of either a project (reconstru	uction of a section	of a railway line,
study of new railway lines), a research (processing of an overview in a certain area) or a laboratory (including the execution and evaluation of specific	ed laboratory tests), or a combined
one.		
210DPM Diploma Thesis	Z	30
Students will get the opportunity to organize complex process of experimental work from the beginning of production, experimental investigation to o	of the data. Thesis	are designed to
fit scientific and research activity of the Experimental Centre		
220DPM Diploma Thesis	Z	30
Diploma thesis elaboration with possible use of geotechnical laboratory and underground facility the Josef underground laboratory (http://ceg.fsv.cvu	ut.cz).	

List of courses of this pass:

Code	Name of the course	Completion	Credits
101DISE	Diploma Seminar	Z	4
	Please contact your teacher or guarantor of this subject.		
101DPM	Diploma Thesis	Z	30
	Please contact your teacher or guarantor of this subject.	1 1	
101NRDR	Numerical Solution of Differential Equations	Z,ZK	4
After elementary	tools of linear algebra (matrix, determinant, Gaussian elimination) are recalled, iterative methods for solving systems of linear algebr	aic equations are in	the focus.
Then, the finite dif	fference method and the finite element method are presented and their applications to problems based on differential equations are s	hown. Attention is a	also paid to
	basic methods for solving initial value problems in ordinary differential equations.		
101YMCD	Methods of Time Discretization	Z	2
	viced to a universal and very effective method for solving problems involving time, the so-called evolutionary problems, especially for p	artial differential equ	uations with
a time variable. Th	is method represents a modern approach to modeling and solving engineering tasks. These problems, both linear and non-linear, mo	del 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	CS.	
101YNUM	Numerical Methods	Z	2
	Numerical computing in applied mathematics: course for beginners.	1 1	
102YFPL	Solid State Physics in Civil Engineering	7	2
	ucture, atomic shell theory, valence layer chemical bonds, dislocation disturbances, critical crack energy, vibration of masses, systems	1 – 1	_
	tion, basics concepts of fracture mechanics, types of fracture, electron microscopes, scanning tunneling microscope, atomic force mi		
	methods, semiconductors, p-n junction, photovoltaic effect, solar cells, heat and moisture transport.	· ·	,
126YBIM	Building Information Modelling - Fundamentals	Z	2
	h Building Information Modeling (BIM) topic as with the modern tool for management and operation of construction projects. It is orier	nted to handling bas	
software (Autodes	k Revit, Autodesk Navisworks) and especially to understanding meaning of BIM in current construction business and its future and in	nportance in specifi	c phases of
	construction projects.		
132DISE	Diploma Seminar	Z	4
	es the thesis and prepares students for writing their future thesis. The assignment of the final thesis is always individual based on the	agreement of the	teacher and
the student. The v	vast majority of assignments are connected with the scientific and research activities of the respective employee. The output of the sc	lution may be a brie	ef research
	study of the given problem, experimental activity, programming and others according to the respective assignment.		
132DPM	Diploma Thesis	Z	30
	In accordance with the thesis proposal.	1 1	
132EANK	Experimental Analysis and Diagnostics K	KZ	4
	used on monitoring of the amount of climatic loads on building and engineering structures (wind, snow, temperature loads), diagnostic	1	ngineering
	carried out on physical models of building and engineering structures (model similarity laws, seismic simulations on shake tables, wi	-	
structures, tests	d tests on physical models), monitoring of building and engineering structures, static load tests (building structures, engineering struc	tures, bridaes), dvr	namic load
,			
effects, static loa	nental modal analysis (building structures, engineering structures, bridges, footbridges), effects of technical seismicity, evaluation of a		bration on
effects, static loa			bration on
effects, static loa	nental modal analysis (building structures, engineering structures, bridges, footbridges), effects of technical seismicity, evaluation of a		bration on
effects, static loa tests and experin 132NAK	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).	adverse effects of vi	5

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-	Dynamics of Transport Structures	Z	2
procedures the or	e problems of the Dynamics of transport structures (especially of road bridges, railway bridges and footbridges), explanation of experir	nental and theore	tical analysis
procedures - the ar	rangement of an experiment "in situ?, monitored parameters, measuring line, modal analysis, the monitoring systems for observation	of building structu	ure dynamics
behaviour and of t	raffic flow characteristics, numerical methods for solving dynamical interaction between building structure and moving load, modelling	of structures, tra	ffic flow and
	pedestrians, dynamical wind effects, practical examples.		
132YDSK	Diagnostics of Building Structures	Z	2
132YMCK	Micromechanics of Cement-Based Composites	Z	2
	s form the basis of today's civilization and construction industry; traditional concrete is now the most produced material in the world w	ith an average co	nsumption o
over 1 m3 / person	/ year. The properties of these composites can be changed in a wide range according to needs - compressive strength up to 800 MPa	a, creep, shrinkag	e, resistance
to environmental in	fluences or the formation of cracks. The subject presents a multi-scale description of these cement composites, from the atomic level	to the building st	ructure level
It includes an overv	riew of experimental methods used to identify properties, analytical and numerical methods for modeling hydration, heat transfer, elasti	city, creep and str	ength across
different levels of re	esolution. The subject is supplemented by a whole range of engineering applications on which these methods have been successfully u	sed - designs and	optimization
of massive concrete	e structures (arches with cooling, foundation blocks, guide faces of dams), cement concrete highway covers with extended durability, spra	yed concrete with	replacemen
of Portland ceme	ent with calcium sulphide binders, innovative crack-resistant materials, alkali-activated fly ash. Most of the used numerical models hav	ve been implemer	nted in the
open-source so	ftware OOFEM, which you can freely use, for example, for your prediction of temperatures during hydration, stress and crack analysis	s including the inf	luence of
	reinforcement and boundary conditions.		
132YMMO	Modern Methods of Optimization	Z	2
The course is aimed	d at an overview of numerical optimization methods applicable not only in the Civil Engineering area. The emphasis is put more on the in	troduction of drivin	ng principles
	however, practical applications in MATLAB environment are also conducted during exercises.		
132YNA2	Numerical Analysis of Structures 2	Z,ZK	4
Advanced course of	n finite element method. Formulation of plate elements suitable for thin and thick plates, plates on elastic foundation. Introduction to no	onlinear problems	: geometrica
	and material nonlinearity, solution methods, implementation aspects.		<u> </u>
132YNAK	Nonlinear Analysis of Materials and Structures	Z	2
Students becom	e acquainted with the concepts of linear stability and calculation of elastoplastic load capacity. Linear stability - evaluation of the critic	al load and buckli	ng shape.
Analysis of structur	es according to the 2nd order theory - equilibrium conditions on a deformed structure, initial stress matrix. Elastoplastic analysis of structure	uctures - evaluatio	on of the limi
load capacity, distri	bution of internal forces at the limit state - static incremental method, kinematic method. Solving stability and elastoplasticity problems b	y means of a gen	eral-purpose
	finite element program.		
132YPM2	Computer Analysis of Structures 2	Z	2
Limit state of frame	s. Stability analysis of structures. Second order theory. Beams and gridwork girders on elastic foundation. Plate and wall structures. D	ynamic analysis	of structures
	Verification of results.		
132YSEI	Seismic Engineeering	Z	2
	, principles of design of earthquake resistant structures. Methods of calculating the response of structures to earthquake loads accord	ng to Eurocode 8	
132YSSK	Reliability of Structures	Z	2
	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.		
132YUPM	General Principles of Mechanics	Z.ZK	4
	ial operators and their application in mechanics, Gauss and Green theorems. General structure of the basic equations of linear and r	,	-
	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.		
133B03D			
1330030	Concrete Structures 3D	Z,ZK	5
	Concrete Structures 3D Concrete structures with a focus on infrastructure	Z,ZK	5
133DISE	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar		
133DISE	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis.	Z,ZK Z	5
	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis	Z,ZK	5
133DISE 133DPM	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal.	Z,ZK Z Z	5 4 30
133DISE 133DPM 133YATK	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures	Z,ZK Z Z,ZK	5 4 30 4
133DISE 133DPM 133YATK	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a	Z,ZK Z Z,ZK	5 4 30 4
133DISE 133DPM 133YATK Detailed introductio	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory.	Z,ZK Z Z,ZK analysis of thin-wa	5 4 30 4 Iled concrete
133DISE 133DPM 133YATK	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures n to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a	Z,ZK Z Z,ZK	5 4 30 4
133DISE 133DPM 133YATK Detailed introductio	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory.	Z,ZK Z Z,ZK analysis of thin-wa	5 4 30 4 Iled concrete
133DISE 133DPM 133YATK Detailed introductio	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions	Z,ZK Z Z,ZK analysis of thin-wa	5 4 30 4 Iled concrete
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions.	Z,ZK Z Z,ZK analysis of thin-wa Z Z	5 4 30 4 lled concrete 2 2
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extension	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 n of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua	Z,ZK Z Z,ZK analysis of thin-wa Z Z	5 4 30 4 1ed concrete 2 2 ns.
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design	Z,ZK Z Z,ZK analysis of thin-wa Z Z I structural system Z	5 4 30 4 11ed concrete 2 ns. 2
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mnsory structures	Z,ZK Z Z,ZK analysis of thin-wa Z I structural system Z Z	5 4 30 4 100 2 ns. 2 2 2 2 2 2 2 2 30
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mnsory structures sed on fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal ana	Z,ZK Z Z,ZK analysis of thin-wa Z I structural system Z I structural system Z I structural system	5 4 30 4 100 2 ns. 2 2 2 2 2 2 2 2 2 2 2 2
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focus	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. The course is focused on concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mnsory structures sed on fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal ana design methods, material properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures	Z,ZK Z Z,ZK analysis of thin-wa Z I structural system Z I structural system Z allysis, loads, desig res.	5 4 30 4 100 2 2 2 2 2 2 2 2 2 2 30
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focus 133YPRK	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mnsory structures sed on fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal ana design methods, material properties of concrete and steel reinforcement at high temperatures, fire design of masonry structure Failures and Rehabilitation of Concrete Structures	Z,ZK Z Z,ZK analysis of thin-wa Z I structural system Z I structural system Z I structural system Z Z I structural system Z	5 4 30 4 100 2 2 2 2 2 2 2 2 2 2 2 30 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focuse 133YPRK The course focuse	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mnsory structures sed on fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal ana design methods, material properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures as on the description of failures of concrete structures, explanation of the causes of these failures and the design of remedial measure	Z,ZK Z Z,ZK inalysis of thin-wa Z I structural system Z I structural system Z I structural system Z elysis, loads, desig res. Z es. Methods of str	5 4 30 4 100 4 100 2
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focuse 133YPRK The course focuse	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mnsory structures eed on fire resistance of concrete and masory structures exposed to fire, design rules, thermal ana design methods, material properties of concrete and stell reinforcement at high temperatures, fire design of masonry structures es on the description of failures of concrete structures, explanation of the causes of these failures and the design of remedial measur structures are also discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of ben	Z,ZK Z Z,ZK inalysis of thin-wa Z I structural system Z I structural system Z I structural system Z elysis, loads, desig res. Z es. Methods of str	5 4 30 4 100 4 100 2
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focus 133YPRK The course focus existing concrete	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and concrete structures exposed to fire, design rules, thermal ana design methods, material properties of concrete and steel reinforcement at high temperatures, fire design of masonry structure set on the description of failures of concrete structures, explanation of the causes of these failures and the design of remedial measur structures are also discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of ben foundation structures are discussed. The course appropriately combines theoretical approaches with common practice.	Z,ZK Z Z,ZK analysis of thin-wa Z I structural system Z I structural system Z es. loads, desig res. Z es. Methods of structural ding moment and	5 4 30 4 100 2 2 2 2 2 2 2 2 2 2 2 2 30 30
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focus 133YPRK The course focus existing concrete 133YRZM	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and concrete structures sed on fire resistance of concrete and masonry structures: concrete and concrete structures sed on fire resistance of concrete and masonry structures and concrete structures sed on fire resistance of concrete and masonry structures: concrete and concrete structures sed on fire resistance of concrete and masonry structures: concrete and concrete structures sed on fire resistance of concrete and masonry structures: concrete and concrete structures sed on fire resistance of concrete and masonry structures and concrete structures set on the description of failures of concrete and steel reinforcement at high temperatures, fire design of masonry structure satisfy and Rehabilitation of Concrete Structures as on the description of failures of concrete structures, explanation of the causes of these failures and the design of remedial measure structures are also discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of been foundation structures are discussed. The course appropriately combines theoretical approaches with common practice. Reconstruction and strengthening of bridges	Z,ZK Z Z,ZK Inalysis of thin-wa Z I structural system Z I structural system Z	5 4 30 4 lled concrete 2 ns. 2 ns. 2 gn principles rengthening shear, and 2
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focuse existing concrete 133YRZM The course	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures in to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mnsory structures sed on fire resistance of concrete and masonry structures: concrete and concrete structures exposed to fire, design rules, thermal ana design methods, material properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures as on the description of failures of concrete structures, explanation of the causes of these failures and the design of remedial measur structures are also discussed. Surface repairs, strengthening of contactors, strengthening of structure lements to the effects of bene foundation structures are discussed. The course appropriately combines theoretical approaches with common practice. Reconstruction and strengthening of bridges ree focuses on the assessment of existing concrete and masonry bridges, determination of carrying capacity, design of rehabilitation	Z,ZK Z Z,ZK analysis of thin-wa Z I structural system Z I structural system Z slysis, loads, desig res. Z es. Methods of structural ding moment and Z and strengthenin	5 4 30 4 lled concrete 2 ns. 2 gn principles 2 rengthening shear, and 2 g.
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focuse existing concrete 133YRZM The course 133YRZM The course 133YRZM	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 In of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and concrete structures exposed to fire, design rules, thermal ana design methods, material properties of concrete and steel reinforcement at high temperatures, fire design of masonry structures structures are also discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of benefices of foundation structures are discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of bene- foundation structures are discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of ben- foundation structures are discussed. The course appropriately combines theoretical approaches with common practice. Reconstruction and strengthening of bridges rse focuses on the assessment of existing concrete and masonry bridges, determination of carrying capacity, design of rehabilitation Ultrahigh Performance Concretes	Z,ZK Z Z,ZK analysis of thin-wa Z z I structural system Z I structural system Z sulysis, loads, designers. Z es. Methods of structural ding moment and Z and strengthenin Z	5 4 30 4 lled concrete 2 ns. 2 ns. 2 gn principles 2 rengthening shear, and 2 g. 2
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focuse existing concrete 133YPRK The course focuse existing concrete 133YRZM The course 133YVHB The aim of the course	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures on to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 n of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mosory structures eed on fire resistance of concrete and masonry structures and concrete Structures exposed to fire, design of masonry structure structures are also discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of ben foundation structures are discussed. The course appropriately combines theoretical approaches with common practice. Reconstruction and strengthening of bridges rse focuses on the assessment of existing concrete and masonry bridges, determination of carrying capacity, design of rehabilitation Ultrahigh Performance Concretes rse is to present a special type of concrete that achieves great strength and high durability, which enables the realization of very thin is	Z,ZK Z Z,ZK analysis of thin-wa Z Z I structural system Z I structural system Z structural system Z es. Methods of structural ding moment and Z and strengthenin Z structures. The co	5 4 30 4 lled concrete 2 5 2 ns. 2 2 ns. 2 2 gn principles 2 crengthening shear, and 2 g. 2 g. 2 g. 2 g. 2 g. 2 g. 2 g. 2 g
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focuse existing concrete 133YPRK The course focuse existing concrete 133YRZM The course 133YRZM The cou	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 n of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mnsory structures sed on fire resistance of concrete and masonry structures: concrete and mnsory structures as on the description of failures and Rehabilitation of Concrete Structures as on the description of failures and Rehabilitation of Concrete Structures as on the description of failures and Rehabilitation of concrete failures and the design of remedial measur structures are also discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of bene foundation structures are discussed. The course appropriately combines theoretical approaches with common practice. Reconstruction and strengthening of bridges rese focuses on the assessment of existing concrete and masonry bridges, determination of carrying capacity, design of rehabilitation Ultrahigh Performance Concretes rese is to present a special type of concrete that achieves great strength and high durability, which enables the realization of very thin a concrete are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devote	Z,ZK Z Z,ZK analysis of thin-wa Z I structural system Z I structural system Z structural system Z and strengthenin Z structures. The co- of to the component	5 4 30 4 lled concrete 2 2 s. 2 2 3 3 3 4 2 3 3 3 3 4 2 3 3 3 3 3 3 3
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focuse existing concrete 133YPRK The course focuse existing concrete 133YRZM The cou 133YVHB The aim of the cou high performance	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures no to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 n of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mnsory structures structures are also discussed. Surface repairs, strengthening of Concrete Structures structures are also discussed. The course appropriately combines theoretical approaches with certers of concrete and Rehabilitation of Concrete Structures structures are also discussed. The course appropriately combines theoretical approaches with certers set on the description of failures of concrete and masony bridges, determination of carrying capacity, design of rehabilitation Failures and Rehabilitation of concretes with common practice. Reconstruction and strengthening of bridges ree focuses on the assessment of existing concrete and masony bridges, determination of carrying capacity, design of rehabilitation Ultrahigh Performance Concretes are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devoted for the subsequently accompanied by laboratory exercises, where the subsequently accompanied by laboratory exercises.	Z,ZK Z Z,ZK analysis of thin-wa Z I structural system Z I structural system Z structural system Z and strengthenin Z structures. The co- of to the component	5 4 30 4 lled concrete 2 2 ms. 2 2 gn principles 2 rengthening shear, and 2 2 g. 2 mponents o ents of high
133DISE 133DPM 133YATK Detailed introductio 133YBEX 133YBM2 Extensio 133YPMM 133YPNB The course is focuse existing concrete 133YPRK The course focuse existing concrete 133YRZM The cou 133YVHB The aim of the cou high performance	Concrete Structures 3D Concrete structures with a focus on infrastructure Diploma Seminar The topic of the assignment is individual, mostly related to the expected topic of the Diploma Thesis. Diploma Thesis In accordance with a thesis proposal. Applied Theory of Structures In to theoretical approaches to the effects of creep and shrinkage on structures. Principles of time-dependent analysis. Methods for the a structures, stability theory. Concrete under Extreme Conditions The course is focused on concrete and concrete structures under extreme conditions. Concrete Bridges 2 n of the field of concrete bridges. The technologies of bridge construction represent main part of the study. Specifications of individua Parametric Bridge Design Fire desgn og concrete and mnsory structures sed on fire resistance of concrete and masonry structures: concrete and mnsory structures as on the description of failures and Rehabilitation of Concrete Structures as on the description of failures and Rehabilitation of Concrete Structures as on the description of failures and Rehabilitation of concrete failures and the design of remedial measur structures are also discussed. Surface repairs, strengthening of contactors, strengthening of structural elements to the effects of bene foundation structures are discussed. The course appropriately combines theoretical approaches with common practice. Reconstruction and strengthening of bridges rese focuses on the assessment of existing concrete and masonry bridges, determination of carrying capacity, design of rehabilitation Ultrahigh Performance Concretes rese is to present a special type of concrete that achieves great strength and high durability, which enables the realization of very thin a concrete are presented and the main differences in composition of ordinary concrete and HPC. A large part of the lectures is devote	Z,ZK Z Z,ZK analysis of thin-wa Z I structural system Z I structural system Z structural system Z and strengthenin Z structures. The co- of to the component	5 4 30 4 lled concrete 2 2 ms. 2 2 gn principles 2 rengthening shear, and 2 g. 2 mponents of pents of high

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 cused on research of load bearing structures may be also the topic of the the project. The project is assigned by a final project superis	structural element	
134O02D	Steel Structures 2D	Z,ZK	5
Deepening of know	vledge received from courses 133NNK and 134OK01. Amplifying of theoretical knowledge in the field of steel grade selection, toughnes	s, global analysis o	f structures,
	ral systems, joint classification, and high strength steel and demanding composite steel and concrete structures. Complementation of I	•	
of steel and comp	osite structures and detailed design of industrial buildings and crane girders. Design of masts, towers, chimneys, tanks, silos and pipe	-	l structures,
134YDKM	pre-stressed steel structures and basis of design from aluminium alloys and stainless steel, and cable and membrane structu	Z	2
	Timber structures and bridges focused 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		gr i i o
134YHNK	Stainless steel and aluminium structures	Z	2
Subject YHNK cov	ers two parts: the first concerns design of structures from aluminium alloys, the second deals with stainless steel structures. Structures o	f aluminium alloys:	Introduction
	esigning of aluminium structures. Structures of stainless steel: Evolution of stainless steel materials/structures and examples of realize		
	ctures are described in a detail, including their properties. Dissimilarities in assessments of members under common loadings with re- th ultimate and serviceability limit states. In the end the possibilities concerning connections of stainless steel members, erection and	•	
described for bo	members are described.		1633 36661
134YNDK	Load-bearing timber roof constructions	Z	2
	ructures. Creation of numerical models for assessment of internal forces and deformations for main different roof systems and structures	s. Analysis of the sta	
and behaviour of	main individual elements and their design. Historic structures and their reconstruction. Designing typical structural details based on ca	rpentry joints. We	will discuss
	also using modern methods of joining elements of timber structures.		
134YNSK	Design of Glass Structures	Z,ZK	2
	ended for students of the master's program Civil Engineering, deepens the knowledge acquired in the subject 134YNKS. Extension of glass beams, columns and walls. Principles of designing structural elements made of glass according to normative documents, exper		-
	properties of glass, safety glass, use of software support for designing.		ormaterial
134YPMK	Design of Membrane Structures	Z	2
134YPOD	Fire Resistance of Steel and Timber Structures	Z	2
	The class gives introduction to fire modeling, fire safety and fire resistance of steel, steel-concrete composite and timber structural	elements.	
134YROK	Extending the Life of Steel and Timber Structures	Z	2
	bearing structures. Developments in the area of regulations and standardization. Causes of defects, malfunctions, survey of objects, static	-	
	trengthening, strengthening of steel and timber structures and strengthening of connections. Using of computers in reconstructions ar models.		
134YSMK	Stability and modelling of steel structures	Z	2
-	vers two parts. The first one deals with stability and strength of steel plates, the second one with stability and strengths of steel frame of steel structures are analysed including the importance of imperfections for a design of thin plated structures. Presented are principle		-
	eory of buckling of thin plates. The results are applied to the 4th class cross sections in harmony with Eurocode. Buckling due to norm	-	-
	bination is analysed in a detail. In the end the application of the results is shown together with design of necessary stiffeners. The second		-
and structure stal	pility. Possible global analysis methods are presented together with methods for compression and bending interaction for slender mem	nbers. In detail, spe	cific cases
	of lateral torsional buckling are explained including also tapered members.		
134YSOD	Connections of steel and timber structures The subject allows insight and ability to apply the knowledge related to structural connections and its application by softwar	Z	2
134YSOK	Special steel structures	Z	2
	g structures - actions, design, detailing. Silos - actions, behaviour, silos with rigid and non-rigid section. Masts - division, detiling, desig		
	calculation.	•	
135DISE	Diploma Seminar	Z	4
Deepening of know	vledge in the field according to the choice of the assignment as preparation for the Diploma Thesis, study of specialized literature and known		mentations,
4050014	preparation of theoretical research and variant solutions, or preparation for the implementation of an experimental program		
135DPM	Diploma Thesis Diploma Thesis by the department from those regularly announced by the department. It addresses, for example,		30 lated to the
	uction of geotechnical structures, civil engineering structures, special foundations for industrial, transport, housing and water managen		
	structures in complex cases and waste disposal structures. The thesis builds on and develops the findings of the thesis proje		
135DYGK	Dynamics of geotechnical structures	Z,ZK	4
	ds on the knowledge acquired by students of the Dynamics of Building Structures course. The student will get acquainted with the det		- 1
	uctures from natural and technical seismicity, will get an overview of the properties of dynamically loaded soils and rocks, including the		
inese properties.	In addition, the student will learn the basic procedures for assessing the effects of technical seismicity and earthquakes on selected foundations, frame and retaining walls, embankments, slopes, tunnels).	geolechnical struct	ures (siab
135GET	Geotechnics	Z,ZK	5
	h specific issues of building foundation, mastering the basic methods of technology of implementation of individual elements and struct		
	of their static assessment.		
135YGEM	Geotechnical monitoring	Z	2
Monitoring of struc	ctures and subsoil as a tool for confirmation of assumptions made at the design stage, selection of input data and reliability assurance of sensors and gathered data for back analyses and modelling of field performance.	. Relation between	application
135YGSM	Geotechnical Software for Numerical modelling	Z	2
	ainted with the Finite Element Method, the currently dominant tool for numerical modeling in Geotechnics. Emphasis is placed on intra		
	Method and their subsequent application to selected problems of Geotechnical Engineering. The course summarises the types of finite		
applications, mate	rial models suitable for the description of soil deformation, and selected specifics associated with numerical modeling in geotechnics. The	is knowledge is fur	ther applied
	in the modeling of foundation, embedded walls, and stability problems.		
135YMPK	Mechanics of underground structures	Z doopops the know	2 Iodao in tho
	intinuation of the course Underground structures and rock mechanics, which is part of the Bachelor's degree programme. The course Ind construction and provides practical experience in the design and implementation of underground structures. The student tries out the	-	-
	gained on a simple tunnel project. An integral part of the course is also an excursion to a completed underground construction in		

135YZAL	Basics of mining	Z	2		
	of Quarrying course introduces students to all the essential aspects of aggregate mining, an important part of the national economy, in	I I			
	way. Aggregates extracted and processed in various ways are essential raw materials for most construction industries.				
135YZKS	Soil structures	Z	2		
10012100	Principles of soil structures design		2		
136DISE	Diploma Seminar	Z	4		
	basic documents for the assignment of a master thesis and their processing. Lectures by experts from the practice (road design, const	- 1			
	about new procedures and software)	ruction technology,	mormation		
136DPM		Z	30		
	Diploma Thesis of diploma theses can be a project, traffic surveys, research of selected issues with application in practice for various technical solution	. – .			
	e functionality of various materials for pavements, etc. In terms of design, the most common topics of theses are, for example, the des		-		
-	of a selected section of a road (bypass, flyover), the design of a road network in a selected area of the city, the design of a new const	-			
	lesign of an airport, heliport, etc. In terms of pavement structures and road construction technologies, the most frequent topics of work				
	I solutions for asphalt or concrete pavements, including the relevant composite materials or input components (binders, aggregates, etc.				
	of a particular material or type of structure by laboratory methods, or carrying out simulations, etc.), accoccinent of th	obonavioai		
136S03D	Road construction 3D	Z,ZK	5		
	an engineering, solutions in built-up areas - reconstruction. Parking - solution methods, technical parameters and requirements, garage	I ' I	-		
	ss transport and its preferences. Pedestrian and bicycle traffic. Traffic signs. Adaptations for the blind and partially sighted, barrier-free				
136S04D	Road construction 4D	Z.ZK	4		
	the final professional course for students who have chosen to specialization in road construction. The course deepens the knowledge	ı ' I			
	d technical solutions of road structures including pavements and extends it to other special or otherwise specific technologies. The st				
or technologies an	technologies for asphalt pavements, concrete pavements, stone paved pavements and bridge pavements.		uceu io key		
		7	2		
136YEES	Environmental Aspects and Esthetics of Road Structures		2		
	ronmental terms, Laws 114/1991 and 100/2000, Detailed description of the EIA process from the point of view of the investor, the description of the EIA process from traffic historical development of amiltad cellulates	• ·			
	istics, noise from traffic and anti-noise measures, emissions and immissions from traffic, historical development of emitted pollutants ween increasing traffic intensity and decreasing emissions from better-quality vehicles, animal migration and its reasons, ways of final				
	rding to categories and owners, functioning of municipal and city authorities, competence of mayors, councils, councils and officials of	-			
	advantages and risks transition to electric cars, technical, economic and environmental aspects and risks, issues of transition to hydr				
	e Czech Republic, basics of automobile traffic modeling, aesthetics of off-road road design, landscape profile considerations, relations				
	t common mistakes in proposals, risks of ill-advised acceptance of data from CRMV for transport ex numbers, the principle of determ	-			
noigin promo, moo	of the vehicle fleet, the differences between static and dynamic composition in the data.	ining the dynamic (on poon on		
136YLET	Airports	7	2		
	rganization, data about airports, legislature, choice notions, movement of aeroplanes, flight and touch - down, assesment longitude RV	. – .	_		
	characteristics , ACN / PCN, protective zone, visual aids, traffic processes at the airport, structureof terminals and aprons, proposa		, geometrie		
136YMVZ	Pavement mechanics	Z	2		
	poment of road pavement mechanics, fundamental data for designing, characteristics of traffic load, thermic and water relation of subb	. – .	_		
-	pavement materials, pavement design methods - partition, development and possibilities. Stress and transformation analysis on road	-			
Subgrade, road	subgrade, pavement design specificity for different constructional types, road pavements with special loads.	pavement construc			
136YPPK	Intersection Highway Design	KZ	2		
	gn of interchange. Based on capacity assessment, evaluation of the most suitable form of interchange and its design processing. Rou		2		
137DISE	Diploma Seminar		4		
	th the teacher, a preliminary thesis topic is determined. The student should responsibly prepare for the creation of the work itself by stu	<u> </u>			
-	obtaining background materials (e.g. maps). Furthermore, he should determine the outline of the work and master the work with any		-		
137DPM	Diploma Thesis	Z	30		
		_			
The diploma thesis is the final complex work prepared by students at the end of their university studies. The diploma thesis describes the given issue in a broader context, in which the					
student demonstrates the ability to work independently and an engineering approach. The diploma thesis takes the form of either a project (reconstruction of a section of a railway line, study of new railway lines), a research (processing of an overview in a certain area) or a laboratory (including the execution and evaluation of specified laboratory tests), or a combined					
Sludy of new rallwa			a combined		
107// 70		KZ	2		
137YAZS	Project - Progressive application of substructure le subject is focused on the presentation of the latest knowledge and results of research and development in the field of railway under				
	o common practice or the regulatory base in the Czech Republic. It complements and expands students' knowledge from basic subject is inclusion of the regulatory base in the Czech Republic. It complements and expands students' knowledge from basic subject is inclusion of the regulatory base in the Czech Republic.	-	-		
		Z			
137YDKP	Diagnostics of rail transport construction		2		
-	railway track - Czech regulation 177/1995 as amended, regulations for assessing the operability of the lines, means of diagnostics of		ructure and		
	switches, railway substructure - ballast bed. Measurement of other track parameters. Examples of defects and shortcomings of the ra	-	0		
137YEAD	Ecological Aspects of Transport	Z	2		
	of noise and vibration on human. Assessment of varied transport noise Acoustic levels. Noise maps. Noise study. Traffic noise charac		t transport		
	ns. Propagation of noise. Ways of environment protection before adverse impacts of transport noise (urban, architectural, traffic-organ		-		
137Z02D	Railway structures 2D ividual types of railway stations, structural elements of railway stations, equipment for passenger and freight transport, connection to	Z,ZK	5		
mack design of ind	modernisation and optimisation of railway lines, design of tram and metro lines, ecological impacts of rail transport.	are Luropean fallw	ay network,		
1077000		7 71/	1		
137Z03D	Railway Structures 3D	Z,ZK	4 ole that are		
The subject is aim	ed at a detailed introduction to the construction and maintenance of railway lines. Students are introduced to working procedures and		us ulat are		
0400105	used for the construction of the railway bottom and top and for the establishment and maintenance of the geometrical position of t		4		
210DISE	Diploma Seminar	Z	4		
reparatory works	on diploma thesis elaboration. Literature review, study on problematics to be solved - practical cases in geotechnical laboratory and the	soser underground	u laporatory		
040001	(http://ceg.fsv.cvut.cz).	-			
210DPM	Diploma Thesis		30		
Students will get th	ne opportunity to organize complex process of experimental work from the beginning of production, experimental investigation to of the	e data. I hesis are	designed to		
	fit scientific and research activity of the Experimental Centre				

220DISE	Diploma Seminar	Z	4		
Preparatory works on diploma thesis elaboration. Literature review, study on problematics to be solved - practical cases in geotechnical laboratory and the Josef underground laboratory					
(https://www.stolajosef.cz).					
220DPM	Diploma Thesis	Z	30		
Diploma thesis elaboration with possible use of geotechnical laboratory and underground facility the Josef underground laboratory (http://ceg.fsv.cvut.cz).					
220YLPG	Geotechnical laboratory	Z	2		
A course dealing with practical exercise on geotechnical tests in laboratory and in-situ activities (The Josef underground laboratory, http://ceg.fsv.cvut.cz). It focuses on laboratory					

determination of soil and rock parametres necessary for geotechnical calculations and design - basic physical and hydrophysical properties, strength and deformation parametres.

For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 2025-09-03, time 01:35.