Study plan

Name of study plan: DOS bak.prez.21/22 (skok do 3.r.)

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Technology in Transportation and Telecommunications

Type of study: Bachelor full-time

Required credits: 180 Elective courses credits: 0 Sum of credits in the plan: 180

Note on the plan:

Name of the block: Compulsory courses Minimal number of credits of the block: 140

The role of the block: Z

Code of the group: 1.S.BP 20/21

Name of the group: 1.sem.bak.prez. (od) 20/21 (pro B3710)

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

Requirement courses in the group: In this group you have to complete 11 courses

Credits in the group: 30 Note on the group.

Note on the	Name of the course / Name of the group of courses					
Code	(in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11CAL1	Calculus 1 Olga Vraštilová, Tomáš Tasák, Magdalena Hykšová, Bohumil Ková, Ond ej Navrátil Bohumil Ková Ond ej Navrátil (Gar.)	Z,ZK	7	2P+4C+22E	Z	Z
11LA	Linear Algebra Lucie Kárná, Pavel Provinský, Martina Be vá ová Martina Be vá ová Martina Be vá ová (Gar.)	Z,ZK	3	2P+1C+10B	Z	Z
12ZYDI	Introduction to Transportation Engineering Vojt ch Novotný, Zuzana arská, Dagmar Ko árková	Z,ZK	2	1P+1C	Z	Z
18MTY	Materials Science and Engineering Nela Kr má ová, Jan Falta, Radim Dvo ák, Václav Rada, Jitka ezní ková, Jaroslav Valach, Jaroslav Valach Jaroslav Valach (Gar.)	Z,ZK	3	2P+1C+10B	Z	Z
11GIE	Geometry Pavel Provinský, Old ich Hykš, Šárka Vorá ová Old ich Hykš Old ich Hykš (Gar.)	KZ	3	2P+2C+12B	Z	Z
14ASD	Algorithm and Data Structures Jana Kaliková, Jan Kr ál, Tomáš Brandejský, Michal Je ábek, Marek Kalika, Zden k Lokaj, Alena Plašilová, Jan Procházka, Martin Šrotý, Vít Fábera Vít Fábera (Gar.)	KZ	3	0P+2C+8B	Z	Z
14KSP	Constructing with Computer Aid Martin Brumovský, Martin Fiala, Radek Kratochvíl, Lukáš Svoboda, Jan Vogl, Drahomír Schmidt Lukáš Svoboda Drahomír Schmidt (Gar.)	KZ	2	0P+2C+8B	Z	Z
18TED	Technical Documentation Jitka ezní ková, Vít Malinovský Jitka ezní ková (Gar.)	KZ	2	1P+1C+8B	Z	Z
15DPLG	Transportation Psychology Eva Rezlerová, Jana Štikarová	Z	2	2P+0C+6B	Z	Z
16UDOP	Introduction into Vehicles Zuzana Radová, Petr Bouchner	Z	2	2P+0C+8B	Z	Z
TV-1	Physical Education	Z	1		Z	Z

Characteristics of the courses of this group of Study Plan: Code=1.S.BP 20/21 Name=1.sem.bak.prez. (od) 20/21 (pro B3710)

11CAL1	Calculus 1	Z,ZK	7				
Sequence of real numb	Sequence of real numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dimensional Euklidean space and						
Cartesian coordinate sy	Cartesian coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several real variables.						

11LA Linear Algebra Z,ZK Vector spaces (linear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvability. Determinants and

their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.

12ZYDI	Introduction to Transportation Engineering	Z,ZK	2				
Role of transportation in	land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads	s, public mass tra	nsport. Negative				
impacts of transportation	n to environment and safety.						
18MTY	Materials Science and Engineering	Z,ZK	3				
Basic course of material	s science and engineering explains mechanical properties of structural materials based on their bonding forces and microstru	cture. However th	e main attention				
is paid to metals as the	most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and o	composites. Atten	tion is also paid				
to degradation processe	s in materials, to defectoscopy and to main mechanical tests.						
11GIE	Geometry	KZ	3				
Differential geometry of	curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory	of the motion, th	e velocity, and				
acceleration of a particle moving on a curved path.							
14ASD	Algorithm and Data Structures	KZ	3				
Students will be familiari	zed with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will ana	ze problems, pro	pose theoretical				
solutions to the set task	and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart a	and use the basic	s of Boolean				
algebra with forming the	conditions for the algorithms.						
14KSP	Constructing with Computer Aid	KZ	2				
"CAD systems" term det	ermination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common v	ork rules in grap	hic applications				
and CA systems. Co-ord	linated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possi	bilites, AutoCAD	environment				
profiles, drawings with ra	aster foundaments).						
18TED	Technical Documentation	KZ	2				
Technical standards, inte	ernational standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimension	al and geometrica	al accuracy,				
arrangement of drawing	sheets.						
15DPLG	Transportation Psychology	Z	2				
Subject of psychology ar	nd its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle co	nstruction. Psych	ological aspects				
of travel route and traffic	conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport of	peration.					
16UDOP	Introduction into Vehicles	Z	2				
Vehicles and transportat	ion systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and wa	ter transport. Alte	ernative means				
of transport. Lifting equip	oment and conveyors. Legislation.						
TV-1	Physical Education	Z	1				
		'					

Code of the group: 2.S.BP 20/21

Name of the group: 2.sem.bak.prez. (od) 20/21 (pro B3710)

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

Requirement courses in the group: In this group you have to complete 9 courses

Credits in the group: 30 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members)	Completion	Credits	Scope	Semester	Role
	Tutors, authors and guarantors (gar.)					
11CAL2	Calculus 2 Olga Vraštilová, Tomáš Tasák, Magdalena Hykšová, Ond ej Navrátil, Old ich Hykš Ond ej Navrátil Ond ej Navrátil (Gar.)	Z,ZK	5	2P+3C+20B	L	Z
11STAT	Statistics Pavel Provinský, Evženie Uglickich, Pavla Pecherková, Michal Matowicki, Natálie Blahitka, Ivan Nagy Pavla Pecherková Evženie Uglickich (Gar.)	Z,ZK	4	2P+2C+12B	L	Z
12ZTS	Railway Lines and Stations Lukáš Týfa, Petr Šatra, Martin Jacura, Tomáš Javo ík, Ond ej Trešl Lukáš Týfa (Gar.)	Z,ZK	4	2P+2C+10B	L	Z
18SAT	Structural Analysis Nela Kr má ová, Jan Falta, Jitka ezní ková, Daniel Kytý, Jan Vy ichl, Tomáš Doktor, Jan Šleichrt Daniel Kytý (Gar.)	Z,ZK	4	2P+2C+14B	L	Z
20SYSA	Systems Analysis Zuzana B linová, Ji í R ži ka, Petr Bureš Zuzana B linová (Gar.)	Z,ZK	5	2P+2C+14B	L	Z
14PRG	Programming Jana Kaliková, Jan Kr ál, Alena Plašilová, Jan Procházka, Martin Fiala, Lukáš Svoboda Jana Kaliková Jana Kaliková (Gar.)	KZ	2	0P+2C+8B	L	Z
17TEDL	Transport Technology and Logistics Vít Janoš, Michal Drábek, Zden k Michl, Milan K íž, Rudolf Vávra Zden k Michl Vít Janoš (Gar.)	KZ	3	2P+1C	L	Z
21ZALD	Basics of Air Transport Jakub Hospodka, Tomáš Tlu ho , Ji í Volt, Peter Olexa, Jan Slezá ek, Jakub Trýb	KZ	2	0P+2C+8B	L	Z
TV-2	Physical Education	Z	1		L	Z

Characteristics of the courses of this group of Study Plan: Code=2.S.BP 20/21 Name=2.sem.bak.prez. (od) 20/	//21 (pro B3/	10)

11CAL2 Calculus 2
Indefinite integral, Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in Rn. Parametric description of regular k-dimensional surfaces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations of the first order, linear differential equations with constant coefficients and its systems

11STAT Statistics Z.ZK 4

Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparametric tests Regression and correlation analysis

12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Ra	ilway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstruc	ture. Spatial layout of	railway lines.
Railway control sy	ystems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport.		
18SAT	Structural Analysis	Z,ZK	4
General system o	of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically deter	minate beams and sir	mple girders.
Principle of virtual	work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constr	uctions. Cross-section	al characteristics
of planar shapes.	Fiber polygons and chains.		
20SYSA	Systems Analysis	Z,ZK	5
Introduction to sys	stem sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interfa	ce tasks, processes, s	ystem behaviour
and its analysis, s	strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decis	ion tables, algorithms	for structural
tasks. Soft and ha	ard systems, methods for soft system analysis.		
14PRG	Programming	KZ	2
_	Programming ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python p	1	_
The Course Progr		rogramming language	e is expanded
The Course Progr	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python p	rogramming language	e is expanded
The Course Progr	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting an	rogramming language	e is expanded
The Course Progresser so that the payorking with date 17TEDL	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting at and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).	orogramming language and searching, tuples, s	e is expanded ets, dictionaries,
The Course Progress of the post of the pos	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting at and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML). Transport Technology and Logistics	orogramming language and searching, tuples, s KZ	e is expanded lets, dictionaries,
The Course Progress of the post of the pos	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML). Transport Technology and Logistics Insport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and free	orogramming language and searching, tuples, s KZ	e is expanded lets, dictionaries,
The Course Progressive Services of that the power working with date 17TEDL Basic terms in traceach transport model 21ZALD	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML). Transport Technology and Logistics ansport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and free odus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplicative.	orogramming language and searching, tuples, s KZ ght transport, organismon using various trans KZ	e is expanded ets, dictionaries, 3 ation of traffic in sport modus.
The Course Progressive Services of that the power working with date 17TEDL Basic terms in traceach transport model 21ZALD History, definitions	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting at and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML). Transport Technology and Logistics Insport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and free odus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication and Basics of Air Transport	orogramming language and searching, tuples, s KZ ght transport, organismon using various trans KZ rigation. Weight, balance	e is expanded ets, dictionaries, 3 ation of traffic in sport modus. 2 ce, performance.
The Course Progress that the powerking with date 17TEDL Basic terms in traceach transport model 21ZALD History, definitions Flight planning, of	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML). Transport Technology and Logistics Insport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and free odus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplicated Basics of Air Transport Is the step of the Python particular of the Python particular steps of the Python particular shall be and the particular of the Python particular shall be and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML). Transport Technology and Logistics Insport Technology and Logistics Basics of Air Transport Is the particular design of the Python particular particular shall be a structured by the Python particular particular shall be a structured by the Python particular pa	orogramming language and searching, tuples, s KZ ght transport, organismon using various trans KZ rigation. Weight, balance	e is expanded ets, dictionaries, 3 ation of traffic in sport modus. 2 ce, performance.

Code of the group: 3.S.BP 20/21

Name of the group: 3.sem.bak.prez. (od) 20/21 (pro B3710)

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

Requirement courses in the group: In this group you have to complete 8 courses

Credits in the group: 30 Note on the group:

Note on the grou	ρ.					
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
11FYZ	Physics Old ich Hykš, Zuzana Malá, Tomáš Vít , Jana Kuklová Zuzana Malá Zuzana Malá (Gar.)	Z,ZK	5	2P+2C+18B	Z	Z
12MDE	Transport Models and Transport Excesses Milan Dont, Josef Kocourek	Z,ZK	3	2P+1C+8B	Z	Z
17TGA	Graph Theory and its Applications in Transport Alena Rybi ková, Denisa Mocková, Dušan Teichmann	Z,ZK	4	2P+2C+12B	Z	Z
18PZP	Elasticity and Strength Nela Kr má ová, Jan Falta, Radim Dvo ák, Jitka ezní ková, Daniel Kytý, Jan Vy ichl, Tomáš Doktor, Jan Šleichrt, Tomáš Fíla,	Z,ZK	3	2P+1C+10B	Z	Z
20UITS	Introduction to Intelligent Transport Systems Ji í R ži ka, Patrik Horaž ovský, Kristýna Navrátilová, Viktor Beneš, Eva Haj iarová, Martin Langr, Vladimír Faltus, Pavel Hrubeš	Z,ZK	7	3P+2C+20B	Z	Z
12PPOK	Designing Roads, Highways and Motorways Petr Šatra, Josef Kocourek, Tomáš Pad lek, Petr Kumpošt	KZ	3	1P+2C+10B	Z	Z
14DATS	Database Systems Jana Kaliková, Jan Kr ál Jana Kaliková Jana Kaliková (Gar.)	KZ	2	1P+1C+10B	Z	Z
15JZ1A	Foreign Language - English 1 Eva Rezlerová, Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora Horá ková, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss,	Z	3	0P+4C+10B	Z	Z

11FYZ	of the courses of this group of Study Plan: Code=3.S.BP 20/21 Name=3.sem.bak.prez. (od) 2		
· · · · —	Physics	Z,ZK	Э
Kinematics, particle d	ynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.		
12MDE	Transport Models and Transport Excesses	Z,ZK	3
Parameters of the traf	fic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory o	f queues, shock w	aves. Quality of
transport and its asse	ssment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the conse	quences. Improvin	g of transport
safety and fluency.			
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4
Basic terms of graph	heory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in ot	her scientific disci	plines.
18PZP	Elasticity and Strength	Z,ZK	3
Tension and compres	sion. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolt	ed and welded joir	nts of structures
Analysis of deflection	curve of beams. Torsion of circular cross sections. Combined loading. Stability.		
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
Terminology and legis	lative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of i	nformation and tele	ecommunication
systems for ITS. Prince	iples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real exam _l	ples of possible ap	plications of the
principles of ITS.			

Designing Roads, Highways and Motorways Definition, types, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. Route in rural areas. Range of vision for stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device. Crossings, junctions, intersections 14DATS **Database Systems** Basic concepts of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrity of data, database queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW. 15JZ1A 3 Foreign Language - English 1 Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary

Code of the group: 4.S.BDOS VÝB R1 18/1

Name of the group: 4.sem.DOS 1.výb r p edm tu (od) 18/19

Requirement credits in the group: In this group you have to gain 4 credits

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

stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.

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
11EMOP	Electromagnetic Field and Optics Old ich Hykš, Zuzana Malá, Tomáš Vít Tomáš Vít Tomáš Vít (Gar.)	Z,ZK	4	2P+2C	L	Z
12DOPS	Traffic Surveys and Simulations	Z,ZK	4	2P+2C	L	Z

Characteristics of the courses of this group of Study Plan: Code=4.S.BDOS VÝB R1 18/1 Name=4.sem.DOS 1.výb r p edm tu (od) 18/19

11EMOP	Electromagnetic Field and Optics	Z,ZK	4				
Electric field. Electric cu	Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.						
12DOPS	Traffic Surveys and Simulations	Z,ZK	4				
Theory of traffic flow. Methods of monitoring - profile, spatially time. Automatic traffic counts. Security parameters - accidents, near-misses. Surveys in public transport. Overview of							
traffic microsimulation n	raffic microsimulation models. Getting to know the working environment applications. Explanation of movement of vehicles in the traffic system. Creating and simulation of microscopic						

traffic model. Evaluation of the output characteristics. 4D visualization model.

Code of the group: 4.S.BDOS VÝB R2 17/1

Name of the group: 4.sem.DOS 2.výb r p edm tu (od) 17/18

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

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

Credits in the group: 2 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11MDS	Collection and Processing of Traffic Data	KZ	2	2P+0C	L	Z
18TK	Theory of Structures	KZ	2	2P+0C	L	Z

Characteristics of the courses of this group of Study Plan: Code=4.S.BDOS VYB R2 17/1 Name=4.sem.DOS 2.vyb r p edm tu (od) 17/18

11MDS	Collection and Processing of Traffic Data	KZ	2			
Basic principles of traffic detection and data collection, specific problems of the field of traffic data. Data preprocessing and analysis for use in additional applications.						
18TK	Theory of Structures	KZ	2			
Deformation in plane, principle of virtual work. Force (flexibility) method. Aplication of force method to frame analysis. Displacement (stiffness) method. Simplified and general stiffness						
method. Mathematical foundations of elasticity. Static analysis of complex statically indeterminate structure. Energy methods for beam analysis. Lagrange variational principle. Winkler						

Code of the group: 4.S.BDOS VÝB R3 17/1

model of elastic foundation. Pasternak model of elastic foundation.

Name of the group: 4.sem.DOS 3.výb r p edm tu (od) 17/18

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

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

Credits in the group: 2 Note on the group:

	Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
	14PPD	Computer Aid of Transportation Projecting	KZ	2	0P+2C	L	Z
ſ	18POM	Advanced Materials	KZ	2	0P+2C	L	Z

Characteristics of the courses of this group of Study Plan: Code=4.S.BDOS VÝB R3 17/1 Name=4.sem.DOS 3.výb r p edm tu (od) 17/18

14PPD Computer Aid of Transportation Projecting ΚZ

Overview of CAx application for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, data exchange). Advanced blocks modification (attributes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic transition curve, cross and longitudinal section). Basics of 3D modelling.

18POM **Advanced Materials** ΚZ

The knowledge gained in primary materials course is further developed. In greater physical detail it explains dynamics of strcture defects, phase diagrams of binary systems and other concepts. Special processes of structure control are discussed. The gained knowledge is utilized on description of contemporary technologies of material production for key industrial

Code of the group: 5.S.BDOS 19/20

Name of the group: 5.sem.DOS bak.prez. (od) 19/20 (pro B3710)

Requirement credits in the group: In this group you have to gain 18 credits

Requirement courses in the group: In this group you have to complete 5 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
12MKOD	City Rail Transport Ond ej Trešl	Z,ZK	5	2P+1C	Z	Z
12ZELP	Railway Operation Martin Jacura, Tomáš Javo ík	Z,ZK	4	2P+2C	Z	Z
16DYJ	Vehicle Dynamics	Z,ZK	3	2P+1C	Z	Z
22PRES	Road Traffic Accidents Prevention	KZ	4	2P+1C	Z	Z
22UAN	Road Traffic Accidents Analysis Introduction	KZ	2	1P+2C	Z	Z

Characteristics of the courses of this group of Study Plan: Code=5.S.BDOS 19/20 Name=5.sem.DOS bak.prez. (od) 19/20 (pro B3710)

City Rail Transport City and suburban rail transport. Tram lines layout and city roads. Tram track geometry parameters. Tram track superstructure. Turnouts and other construction of tram lines. Tram stops and turn space. Underground and its basic characteristics. Underground nets in the world and undeground history in Prague. Underground track geometry parameters. Underground track superstructure and substructure. Underground stations, Suburban rail transport,

12ZELP Railway Operation Z.ZK

Legislation in railway transport. Railway vehicles. Railway signals and signal devices. Railway traffic organisation and operation. Simplified railway traffic operation. Railway vehicles brakes. Railway vehicles marking. Operation intervals. Theoretical graph of train running.

Vehicle Dynamics 16DY.J

Z,ZK

Application of mechanics. Wheel and axle suspension mechanism. Wheel to road positioning characteristics. Wheel - road contact. Skid and its characteristics. Longitudinal dynamics, acceleration and deceleration. Vertical dynamics, spring suspension, driving characteristics. Directional dynamics, gyroscopical characteristics. Driving stability conditions. Aerodynamic

22PRES Road Traffic Accidents Prevention

Basic relation causes - prevention, collision diagrams, causes of not giving way, initial speed and breaking influence on speed of impact, downhill grade, load transport and fixation, collisions with pedestrians, cyclists and motorcyclists, construction of vehicle breaks, winter conditions, inconvenient road parameters, visibility, anti-slide properties of road surface, solid barriers, assist systems, technical fault of vehicles.

22UAN Road Traffic Accidents Analysis Introduction K7

Important parameters of road infrastructure, typical vehicle dimensions, distance-time diagram, response time components, backward projection of accidental process, vehicle body post-crash deformation, impact influence on passengers, video documentation, problem who was the driver, documentation, marks analysis, limits of accidental analysis, cornering, critical maneuvring, technical view hindrances, visibility and discriminability, nightfall.

Code of the group: 5.S.BDOS VÝB R 19/20

Name of the group: 5.sem.DOS výb r p edm tu (od) 19/20 (pro B3710) Requirement credits in the group: In this group you have to gain 3 credits

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

Credits in the group: 3 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
12APE	Applied Ecology	Z	3	2P+0C	Z	Z
12VERD	Public Transport in Cities and Regions	Z	3	2P+0C	Z	Z

Characteristics of the courses of this group of Study Plan: Code=5.S.BDOS VÝB R 19/20 Name=5.sem.DOS výb r p edm tu (od) 19/20 (pro B3710)

12APE Applied Ecology

Basic ecological principles. The atmosphere, air pollution from transport, smog, traffic share of greenhouse gas emissions. Transport within the different components of the environment. Nature and landscape protection, conflict of highway construction and protected areas NATURA 2000. The current ecological problems of the present. Rating losses from transport,

12VERD Public Transport in Cities and Regions

especially in the context of traffic on the roads and delay construction of transport.

Public transport network design including determination of walking distances, characteristics of usable kind of transport, dimensioning transport capacity of lines, formation of lines, operational parametres of lines, objective way of quality evaluation of transport measures design.

Code of the group: 6.S.BDOS 17/18

Name of the group: 6.sem.DOS bak.prez. (od)17/18

Requirement credits in the group: In this group you have to gain 10 credits

Requirement courses in the group: In this group you have to complete 3 courses

Credits in the group: 10 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
12PPMK	Urban Road Traffic and Design Josef Kocourek, Tomáš Pad lek, Petr Kumpošt Josef Kocourek (Gar.)	Z,ZK	4	2P+2C	L	Z
17GEDS	Geography of Transport Systems Miroslav Marada Miroslav Marada (Gar.)	KZ	2	2P+0C+8B	B L	Z
22MEMT	Measurement Methods and Technology in Transportation Drahomír Schmidt, Michal Frydrýn, Luboš Nouzovský, Zden k Svatý Drahomír	KZ	4	2P+2C	L	Z

Characteristics of the courses of this group of Study Plan: Code=6.S.BDOS 17/18 Name=6.sem.DOS bak.prez. (od)17/18

12PPIMK	Urban Road Traffic and Design		4	
Composition of urban ro	ad, elements and routes for traffic, pedestrian and cycling transport, projection of intersections, roundabouts, calming of traff	lic, parking, preca	ution for blind	
& partially-sighted,	induction of traffic, organization and regulation of transport.			
17GEDS	Geography of Transport Systems	KZ	2	

Regional differentiation of the transport system. Sociogeographic regionalization and its relation to transport. Transport and local and regional development. Spatial interaction - theoretical and methodological framework. Mobility research - travel behavior, mode choice and the influence onto "modal-split." Modal competition. Practical use of transport-geographical analysis in transportation planning.

22MEMT Measurement Methods and Technology in Transportation KZ

Measurement methods in transport, their meaning and use; Geodetic basics in the Czech Republic; Angular, length and height measurements; Principles of mapping, accuracy and errors of geodetic measurements; Surveying and setting out; Challenges of localization, navigation and Global Navigation Satellite Systems; Laser scanning (terrestrial, mobile, UAV); Technical photography and photogrammetry; Dynamic measurements of vehicles; High-speed cameras;

Code of the group: 6.S.BDOS VYB1 17/18

Name of the group: 6.sem.DOS 1.vvb r p edm tu (od)17/18

Requirement credits in the group: In this group you have to gain 4 credits

Requirement courses in the group: In this group you have to complete 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
12OMHD	Public Transport Operation Jan Kruntorád, Martin Jareš, Petr Chmela	Z,ZK	4	2P+2C	L	Z
18DKS	Dynamics of Structures and Systems	Z,ZK	4	2P+2C	L	Z

Characteristics of the courses of this group of Study Plan: Code=6.S.BDOS VÝB1 17/18 Name=6.sem.DOS 1.výb r p edm tu (od)17/18

12OMHD	Public Transport Operation	Z,ZK	4

Project of public transport organisation, project of city public transport network, transportation survey, project of transport parametres, transport graph, route and stops of line, public transport priority, financing of public transport, quality of public transport.

18DKS Dynamics of Structures and Systems

Z.ZK

4

Vibration of systems with multiple degrees of freedom. Natural modes and natural frequencies. Method of stiffness constants, method of elastic constants, other numerical methods. Systems with continuously distributed mass. Matrix form of equations of vibration. Finite element method in dynamics of structures. Solving vibrations by superposition of natural modes Subspace iteration methods. Introduction to nonlinear vibrations.

Code of the group: 6.S.BDOS VÝB3 17/18

Name of the group: 6.sem.DOS 3.výb r p edm tu (od)17/18

Requirement credits in the group: In this group you have to gain 3 credits

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

Credits in the group: 3 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
12ZAR	Introduction to Architectural Design Karel Hájek	Z	3	2P+0C+8B	L	Z
18NMM	Numerical Methods in Mechanics	Z	3	2P+0C	L	Z

Characteristics of the courses of this group of Study Plan: Code=6.S.BDOS VÝB3 17/18 Name=6.sem.DOS 3.výb r p edm tu (od)17/18

12ZAR Introduction to Architectural Design Z 3
Urbanism and architecture of traffic systems. Bus and trolley-bus transport. Tramway and town tracks. Design of vehicles. Subway. Railway transport. Railway stations. Local communications. International airports.

18NMM Numerical Methods in Mechanics Z 3

Basics of the most used numerical methods in structural mechanics. Central difference method, finite element method, finite volume method, boundary element method. Time and spatial discretization schemes. Finite element method: derivation of the basic equations. Stiffness matrix, mass matrix, damping matrix for element and structure. Methods for solving systems of algebraic equations. Numerical integration. Programming the FEM.

Code of the group: 6.S.BDOS VYB2 17/18

Name of the group: 6.sem.DOS 2.výb r p edm tu (od)17/18

Requirement credits in the group: In this group you have to gain 4 credits

Requirement courses in the group: In this group you have to complete 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
16PAV	Passive Safety Zuzana Radová, Josef Mík Josef Mík (Gar.)	Z,ZK	4	2P+1C	L	Z
17SFID	Public Administration and Financing in Transport	Z,ZK	4	2P+1C+12B	L	Z

Characteristics of the courses of this group of Study Plan: Code=6.S.BDOS VÝB2 17/18 Name=6.sem.DOS 2.výb r p edm tu (od)17/18

16PAV Passive Safety Z,ZK 4

Road accident evaluation. Testing and legislation. Crash tests. Carbody properties. Injury mechanics. Restrain systems. Airbags. Road user safety. Mathematic modelling. Post collision safety systems.

17SFID Public Administration and Financing in Transport Z,ZK 4
Basic issues of transport and transport policy in the social context, environmental issues in transport, economical aspects of transport, public administration and financing of transport

Name of the block: Semestrální projekt Minimal number of credits of the block: 6

The role of the block: ZP

Code of the group: XB 4,5,6 13/14

Name of the group: Projekty bak. 4.5.6.sem. (od)13/14 - pro B3710

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

Requirement courses in the group: In this group you have to complete 3 courses

Credits in the group: 6 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11X31	Project 1	Z	2	0P+1C	L	ZP
12X31	Project 1	Z	2	0P+1C	L	ZP
14X31	Project 1	Z	2	0P+1C	L	ZP
I5X31	Project 1	Z	2	0P+1C	L	ZP
16X31	Project 1	Z	2	0P+1C	L	ZP
17X31	Project 1 Vít Janoš, Michal Drábek, Zden k Michl, Milan K íž, Rudolf Vávra, Alena Rybi ková, Denisa Mocková, Dušan Teichmann, Roman Št rba, Václav Baroch (Gar.)	Z	2	0P+1C	L	ZP
18X31	Project 1	Z	2	0P+1C	L	ZP
20X31	Project 1 Ji i R ži ka	Z	2	0P+1C	L	ZP
21X31	Project 1 Jakub Hospodka, Jakub Kraus, Andrej Lališ, Slobodan Stoji , Lenka Hanáková, Terézia Pilmannová, Peter Vittek, Natalia Guskova, Kate ina Grötschelová,	Z	2	0P+1C	L	ZP
22X31	Project 1	Z	2	0P+1C	L	ZP
23X31	Project 1 Milena Macková	Z	2	0P+1C	L	ZP
11X32	Project 2	Z	2	0P+2C	Z	ZP
12X32	Project 2	Z	2	0P+2C	Z	ZP
14X32	Project 2 Jana Kaliková, Jan Kr ál	Z	2	0P+2C	Z	ZP
15X32	Project 2	Z	2	0P+2C	Z	ZP
16X32	Project 2 Petr Bouchner, Tereza Kunclová	Z	2	0P+2C	Z	ZP
17X32	Project 2 Vít Janoš, Michal Drábek, Zden k Michl, Milan K íž, Rudolf Vávra, Alena Rybi ková, Denisa Mocková, Dušan Teichmann, Andrea Hrní ková,	Z	2	0P+2C	Z	ZP
18X32	Project 2	Z	2	0P+2C	Z	ZP
20X32	Project 2	Z	2	0P+2C	Z	ZP
21X32	Project 2 Jakub Hospodka, Jakub Kraus, Andrej Lališ, Slobodan Stoji , Lenka Hanáková, Terézia Pilmannová, Peter Vittek, Natalia Guskova, Lukáš Popek,	Z	2	0P+2C	z	ZP
22X32	Project 2	Z	2	0P+2C	Z	ZP
23X32	Project 2	Z	2	0P+2C	Z	ZP
11X33	Project 3	Z	2	0P+1C	L	ZP
12X33	Project 3 Dagmar Ko árková, Josef Kocourek, Tomáš Pad lek	Z	2	0P+1C	L	ZP
14X33	Project 3 Jana Kaliková, Jan Kr ál	Z	2	0P+1C	L	ZP
5X33	Project 3	Z	2	0P+1C	L	ZP
16X33	Project 3	Z	2	0P+1C	L	ZP
17X33	Project 3 Vít Janoš, Michal Drábek, Zden k Michl, Milan K íž, Rudolf Vávra, Alena Rybi ková, Denisa Mocková, Dušan Teichmann, Roman Št rba, Václav Baroch (Gar.)	Z	2	0P+1C	L	ZP
18X33	Project 3	Z	2	0P+1C	L	ZP
20X33	Project 3	Z	2	0P+1C	L	ZP
21X33	Project 3 Andrej Lališ, Slobodan Stoji , Lenka Hanáková, Terézia Pilmannová, Lukáš Popek, Iveta Kameníková, Milan Kameník, Marek Šudoma, Viktor Valenta,	Z	2	0P+1C	L	ZP
22X33	Project 3	Z	2	0P+1C	L	ZP
23X33	Project 3	Z	2	0P+1C	L	ZP
	of the courses of this group of Study Plan: Code=XB 4,5,6 13/14 Na	me=Projekty	bak. 4.5.	6.sem. (c	od)13/14 - p	
1X31	Project 1				Z	2
2X31	Project 1				Z	2
14X31	Project 1				Z	2

11X31	Project 1	Z	2
12X31	Project 1	Z	2
14X31	Project 1	Z	2
15X31	Project 1	Z	2
16X31	Project 1	Z	2
17X31	Project 1	Z	2
18X31	Project 1	Z	2
20X31	Project 1	Z	2

21X31	Project 1	Z	2
22X31	Project 1	Z	2
23X31	Project 1	Z	2
11X32	Project 2	Z	2
12X32	Project 2	Z	2
14X32	Project 2	Z	2
15X32	Project 2	Z	2
16X32	Project 2	Z	2
17X32	Project 2	Z	2
18X32	Project 2	Z	2
20X32	Project 2	Z	2
21X32	Project 2	Z	2
22X32	Project 2	Z	2
23X32	Project 2	Z	2
11X33	Project 3	Z	2
12X33	Project 3	Z	2
14X33	Project 3	Z	2
15X33	Project 3	Z	2
16X33	Project 3	Z	2
17X33	Project 3	Z	2
18X33	Project 3	Z	2
20X33	Project 3	Z	2
21X33	Project 3	Z	2
22X33	Project 3	Z	2
23X33	Project 3	Z	2

Name of the block: Compulsory courses in the program

Minimal number of credits of the block: 20

The role of the block: P

Code of the group: 4.S.BDOS 17/18

Name of the group: 4.sem.DOS bak.prez. (od)17/18

Requirement credits in the group: In this group you have to gain 20 credits

Requirement courses in the group: In this group you have to complete 5 courses

Credits in the group: 20 Note on the group:

	9					
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
11MSP	Modeling of Systems and Processes Bohumil Ková, Lucie Kárná, Jana Kuklová Jana Kuklová Bohumil Ková (Gar.)	Z,ZK	4	2P+2C+12B	L	Р
12SDK	Highways, Motorways and Intersections Josef Kocourek, Tomáš Pad lek, Petr Kumpošt Josef Kocourek (Gar.)	Z,ZK	4	2P+2C	L	Р
18KAD	Kinematics and Dynamics Vít Malinovský, Tomáš Fíla, Petr Zlámal	Z,ZK	4	2P+1C	L	Р
16DPY	Vehicle Technology	KZ	5	2P+2C	L	Р
15JZ2A	Foreign Language - English 2 Eva Rezlerová, Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora Horá ková, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss,	Z,ZK	3	0P+4C+10B		Р

Characteristics of the courses of this group of Study Plan: Code=4.S.BDOS 17/18 Name=4.sem.DOS bak.prez. (od)17/18

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11MSP	Modeling of Systems and Processes	Z,ZK	4					
System and subsystem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differential and differential equations.								
Linear and nonlinear sy	Linear and nonlinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function. Stability of LTI systems.							
Discretization of contin	Discretization of continuous systems. System interconnection.							
12SDK	Highways, Motorways and Intersections	Z,ZK	4					
Roads and motorways	network, transport output. Types of direction curves. Hairpin bend. Stopping sight distance and overtaking sight distance. Levels	of traffic service.	Design elements					
of crossroads and intersections. Crossroads. Roundabouts. Intersections. Special types of junctions. Capacity of crossroads and intersections. Structure of pavement of roads and								
motorways. Road engir	neering structures. Assessment of route alternatives.							
18KAD	Kinematics and Dynamics	7 7K	4					

Motion along a line, motion along a curve. Kinematics of rigid plane, kinematics of rigid body. Point mass kinematics, system of point masses. Point mass dynamics and system of point masses, equation of motion. Method of Newton. Princle of D'Alembert. Free and forced vibration with one degree of freedom. Viscous damping. Impact theory. Introduction to the solution of vibration with multiple degrees of freedom.

16DPY Vehicle Technology

KZ

Technical nomenclature in transportation technology. Vehicle in legislation. Design. Operation. Influence on environment. Vehicle and ecology. Traction engine characteristics

combustion engines, electric engines, change of energy principles. Powertrain construction. Power transmission.

15JZ2A Foreign Language - English 2 Z,ZK 3

Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 8

The role of the block: PV

Code of the group: Y1-BDOS 21/22

Name of the group: PVP bak.prez.DOS v 21/22 (B3710)

Requirement credits in the group: In this group you have to gain 8 credits

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

Credits in the group: 8
Note on the group:

Note on the o	•					
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
21Y1AM	Aeronautical Information Management (AIM)	KZ	2	2P+0C	Z	PV
20Y1AF	Alternative Forms of Transportation Project Financing	KZ	2	2P+0C	Z	PV
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2	2P+0C	Z	PV
14Y1AV	Animation and Visualization	KZ	2	2P+0C	L	PV
20Y1AE	Applied Electronics	KZ	2	2P+0C	Z	PV
14Y1BE	Barrierless Transport Jan Kr ál	KZ	2	2P+0C	L	PV
21Y1BC	Aviation safety and security Andrej Lališ, Natalia Guskova, Kate ina Grötschelová Andrej Lališ	KZ	2	2P+0C	L	PV
15Y1BO	Work Safety and Health Protection in Transportation Eva Rezlerová, Petr Musil	KZ	2	2P+0C	L	PV
11Y1BK	Error Detection Codes for Interlocking Systems Lucie Kárná	KZ	2	2P+0C	Z	PV
21Y1BS	Unmanned aircraft systems 1 Tomáš Tlu ho , Michal erný	KZ	2	2P+0C	L	PV
14Y1BM	Biometric Methods	KZ	2	2P+0C	Z	PV
15Y1DZ	History of Railway Eva Rezlerová, Martin Jacura	KZ	2	2P+0C	L	PV
12Y1DS	Project Documentation in Practice	KZ	2	2P+0C	Z	PV
17Y1EV	Public Sector Economy Veronika Faifrová	KZ	2	2P+0C	Z	PV
20Y1EK	Qualification in Electrical Engineering	KZ	2	2P+0C	L	PV
16Y1EN	Energy Requirements of Vehicles	KZ	2	2P+0C	L	PV
20Y1EA	Environmental Aspects of Transport	KZ	2	2P+0C	Z	PV
15Y1EH	European Integration within Historical Context Jan Feit	KZ	2	2P+0C	Z	PV
18Y1EM	Experimental Methods in Mechanics Daniel Kytý	KZ	2	2P+0C	Z	PV
15Y1FD	French Area Studies and Transportation	KZ	2	2P+0C	L	PV
14Y1HW	Computer Hardware	KZ	2	2P+0C	L	PV
15Y1HL	History of Civil Aviation Eva Rezlerová, Vladimír Plos	KZ	2	2P+0C	L,Z	PV
15Y1HD	History of City Mass Transport Eva Rezlerová, Milan Dont	KZ	2	2P+0C	Z	PV
12Y1HD	Traffic Noise Dagmar Ko árková, Libor Ládyš	KZ	2	2P+0C	L	PV
15Y1HE	Work Hygiene and Ergonomics in Traffic Eva Rezlerová, Petr Musil	KZ	2	2P+0C	Z	PV
16Y1IS	Interactive simulators and simulations	KZ	2	2P+0C	L	PV
12Y1KN	Combined Transportation Petr Nejedlý	KZ	2	2P+0C	Z	PV
20Y1KP	Communication and presentation skills Ji (R ži ka. Patrik Horaž ovský, Kristýna Navrátilová, Eva Haj iarová	KZ	2	2P+0C	Z	PV

23Y1KM	Crisis Management	KZ	2	2P+0C	Z	PV
23Y1KO	Quantum Physics and Optoelectronics	KZ	2	2P+0C	L	PV
17Y1LL	Logistics of Passenger and Freight Air Transport Petra Skolilová Petra Skolilová (Gar.)	KZ	2	2P+0C	L	PV
20Y1LN	Location and Navigation	KZ	2	2P+0C	L	PV
17Y1MD	Marketing in Transportation	KZ	2	2P+0C	Z	PV
18Y1MT	Engineering Materials	KZ	2	2P+0C	L	PV
21Y1MP	Jaroslav Valach Matlab for project-oriented study Vladimír Socha	KZ	2	2P+0C	Z	PV
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2	2P+0C	Z	PV
15Y1MK	Modern History in Context: Every Day Life and Transport Eva Rezlerová, Marie Michlová	KZ	2	2P+0C	L	PV
15Y1NE	German in the Economy and Society	KZ	2	2P+0C	Z	PV
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2	2P+0C	L	PV
20Y1OI	Fare Collection and Information Systems Patrik Horaž ovský, Milan Sliacky Milan Sliacky (Gar.)	KZ	2	2P+0C	L	PV
14Y1OJ	Object - oriented programming in JAVA	KZ	2	2P+0C	L	PV
14Y1OP	Operating System	KZ	2	2P+0C	Z	PV
17Y1OF	Personal Finance	KZ	2	2P+0C	Z	PV
20Y1OK	Road Lighting	KZ	2	2P+0C	L	PV
11Y1PV	František Kekula Parametrical and Multicriterial Programming Olga Vraštilová	KZ	2	2P+0C	Z	PV
17Y1PM	Personnel Management	KZ	2	2P+0C	L	PV
12Y1PC	Pedestrian and Cycling Transport Denis Liutov	KZ	2	2P+0C	L	PV
14Y1PG	Computer Graphics	KZ	2	2P+0C	L	PV
14Y1P2	Computer Aid of Transportation Projecting 2	KZ	2	2P+0C	Z	PV
18Y1PS	Computer Simulations in Mechanics Petr Zlámal	KZ	2	2P+0C	L	PV
14Y1PI	Corporate Information System	KZ	2	2P+0C	Z	PV
14Y1PZ	Advanced Data Processing in Spreadsheets	KZ	2	2P+0C	Z	PV
12Y1PD	Assessment of Transport Structures	KZ	2	2P+0C	Z	PV
20Y1PK	Product Quality Management Processes	KZ	2	2P+0C	Z	PV
14Y1PJ	C Programming Language	KZ	2	2P+0C	Z	PV
12Y1C1	Designing Roads in Civil 3D I Tomáš Honc	KZ	2	2P+0C	L	PV
12Y1C2	Designing Roads in Civil 3D II Tomáš Honc	KZ	2	2P+0C	Z	PV
14Y1PA	3D Modeling in AutoCAD	KZ	2	2P+0C	Z	PV
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2	2P+0C	L	PV
21Y1PA	Air Traffic Control Operating Procedures Terézia Pilmannová	KZ	2	2P+0C	Z	PV
12Y1PU	Organization Disposition of Railway Stations	KZ	2	2P+0C	L	PV
12Y1RU	Railway Lines Reconstruction	KZ	2	2P+0C	Z	PV
16Y1RE	Control and Electronic Vehicle Systems Josef Mik, P emysl Toman	KZ	2	2P+0C	Z	PV
21Y1RZ	Human Resources Management	KZ	2	2P+0C	L	PV
17Y1ST	Titan Simulation	KZ	2	2P+0C	L	PV
20Y1SC	Sensors and Actuators	KZ	2	2P+0C	L	PV
17Y1SL	Sociology of Human Resources	KZ	2	2P+0C	Z	PV
11Y1SI	Transportation Software Engineering Martin P ni ka	KZ	2	2P+0C	Z	PV
16Y1KS	Quality and Reliability of Vehicles Jaroslav Machan, David Lehet	KZ	2	2P+0C	Z	PV
12Y1SU	Road Management and Maintenance Dagmar Ko árková, Otakar Vacín	KZ	2	2P+0C	L	PV
17Y1SK	Urban and Regional Rail Transport Systems Ji í Pospíšil Ji í Pospíšil (Gar.)	KZ	2	2P+0C	L	PV
21Y1TH	Aircraft Technical Handling Peter Olexa	KZ	2	2P+0C	Z	PV

11Y1TG	Graph Theory Lucie Kárná Lucie Kárná (Gar.)	KZ	2	2P+0C	L	PV
14Y1TI	Creating Interactive Internet Applications	KZ	2	2P+0C	L	PV
14Y1UP	Editing of Theses in MS Word	KZ	2	2P+0C	L	PV
18Y1UK	Introduction of Rail Vehicles Jitka ezní ková, Josef Kolá	KZ	2	2P+0C	L	PV
23Y1VS	Negotiation and Cooperation Milena Macková	KZ	2	2P+0C	Z	PV
14Y1VM	Development of Applications for Mobile Devices	KZ	2	2P+0C	Z	PV
16Y1VT	Development in Railroad Vehicles	KZ	2	2P+0C	L	PV
14Y1WG	Webdesign	KZ	2	2P+0C	Z	PV
14Y1W1	Webdesign 1	KZ	2	2P+0C	Z	PV
14Y1W2	Webdesign 2	KZ	2	2P+0C	L	PV
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2	2P+0C	L	PV
14Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2	2P+0C	L	PV
11Y1ZM	Foundation of MATLAB Programming Šárka Vorá ová Šárka Vorá ová Sárka Vorá ová (Gar.)	KZ	2	2P+0C	L	PV
14Y1ZJ	Fundamentals of programming in JAVA	KZ	2	2P+0C	Z	PV
12Y1ZU	Principles of Urbanism Karel Hájek	KZ	2	2P+0C	Z	PV
15Y1ZV	East-West dichotomy: Prelude to the Cold War Eva Rezlerová, Marie Michlová	KZ	2	2P+0C	Z	PV
16Y1ZL	Vehicle Testing, Legislation and Construction Zuzana Radová. Josef Mik	KZ	2	2P+0C	Z	PV

121 120	Karel Hajek	112		21 100		1 V
15Y1ZV	East-West dichotomy: Prelude to the Cold War Eva Rezlerová, Marie Michlová	KZ	2	2P+0C	Z	PV
16Y1ZL	Vehicle Testing, Legislation and Construction Zuzana Radová, Josef Mík	KZ	2	2P+0C	Z	PV
Characteristics of the	courses of this group of Study Plan: Code=Y1-BDOS 21/22 Na	me=PVP bak	c.prez.D0	OS v 21/2	2 (B3710)	
21Y1AM Aer	onautical Information Management (AIM)				KZ	2
	of AIS and AIM. Transition from AIS to AIM. Regulatory base. Provision of AIS/AIM in	•			,	
the Czech Rep. AIRAC Syste	m. NOTAM messages.PIB (Pre-flight Informtion Bulletin). AIC (Aeoronautical Inf. Circu	lars). Aeronautica	al Charts. E	AD (Europer	na AIS Databa	ase). QMS
(Quality Mng. System). ADQ	(Aeronautical Data Quality). AIXM (Aeronautical Inf. Exchnage Format).					
20Y1AF Alte	ernative Forms of Transportation Project Financing				KZ	2
In will be specifed such forms	s of financing in transportation and telecomunications, where the public sector body pe	erform the final de	btor, i. e. de	bt payments	come from it	s budget but
the final debtor is not a direct	participant of the transaction and it is not the counterparty of the financial institute which	ch provides the fu	ınding. Issu	e of securitie	s as an alter	native source
of transportation and telecom	unication projects.					
18Y1AM Ana	atomy, Mobility and Safety of Man				KZ	2
Survey of tissues. Anatomical	structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical st	tructure of muscle	s. Blood cir	culation and	nervous syste	em. Structure
and biomechanics of muscula	ar-skeletal system. Injury of human organs and musculo-skeletal system during traffic	accidents. Mobilit	y of ill and i	njured man	and his treatn	nent. Human
joint prostheses. Protective m	neans and traffic safety regulations.					
14Y1AV Ani	mation and Visualization				KZ	2
Advanced modifications and r	modeling of NURBS, Patch objects, selection of objects (according to filter and properti-	es). 3D Studio MA	AX systems	and Space \	Varp objects.	Atmospheric
and other effects, rendering fi	ilters, Motion blur, advanced animations, Motion panel. Modeling for morphing and ani	mation, bone forn	nation, anin	nation using	Inverse Kiner	natics.
20Y1AE App	blied Electronics				KZ	2
Basic electronic semiconduct	or components, their principles, characteristics and typical connection diagrams. Semi	iconductor PN jur	nction diode	s, transistor	s, thyristor, op	erational
amplifiers, basic logic gates. I	Functions of basic electronic circuits and methods for their designs (rectifiers, voltage	regulator with Zei	ner diode, t	ransistor as	an amplifier, o	perational
amplifier as an inverting and	noninverting amplifier).					
14Y1BE Bar	rierless Transport				KZ	2
The issue of barrierless acces	ssible public transportation in terms of architectural barriers and also for transportation-	technological poi	nt of view. S	tudents will (gain theoretic	al knowledge
	ads, railway stations, public transport stops, terminal buildings, vehicles, public transport	, information and	orientation	systems and	transportatio	n technology.
Theoretical knowledge will be	e supplemented by practical examples.					
21Y1BC Avia	ation safety and security				KZ	2
History of safety and security	development in aviation. Modern tools for safety and security management. Research	and developmer	nt of safe ar	d secure sy	stems.	
15Y1BO Wo	rk Safety and Health Protection in Transportation				KZ	2
Fundamental legislative, defir	nition of terms, risks and possible health damage, working conditions and health prote	ction with focus o	n transport	ation. Health	protection pr	ogrammes,
health insurance of home and	d foreign business trips, statistics, working practice.					
11Y1BK Erro	or Detection Codes for Interlocking Systems				KZ	2
Safe communication and met	hods for its assuring. Safety codes - linear codes, cyclic codes, BCH codes, Reed-So	lomon codes. Tra	nsmission o	channels, de	tection of tran	smission
errors, probability of undetect	ed error. Design and assessment of detection codes; requirements of the European st	tandard EN 5015	9.			
21Y1BS Unr	manned aircraft systems 1				KZ	2
Unmanned Aviation Developr	ment. Aircraft design. Legislation in force in the Czech Republic. Planning and executio	on of the flight. Air	space divis	ion. Operatio	nal risks and	operational
procedures. Practical flights.						
14Y1BM Bio	metric Methods				KZ	2
Basic biometric terms, auther	ntication methods, principles and performance measurement of biometric systems, over	erview of biometr	ic technolog	gies, hand ge	eometry, iris r	ecognition,
•	and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recogn	nition, skin spectro	oscopy, beh	avioral meth	ods, the use	of biometrics
	ety and risks of biometric technologies.					
l l	tory of Railway				KZ	2
•	railways, railway network development in the 2nd half of 19th century, regional railway					
	pment in the 2nd half of 20th century, high-speed railway origins, railway lines closing, i	mportant long-dis	tance train	connections,	railway lines	construction,
railway accidents, railway jun	ctions. Excursions and projections.					

12Y1DS Project Documentation in Practice	KZ	2
Project documentation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining process	ss. Budget and pri	cing. Practical
creation of some project documentation parts. 17Y1EV Public Sector Economy	KZ	2
Economic and financial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assessment of	1	
tax system of the CR, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding		
20Y1EK Qualification in Electrical Engineering	KZ	2
Practical experience with measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock haza	-	-
voltage, maximum allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legis in relation to health and safety and electrical engineering.	lation, standards a	and regulations
16Y1EN Energy Requirements of Vehicles	KZ	2
Dynamics and the driving inertial of the vehicles. Types of energy - kinetic, static, heat, chemical and others. Ways of energy change into kinetic ene	1	
drive, steam engine, air engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW analysis.	0,	<i>,</i>
20Y1EA Environmental Aspects of Transport	KZ	2
State of the atmosphere, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabil		
Air quality, main pollutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp		
15Y1EH	KZ	2 nrinciples and
goals. Europe after Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and		
New quality of French-German relationship - a driving power of starting European integration.	•	·
18Y1EM Experimental Methods in Mechanics	KZ	2
The purpose and role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destruct	-	- 1
experimental procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. I	Fatigue and lifetim	e prediction.
Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement. 15Y1FD French Area Studies and Transportation	KZ	2
France - geography and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tr	1	
French society and culture. Current political system. System of education, studying in France. Selected authors of French literature. French gastrono		gy.
14Y1HW Computer Hardware	KZ	2
Computer architecture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate	e parts designing	controllers,
arithmetic and logical units, I/O subsystem.		
15Y1HL History of Civil Aviation	KZ	2
Beginnings of flying, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development World airports. Famous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era	-	
aviation. Modern era of civil aviation. Airline companies. Supersonic flying.		
15Y1HD History of City Mass Transport	KZ	2
History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current tren	nds and developm	
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21Y1MP	Matlab for project-oriented study	KZ	2
	s focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises		-
	sed on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvem	ent of students' N	latlab skills.
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2
	ng - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipe	elines, and distribu	ition lines.
· · · · · · · · · · · · · · · · · · ·	ndering - physical and material properties, lighting sources. MKP - visual example.		
15Y1MK	Modern History in Context: Every Day Life and Transport	KZ	2
	odern history of every day life, science, technology and transport in a wider context.		
15Y1NE	German in the Economy and Society	KZ	2
	ocial issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic	analysis of texts.	Discussion on
selected topics.			
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2
	ystems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, s	safety of critical ob	jects and critical
infrastructures.			
20Y1OI	Fare Collection and Information Systems	KZ	2
	in public transport and their components (on-board units, validators, turnstiles,). Information systems and their component		ables, maps,
	s (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parking		
14Y1OJ	Object - oriented programming in JAVA	KZ	2
_	psulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters)		
	Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda ex		
14Y1OP	Operating System	KZ	2
	n GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Program		
	programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, grap	phic editors, soun	d, video and
	s management. Safe and secure configuration of OS. Remote administration.		
17Y1OF	Personal Finance	KZ	2
Personal finance (budge	et, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of ho	ousing (rent, mort	gage, savings,
consumer loans, refinar	cing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability a	and adequacy), se	curing the future
(retirement savings and	insurance).		
20Y1OK	Road Lighting	KZ	2
Basic lighting quantities	and terms, street lighting components (luminaires, control cabinets for street lighting, street lighting cables), characteristics of l	, uminaires (lifetime	of light sources,
light distribution), stand	ards, measurement of illuminance and luminance in road lighting, tunnels, conceptual approach to street lighting design, ligh	ting calculations i	n DIALux and
Relux, street lighting co	ntrol systems.		
11Y1PV	Parametrical and Multicriterial Programming	KZ	2
Solution to the problem	of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints	Computation of	efficient solution.
17Y1PM	Personnel Management	KZ	2
Human sources, work g	roup, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, intercul	ı Itural communicat	ion.
12Y1PC	Pedestrian and Cycling Transport	KZ	2
	Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle ro	oute layout and de	sign parameters
for cyclists. Separation	Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle ro of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossir	-	
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crossroads. Traffic signs	of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing and road marking for cyclists.	ngs with other tran	nsport modes,
crossroads. Traffic signs	of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing and road marking for cyclists. Computer Graphics	ngs with other tran	nsport modes,
crossroads. Traffic signs 14Y1PG Basic formats of graphic	of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing and road marking for cyclists. Computer Graphics and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editing and mutual conversion.	ngs with other tran	nsport modes,
crossroads. Traffic signs 14Y1PG Basic formats of graphilevel scope) using layer	of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing and road marking for cyclists. Computer Graphics and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with eds, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.	ngs with other tran	asport modes, 2 ithin the user
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crossroads. Traffic signs 14Y1PG Basic formats of graphic level scope) using layer 14Y1P2 Overview of CAx applic modification (attributes, section). Basics of 3D n	of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing and road marking for cyclists. Computer Graphics and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with edits, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards. Computer Aid of Transportation Projecting 2 attion for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic transpodelling.	KZ data exchange).	2 ithin the user 2 Advanced blocks -and longitudinal
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	Designing Roads in Civil 3D I	KZ	2
	o the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go throu , from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. Th	-	-
	building design in the real-life profession.		
l l	Designing Roads in Civil 3D II	KZ	2
	to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go throu	-	-
·	, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The students learn to design intersections.	ie previousiy acqu	iired skiiis are
	3D Modeling in AutoCAD	KZ	2
•	tric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, objects	ct data creation, v	ork with data
	database. Basic definition of work with lights, materials and reflexes. Models presentation.	KZ	2
	Operation, Construction and Maintenance of Vehicles uction. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measure		
General principles of en			
	Air Traffic Control Operating Procedures	KZ	2
	ne ATC simulator with the following focus - getting familiar with the simulation environment, acquiring basic habits, aircraft ide rance, use of RNAV points. Practical exercises focused on the basis of vectoring, timely application of vertical spacing, EST		- 1
	ACH airspace, arrivals, departures and conflict solutions.	and REV moodag	o tranomicolom
12Y1PU	Organization Disposition of Railway Stations	KZ	2
-	senger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zo		ation yards.
	ology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic railway n Railway Lines Reconstruction	KZ	2
	rational, maintaining lines and stations, geometrical alignment of railway line, vehicles for railway superstructure and substru		_
	ons, preparation of railway lines reconstruction and maintenance, process of ralway line reconstruction.		
	Control and Electronic Vehicle Systems	KZ	2
	regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disa Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control,	_	
comfort systems.	Lieutic dive. Vehicle communication bus (CAN, Lin, Flexicay, 130bus, KWF2000 protocole etc.). Vehicle electronic control,	salety, communic	alion and
	Human Resources Management	KZ	2
=	esources in the organization and related disciplines file. Substance, importance and challenges of human resources manage		
	esource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and cies of employees. Education of employees. Planning career management.	remuneration of s	staff. Positioning,
	Titan Simulation	KZ	2
	game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same produ		
	and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequent	ices of their decis	ions by the form
or financial corporate rep	ports and they use this information for other business decisions. Sensors and Actuators	KZ	2
	actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor		
state (temperature, hum	idity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.		
	Sociology of Human Resources	KZ	2
Human resources and th of the organization.	neir importance, work group as a special kind of social group, communication, personal management, modern management, h	iuman resources p	planning, culture
	Transportation Software Engineering	KZ	2
	are engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implei	mentation using fo	rmal techniques
and practical usuage.	O E IDEATE OVICE	1/7	
	Quality and Reliability of Vehicles error in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability.	KZ Key legislation FM	2 MFA (Failure
	sis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other methods		,
	ms of quality and reliability, data collection.		
	Road Management and Maintenance	KZ	2
-	nership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented develo strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and re	•	
•	restment activity in highway engineering.		
	Urban and Regional Rail Transport Systems	KZ	2
- :	ort demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, ble. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transp	_	-
marketing.	ne. Venicle diculation cleation. Optimizing driver shifts and arranging them in turius. Effects of partier-free and public transp	ort preferences. I	rie loie oi
	Aircraft Technical Handling	KZ	2
	ing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and unlo		ment for
	and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and technical progress.		2
11Y1TG Basic concepts and term	Graph Theory hinology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees,	KZ minimum spannir	2 ng tree, shortest
•	ath, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence	•	• .
	tational complexity, dealing with NP-complete problems, heuristic approach.	1	
	Creating Interactive Internet Applications language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions.	KZ	on programmed
in PHP language.	ianguago i i ii . Overview or i i ii - ianguage syntax, anu iunuturis. Anarysis or iinisneu suripts anu uemonstation or solutions.	rour own applicati	on programmed
	Editing of Theses in MS Word	KZ	2
	ced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, cre		
	etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless concentrate mainly on writing a thesis.	s editing dissertati	ons and theses,
oo mar moy are able to t	constitution mainly on mining a moon.		

18Y1UK Introduction of Rail Vehicles	KZ	2
Basic characteristics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motic	l .	ns. Rolling and
track resistance. Total running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail veh		_
and electric drive. Design concept rail vehicles and drive of wheel set.	•	
23Y1VS Negotiation and Cooperation	KZ	2
Code of conduct for negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Ir	l l	_
Principles of negotiation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", sp		
trust.		aag, a
14Y1VM Development of Applications for Mobile Devices	KZ	2
Object oriented programming, Java programming language, development environment, operating system Android, development application - widge	1	1
permissions, services, GUI.	ets, containers, tille	aus, menu,
	KZ	2
16Y1VT Development in Railroad Vehicles	1	_
Railroad vehicles traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal	transportation. Criti	cal situation
assesment. New materials in design. International standardization.	1/7	
14Y1WG Webdesign	KZ	2
Students will learn the basics of HTTP communication, URL and addressing, HTML5 markup language, advanced CSS3 techniques, accessible a	nd usable web rule	s, responsive
webdesign, content management systems, web server installation + configuration directives. The subject matter will be trained on examples.		
14Y1W1 Webdesign 1	KZ	2
Students will learn the basics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web acces	sibility and usability	, CSS properties
and selectors, the issue of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practice	ed on practical exar	nples.
14Y1W2 Webdesign 2	KZ	2
Students will learn advanced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, we	eb server installatio	n + configuration
directives. Topics will be practiced on practical examples.		
16Y1ZG Introduction into Applied Computer Graphics	KZ	2
Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour	schemes, models,	principles of 2D
and 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW ba		
graphics software.		
14Y1ZM Fundamentals of parametric and adaptive modeling	KZ	2
Basics of work at products and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models f		_
from and to another systems. Fundamentals of assemblies creation.	.o 25 onotorios ii	portana oxport
11Y1ZM Foundation of MATLAB Programming	KZ	2
To explain the principle of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators	1	_
control flow, inputs and outputs, graphics, optimization and program code debugging.	, manices and elem	ients operations,
	1/7	
14Y1ZJ Fundamentals of programming in JAVA	KZ	2
Introduction to the Java SE Platform. IDE Installation and First Project. Comments. Variables and Type System. Operators. User Input and Parsing.		
Chain and Mathematical Methods. Terms. Relational Operators and Switches. Cycles for, while, foreach. Field - declaration, initialization, methods	for field work. ASCI	I. Functions,
parameters, return value, recursion. Program creation.		_
12Y1ZU Principles of Urbanism	KZ	2
Survey on history of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Sparse	acial arrangement of	of settlements.
Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.		
15Y1ZV East-West dichotomy: Prelude to the Cold War	KZ	2
Historical prologue, evolution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and co	ontinuity of the inter	national relations
in the end of 19th century and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress	s, the causes and c	onsequences.
Economic and financial history. Social changes. Discussions on texts, sources.		
16Y1ZL Vehicle Testing, Legislation and Construction	KZ	2
Vehicle, bus and motorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of pers	1	1
legislation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical modelling in terms.		,
	-	

Name of the block: Jazyky

Minimal number of credits of the block: 6

The role of the block: J

Code of the group: JZ-B-3,4 16/17

Name of the group: Jazyk bak. 5., 6.sem. (od) 16/17 (pro B3710)

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

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

Credits in the group: 6 Note on the group:

Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their Code Completion Credits Scope Semester Role members) Tutors, authors and guarantors (gar.) Foreign Language - French 3 15JZ3F 0P+4C+10B Ζ Ζ Eva Rezlerová, Irena Veselková Foreign Language - Italian 3 Ζ Ζ 15JZ3I 0P+4C+10B J Foreign Language - German 3 Eva Rezlerová, Jana Štikarová, Martina Navrátilová 15JZ3N Ζ 3 0P+4C+10B Ζ

15JZ3R	Foreign Language - Russian 3 Eva Rezlerová, Marie Michlová	Z	3	0P+4C+10B	Z	J
15JZ3S	Foreign Language - Spanish 3 Eva Rezlerová, Nina Hricsina Puškinová	Z	3	0P+4C+10B	Z	J
15JZ4F	Foreign Language - French 4 Eva Rezlerová, Irena Veselková	Z,ZK	3	0P+4C+10B	L	J
15JZ4I	Foreign Language - Italian 4 Eva Rezlerová	Z,ZK	3	0P+4C+10B	L	J
15JZ4N	Foreign Language - German 4 Eva Rezlerová, Jana Štikarová, Martina Navrátilová	Z,ZK	3	0P+4C+10B	L	J
15JZ4R	Foreign Language - Russian 4 Eva Rezlerová, Marie Michlová	Z,ZK	3	0P+4C+10B	L	J
15JZ4S	Foreign Language - Spanish 4 Eva Rezlerová, Nina Hricsina Puškinová	Z,ZK	3	0P+4C+10B	L	J

Characteristics of the courses of this group of Study Plan: Code=JZ-B-3,4 16/17 Name=Jazyk bak. 5., 6.sem. (od) 16/17 (pro B3710)

Foreign Language - French 3 Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.

Foreign Language - Italian 3

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.

Foreign Language - German 3

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.

15JZ3R Foreign Language - Russian 3

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its

15JZ3S Foreign Language - Spanish 3

features. Practice of oral and written presentation.

Ζ

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.

15JZ4F Foreign Language - French 4 Z,ZK

3

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.

15JZ4I Foreign Language - Italian 4 Z,ZK

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its

features. Practice of oral and written presentation. Foreign Language - German 4 15JZ4N

Z,ZK

3

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.

15JZ4R Foreign Language - Russian 4

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.

Foreign Language - Spanish 4

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.

List of courses of this pass:

Code	Name of the course	Completion	Credits			
11CAL1	Calculus 1	Z,ZK	7			
Sequence of real n	umbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dim	ensional Euklidear	n space and			
Cartesian coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several real variables.						
11CAL2	Calculus 2	Z,ZK	5			

Indefinite integral, Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in Rn. Parametric description of regular k-dimensional surfaces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations of the first order, linear differential equations with constant coefficients and its systems

11EMOP	Electromagnetic Field and Optics Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.	Z,ZK	4
11FYZ	Physics Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.	Z,ZK	5
11GIE Differential geomet	Geometry try of curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory of acceleration of a particle moving on a curved path.	KZ of the motion, the v	3 velocity, and
11LA	Linear Algebra	Z,ZK	3
I	ar combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and the their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classifications.	ir solvability. Deter	-
11MDS Basic princ	Collection and Processing of Traffic Data iples of traffic detection and data collection, specific problems of the field of traffic data. Data preprocessing and analysis for use in a	KZ	2 ons.
11MSP	Modeling of Systems and Processes	Z.ZK	4
System and subsyst	tem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differences.	ntial and differenti	al equations.
Linear and nonl	linear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function Discretization of continuous systems. System interconnection.	on. Stability of LTI s	systems.
11STAT	Statistics	Z,ZK	4
Basics of probabili	ity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Paramet Regression and correlation analysis	tric tests Nonparar	netric tests
11X31		Z	2
	Project 1	Z	-
11X32	Project 2		2
11X33	Project 3	Z	2
11Y1BK	Error Detection Codes for Interlocking Systems	KZ	2
Safe communicati	ion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission channe		insmission
44)/4D)/	errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN 5		
11Y1PV	Parametrical and Multicriterial Programming	KZ	2
	lem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Co		_
11Y1SI	Transportation Software Engineering	KZ	2
Basic concepts of so	oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implement	ntation using forma	al techniques
44)/470	and practical usuage.	1/7	
11Y1TG	Graph Theory	KZ	2
· ·	d terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, min	· · · · · ·	
path problem, Euler	rian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence a	ind optimization an	ia aigoritnms
441/4714	for their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.	1/7	
11Y1ZM	Foundation of MATLAB Programming iple of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, mat	KZ	2
to explain the princ	control flow, inputs and outputs, graphics, optimization and program code debugging.	nces and elements	s operations,
12APE	Applied Ecology	Z	3
I	nciples. The atmosphere, air pollution from transport, smog, traffic share of greenhouse gas emissions. Transport within the different co	1	_
	cape protection, conflict of highway construction and protected areas NATURA 2000. The current ecological problems of the present. especially in the context of traffic on the roads and delay construction of transport.	•	
12DOPS	Traffic Surveys and Simulations	Z,ZK	4
	ow. Methods of monitoring - profile, spatially time. Automatic traffic counts. Security parameters - accidents, near-misses. Surveys in		verview of
traffic microsimulation	on models. Getting to know the working environment applications. Explanation of movement of vehicles in the traffic system. Creating traffic model. Evaluation of the output characteristics. 4D visualization model.	and simulation of	microscopic
12MDE	Transport Models and Transport Excesses	Z.ZK	3
	raffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of qu	,	_
transport and its a	assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences of the part of the pa	ences. Improving o	of transport
12MKOD	safety and fluency. City Rail Transport	Z,ZK	5
	· · ·		I
	an rail transport. Tram lines layout and city roads. Tram track geometry parameters. Tram track superstructure. Turnouts and other con e. Underground and its basic characteristics. Underground nets in the world and undeground history in Prague. Underground track geon track superstructure and substructure. Underground stations. Suburban rail transport.		
12OMHD	Public Transport Operation	Z.ZK	4
	ansport organisation, project of city public transport network, transportation survey, project of transport parametres, transport graph, transport priority, financing of public transport, quality of public transport.	,	1
12PPMK	Urban Road Traffic and Design	Z,ZK	4
	ban road, elements and routes for traffic, pedestrian and cycling transport, projection of intersections, roundabouts, calming of traffic & partially-sighted, induction of traffic, organization and regulation of transport.		I
12PPOK	Designing Roads, Highways and Motorways	KZ	3
	ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safet intersections.	-	
12SDK	Highways, Motorways and Intersections	Z,ZK	4
	nigriways, Motorways and intersections ays network, transport output. Types of direction curves. Hairpin bend. Stopping sight distance and overtaking sight distance. Levels of t		1 -
	d intersections. Crossroads. Roundabouts. Intersections. Special types of junctions. Capacity of crossroads and intersections. Structu		-
10\/EDD	motorways. Road engineering structures. Assessment of route alternatives.	7	
12VERD	Public Transport in Cities and Regions	Z	3
rubiic transport ne	etwork design including determination of walking distances, characteristics of usable kind of transport, dimensioning transport capac	ity of liffes, formati	ion of lines,
	operational parametres of lines, objective way of quality evaluation of transport measures design.		

12X31	Project 1	Z	2
12X32	Project 2	Z	2
12X33	Project 3	Z	2
12Y1C1	Designing Roads in Civil 3D I	KZ	2
	evoted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through	-	-
particular linear t	building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The explanation of the traffic building design in the real-life profession.	course also includ	des a basic
12Y1C2	Designing Roads in Civil 3D II	KZ	2
	evoted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The improved and developed. Students learn to design intersections.	•	ū
12Y1DS	Project Documentation in Practice	KZ	2
	tation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining process. creation of some project documentation parts.		
12Y1HD	Traffic Noise	KZ	2
Acoustic introduct	tion, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulations	s. Creation acoust	tic climate in
area, principles	s of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area computing and measurement of transport noise. Acoustic studies, measuring protocol.	of interest. Metho	dology of
12Y1KN	Combined Transportation	KZ	2
Combined trans	port strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas.	Multimodal logist	tic centres.
12Y1PC	Pedestrian and Cycling Transport	KZ	2
="	rians. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route	-	-
	rration of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings crossroads. Traffic signs and road marking for cyclists.	with other transp	
12Y1PD	Assessment of Transport Structures	KZ	2
	nsport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of es on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of ass	•	
	the environment.		J
12Y1PU	Organization Disposition of Railway Stations	KZ	2
-	ion. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zon erve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic		tion yards.
12Y1RU	Railway Lines Reconstruction	KZ	2
	line operational, maintaining lines and stations, geometrical alignment of railway line, vehicles for railway superstructure and substructure and organising possesions, preparation of railway lines reconstruction and maintenance, process of railway line reconstruction.	ure maintenance,	
12Y1SU	Road Management and Maintenance	KZ	2
_	with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented developr		
medium and long-	term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and repair	methods are disc	cussed in the
12Y1ZU	classroom as well as investment activity in highway engineering. Principles of Urbanism	KZ	2
	y of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.		1
12ZAR	Introduction to Architectural Design	Z	3
	d architecture of traffic systems. Bus and trolley-bus transport. Tramway and town tracks. Design of vehicles. Subway. Railway transport communications. International airports.	t. Railway stations	s. Local
12ZELP	Railway Operation	Z,ZK	4
	lway transport. Railway vehicles. Railway signals and signal devices. Railway traffic organisation and operation. Simplified railway traffic brakes. Railway vehicles marking. Operation intervals. Theoretical graph of train running.	,	ay vehicles
12ZTS	Railway Lines and Stations	Z,ZK	4
	lailway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. S Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail tr	patial layout of rai	ilway lines.
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2
	ition in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, prognosis in transportation to environment and safety.		I
14ASD	Algorithm and Data Structures	KZ	3
	miliarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze		_
	set task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart an algebra with forming the conditions for the algorithms.		
	Database Systems	KZ	2
solutions to the s	Database Systems of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the server of the serve	d integrity of data,	I
solutions to the s	of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and	d integrity of data,	I
14DATS Basic concepts 14KSP "CAD systems" te	of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the Constructing with Computer Aid later determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common works. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible.	d integrity of data, the WWW. KZ k rules in graphic	, database 2 applications
14DATS Basic concepts 14KSP "CAD systems" te and CA systems	of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the Constructing with Computer Aid germ determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common works. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible profiles, drawings with raster foundaments).	d integrity of data, the WWW. KZ k rules in graphic ilites, AutoCAD er	database 2 applications nvironment
14DATS Basic concepts 14KSP "CAD systems" te and CA systems 14PPD	of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via to Constructing with Computer Aid serm determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common works. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible profiles, drawings with raster foundaments). Computer Aid of Transportation Projecting	d integrity of data, the WWW. KZ k rules in graphic ilites, AutoCAD er	2 applications nvironment
14DATS Basic concepts 14KSP "CAD systems" te and CA systems 14PPD Overview of CAx a	of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the Constructing with Computer Aid germ determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common works. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible profiles, drawings with raster foundaments).	d integrity of data, the WWW. KZ k rules in graphic illites, AutoCAD er KZ a exchange). Adva	2 applications nvironment 2 anced blocks

14PRG	Programming	KZ	2
_	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python program		
here so that the pa	rticipant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and search	hing, tuples, sets,	dictionaries,
1 1)/01	working with date and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).	_	
14X31	Project 1	Z	2
14X32	Project 2	Z	2
14X33	Project 3	Z	2
14Y1AV	Animation and Visualization	KZ	2
	tions and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Spa		•
	s, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation	_	
14Y1BE	Barrierless Transport	KZ	2
	rless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students	J	J
or barrieriess enviro	onment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems Theoretical knowledge will be supplemented by practical examples.	and transportation	i technology.
14Y1BM	Biometric Methods	KZ	2
	prometric interfective metricus proms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies, ha	1	1
	nethod, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavioral r	-	-
J	in transport applications, safety and risks of biometric technologies.		
14Y1HW	Computer Hardware	KZ	2
Computer archite	ecture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate p	ı parts designing - c	ontrollers,
	arithmetic and logical units, I/O subsystem.		
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2
Assemblies pro	gramming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipel	lines, and distribut	ion lines.
	Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.		
14Y1OJ	Object - oriented programming in JAVA	KZ	2
, ,	Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters). Ba	•	
	ance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda expre		
14Y1OP	Operating System	KZ	2
	stallation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Programs	•	
runieveis. Basic o	console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, graph	nic editors, sound,	video and
14Y1P2	communication. Services management. Safe and secure configuration of OS. Remote administration.	KZ	2
	Computer Aid of Transportation Projecting 2 pplication for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, dat	1	1
	utes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic transition		
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	section). Basics of 3D modelling.		
14Y1PA	section). Basics of 3D modelling. 3D Modeling in AutoCAD	K7	2
14Y1PA Work in 3D non-p	3D Modeling in AutoCAD	KZ data creation, wor	2 k with data
	· · · · · · · · · · · · · · · · · · ·	I	_
	3D Modeling in AutoCAD arametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object	I	_
Work in 3D non-p	3D Modeling in AutoCAD arametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.	data creation, wor	k with data
Work in 3D non-p	3D Modeling in AutoCAD arametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation. Computer Graphics	data creation, wor	k with data
Work in 3D non-p	3D Modeling in AutoCAD arametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation. Computer Graphics graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editing	data creation, wor	k with data
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14Y1ZJ	Fundamentals of programming in JAVA	KZ	2	
-	Java SE Platform. IDE Installation and First Project. Comments. Variables and Type System. Operators. User Input and Parsing. Cha			
Chain and Mathematical Methods. Terms. Relational Operators and Switches. Cycles for, while, foreach. Field - declaration, initialization, methods for field work. ASCII. Functions,				
parameters, return value, recursion. Program creation.				
14Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2	
	reducts and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from 2			
basics of work at p	from and to another systems. Fundamentals of assemblies creation.	D sketches. Impor	t and export	
15DPLG	Transportation Psychology	Z	2	
	gy and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle const	-		
	el route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in tra-		lical aspects	
15JZ1A		7	3	
	Foreign Language - English 1	ک مااناه میشود ماناله	_	
Grammatical Struct	ures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and co stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of		Elementary	
45.170.4				
15JZ2A	Foreign Language - English 2	Z,ZK	3	
Grammatical structi	ures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and co		Elementary	
	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles		_	
15JZ3F	Foreign Language - French 3	Z	3	
=	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.		- 1	
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work	vith (professional)	text and its	
	features. Practice of oral and written presentation.			
15JZ3I	Foreign Language - Italian 3	Z	3	
-	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la		- 1	
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	vith (professional)	text and its	
	features. Practice of oral and written presentation.			
15JZ3N	Foreign Language - German 3	Z	3	
Grammar and styli	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	anguage structure	knowledge	
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and its	
	features. Practice of oral and written presentation.			
15JZ3R	Foreign Language - Russian 3	Z	3	
Grammar and styli	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	anguage structure	knowledge	
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and its	
	features. Practice of oral and written presentation.			
15JZ3S	Foreign Language - Spanish 3	Z	3	
	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.	anguage structure	knowledge	
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	vith (professional)	text and its	
	features. Practice of oral and written presentation.			
15JZ4F	Foreign Language - French 4	Z,ZK	3	
	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	•		
-	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work		- 1	
	features. Practice of oral and written presentation.	()		
15JZ4I	Foreign Language - Italian 4	Z,ZK	3	
	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.	•	_	
•	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v			
and porooparo and	features. Practice of oral and written presentation.	тит (р. отооологии)	10/11 0.10 110	
15JZ4N	Foreign Language - German 4	Z,ZK	3	
	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of le	,	-	
•	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work		•	
and perceptive and	features. Practice of oral and written presentation.	with (professional)	text and its	
45 1740		7 71/		
15JZ4R	Foreign Language - Russian 4	Z,ZK	3	
=	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.		- 1	
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work	vitn (professional)	text and its	
45 1740	features. Practice of oral and written presentation.	7 711		
15JZ4S	Foreign Language - Spanish 4	Z,ZK	3	
-	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.		- 1	
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work	with (professional)	text and its	
	features. Practice of oral and written presentation.		_	
15X31	Project 1	Z	2	
15X32	Project 2	Z	2	
15X33	Floject 2		_	
	Project 3	Z	2	
15Y1R∩	Project 3	Z		
15Y1BO Fundamental legis	Project 3 Work Safety and Health Protection in Transportation	Z KZ	2	
	Project 3 Work Safety and Health Protection in Transportation lative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. H	Z KZ	2	
Fundamental legis	Project 3 Work Safety and Health Protection in Transportation lative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health insurance of home and foreign business trips, statistics, working practice.	Z KZ ealth protection pr	2 ogrammes,	
Fundamental legis	Project 3 Work Safety and Health Protection in Transportation lative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health insurance of home and foreign business trips, statistics, working practice. History of Railway	Z KZ ealth protection pr KZ	2 ogrammes,	
Fundamental legis 15Y1DZ Horse-drawn railw	Project 3 Work Safety and Health Protection in Transportation lative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health insurance of home and foreign business trips, statistics, working practice. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Repr	Z KZ ealth protection pr KZ ublic", electric tract	2 ogrammes, 2 tion, World	
Fundamental legis 15Y1DZ Horse-drawn railw	Project 3 Work Safety and Health Protection in Transportation lative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health insurance of home and foreign business trips, statistics, working practice. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Representation of the continuity, high-speed railway origins, railway lines closing, important long-distance train connections."	Z KZ ealth protection pr KZ ublic", electric tract	2 ogrammes, 2 tion, World	
Fundamental legis 15Y1DZ Horse-drawn railw War II railways, railw	Project 3 Work Safety and Health Protection in Transportation lative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health insurance of home and foreign business trips, statistics, working practice. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Representation of the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connection railway accidents, railway junctions. Excursions and projections.	Z KZ ealth protection pr KZ ublic", electric tractons, railway lines c	2 grammes, 2 grion, World construction,	
Fundamental legis 15Y1DZ Horse-drawn railw War II railways, railw 15Y1EH	Project 3 Work Safety and Health Protection in Transportation lative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health insurance of home and foreign business trips, statistics, working practice. History of Railway Vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Representation of the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connection railway accidents, railway junctions. Excursions and projections. European Integration within Historical Context	Z KZ ealth protection pr KZ ublic", electric tractons, railway lines c	2 ogrammes, 2 tion, World construction,	
Tundamental legis 15Y1DZ Horse-drawn railw War II railways, railw 15Y1EH Versailles system,	Project 3 Work Safety and Health Protection in Transportation lative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health insurance of home and foreign business trips, statistics, working practice. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Representation of the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connection railway accidents, railway junctions. Excursions and projections. European Integration within Historical Context formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism. Li	Z KZ ealth protection pr KZ ublic", electric tractons, railway lines c KZ	2 ogrammes, 2 cion, World construction, 2 nciples and	
Tundamental legis 15Y1DZ Horse-drawn railw War II railways, railw 15Y1EH Versailles system,	Project 3 Work Safety and Health Protection in Transportation lative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health insurance of home and foreign business trips, statistics, working practice. History of Railway Vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Representation of the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connection railway accidents, railway junctions. Excursions and projections. European Integration within Historical Context	Z KZ ealth protection pr KZ ublic", electric tractons, railway lines c KZ	2 ogrammes, 2 cion, World construction, 2 nciples and	

15Y1FD	French Area Studies and Transportation	KZ	2
France - geograp	ohy and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tra	ffic, specialised te	rminology.
Frei	nch society and culture. Current political system. System of education, studying in France. Selected authors of French literature. Fren	ch gastronomy.	
15Y1HD	History of City Mass Transport	KZ	2
		l	
	s transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current trends	•	s or tariir and
	ance systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Repul	blic and Slovakia.	,
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
Basic knowledge	of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these	factors on health of	of workers.
Creation and prote	ection of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to p	ossibilities and ski	ills of a man.
•	Practical examples from the field of transportation; relevant legislature.		
15Y1HL	History of Civil Aviation	KZ	2
	,		1
	g, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of a		
World airports. F	amous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era o	f aviation. Golden	era of civil
	aviation. Modern era of civil aviation. Airline companies. Supersonic flying.		
15Y1MK	Modern History in Context: Every Day Life and Transport	KZ	2
	Historical overview of modern history of every day life, science, technology and transport in a wider context.	'	'
15Y1NE		KZ	2
	German in the Economy and Society	1	
Recent economic	and social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic ar	ialysis of texts. Dis	scussion on
	selected topics.		
15Y1ZV	East-West dichotomy: Prelude to the Cold War	KZ	2
Historical prologue	, evolution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and continu	ity of the internation	onal relations
	century and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, the	•	
	Economic and financial history. Social changes. Discussions on texts, sources.		
16DDV		V7	
16DPY	Vehicle Technology	KZ	5
rechnical nom	enclature in transportation technology. Vehicle in legislation. Design. Operation. Influence on environment. Vehicle and ecology. Traction	on engine characte	eristics -
	combustion engines, electric engines, change of energy principles. Powertrain construction. Power transmission.		
16DYJ	Vehicle Dynamics	Z,ZK	3
Application of mecl	hanics. Wheel and axle suspension mechanism. Wheel to road positioning characteristics. Wheel - road contact. Skid and its characte	'	al dynamics.
	eceleration. Vertical dynamics, spring suspension, driving characteristics. Directional dynamics, gyroscopical characteristics. Driving st	_	-
accordiation and ac	forces. Driving and feedback. ABS, ESP.	ability cortainoris.7	torodynamic
4000	-	7.71/	
16PAV	Passive Safety	Z,ZK	4
Road accident eval	luation. Testing and legislation. Crash tests. Carbody properties. Injury mechanics. Restrain systems. Airbags. Road user safety. Mathe	ematic modelling. F	Post collision
	safety systems.		
16UDOP	Introduction into Vehicles	Z	2
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470EID	Dublic Administration and Cinemains in Transport	7 71/	1
17SFID Basic issues of tra	Public Administration and Financing in Transport Insport and transport policy in the social context, environmental issues in transport, economical aspects of transport, public administra	Z,ZK	d 4
17TEDL	Transport Technology and Logistics	KZ	3
	nsport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight transport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight transport technology.	l	n of traffic in
	nodus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication us		
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4
	of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in o		-
17X31	Project 1	Z	2
17X32	Project 2	Z	2
17X33	Project 3	Z KZ	2
17Y1EV Economic and final	Public Sector Economy ancial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of pub	1	I .
	CR, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding fr		
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
Logistics airline pa	assenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial tran	sport process pas	sengers and
(=)/(1) (D	air cargo. Information systems in air transport. Global distribution systems.	147	
17Y1MD	Marketing in Transportation	KZ	2
General principle	s of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport a the application of marketing.	ind the resulting d	illererices iri
17Y10F	Personal Finance	KZ	2
	(budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of house		l .
consumer loans, r	efinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and	adequacy), securi	ng the future
	(retirement savings and insurance).		
17Y1PM	Personnel Management	KZ	2
17Y1SK	rces, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, inter	KZ	2
_	Urban and Regional Rail Transport Systems g transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, li	l	_
	ne timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transp	_	-
	marketing.		
17Y1SL	Sociology of Human Resources	KZ	2
Human resources	and their importance, work group as a special kind of social group, communication, personal management, modern management, hum	an resources plan	ning, culture
47)/4 CT	of the organization.	1/7	
17Y1ST	Titan Simulation agement game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same produce.	KZ	price and
	antity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequence:		-
·	of financial corporate reports and they use this information for other business decisions.		,
18DKS	Dynamics of Structures and Systems	Z,ZK	4
-	ems with multiple degrees of freedom. Natural modes and natural frequencies. Method of stiffness constants, method of elastic consta		
Systems with conf	inuously distributed mass. Matrix form of equations of vibration. Finite element method in dynamics of structures. Solving vibrations by s Subspace iteration methods. Introduction to nonlinear vibrations.	superposition of na	tural modes
18KAD	Kinematics and Dynamics	Z,ZK	1
	e, motion along a curve. Kinematics of rigid plane, kinematics of rigid body. Point mass kinematics, system of point masses. Point mass		tem of poin
_	on of motion. Method of Newton. Princle of D'Alembert. Free and forced vibration with one degree of freedom. Viscous damping. Impa	-	-
	solution of vibration with multiple degrees of freedom.		
18MTY	Materials Science and Engineering	Z,ZK	3
	aterials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructu as the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and cor		
is paid to metals a	to degradation processes in materials, to defectoscopy and to main mechanical tests.	nposites. Attentior	is also paid
18NMM	Numerical Methods in Mechanics	Z	3
	ost used numerical methods in structural mechanics. Central difference method, finite element method, finite volume method, boundar	y element method	. Time and
spatial discretizat	ion schemes. Finite element method: derivation of the basic equations. Stiffness matrix, mass matrix, damping matrix for element and	structure. Method	s for solving
	systems of algebraic equations. Numerical integration. Programming the FEM.		
18POM	Advanced Materials	KZ	2
	ained in primary materials course is further developed. In greater physical detail it explains dynamics of strcture defects, phase diagran processes of structure control are discussed. The gained knowledge is utilized on description of contemporary technologies of materi		
- 555pto. Opoolai	applications.	p. 5 3 4 5 10 1 N	,
18PZP	Elasticity and Strength	Z,ZK	3
Tension and comp	oression. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted a	and welded joints of	of structures
	Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability.		Г
18SAT	Structural Analysis	Z,ZK	4
=	of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinat work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions.	· · · · · · · · · · · · · · · · · · ·	-
opic oi viituai	of planar shapes. Fiber polygons and chains.	2.000 30000 lai 01	
18TED	Technical Documentation	KZ	2
	lards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional	1	1
	arrangement of drawing sheets.		
18TK	Theory of Structures	KZ	2
	ane, principle of virtual work. Force (flexibility) method. Aplication of force method to frame analysis. Displacement (stiffness) method. States of clearly the force of clearly the clearly the force of clearly the force of clearly the clearly the clearly the clearly the clearly th	· -	
method. Mathema	tical foundations of elasticity. Static analysis of complex statically indeterminate structure. Energy methods for beam analysis. Lagrang model of elastic foundation. Pasternak model of elastic foundation.	ge variational princ	ipie. Winkle
18X31	Project 1	Z	2
10/10/1	i iojeot i	ı -	

	Project 2	7	2
18X32 18X33	Project 2 Project 3	Z 	2
18Y1AM	·	KZ	2
_	Anatomy, Mobility and Safety of Man Anatomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation		
•	s of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured n		
	joint prostheses. Protective means and traffic safety regulations.		
18Y1EM	Experimental Methods in Mechanics	KZ	2
	role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive		
	ocedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fa	-	-
	Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.		
18Y1MT	Engineering Materials	KZ	2
Systematic overv	iew of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and	composites, atte	ention is paid
to bio	ological materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's	selection charts	
18Y1PS	Computer Simulations in Mechanics	KZ	2
· ·	erview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model development	=	
from other CAE sy	ystems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions and	d application of th	e load. Basio
40)(41,114	tasks of structural and modal analysis. Introduction to complex nonlinear problems.		
18Y1UK	Introduction of Rail Vehicles	KZ	2
	tics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion tra		
track resistance.	otal running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle - I	nyaromecnanic, r	iyaroaynamid
2000	and electric drive. Design concept rail vehicles and drive of wheel set.	7 71/	
20SYSA	Systems Analysis stem sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks,	Z,ZK	5
	stern sciences, system newpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks, strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tab	-	
and its analysis,	tasks. Soft and hard systems, methods for soft system analysis.	iles, algoritims it	or structural
20UITS	Introduction to Intelligent Transport Systems	Z.ZK	7
	egislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of information from the framework telematics systems and their operation.	,	
	rinciples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples		
.,	principles of ITS.	. ,	
20X31	Project 1	Z	2
20X32	Project 2	Z	2
20X33	Project 3	 Z	2
20X33 20Y1AE	Applied Electronics	KZ	2
-	semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, tran		1
Dasic electronic	semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor i N junction diodes, train		
amplifiers basic		=	-
amplifiers, basic	logic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transisto	=	-
	logic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transisto amplifier as an inverting and noninverting amplifier).	or as an amplifier,	operational
20Y1AF	logic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transistor amplifier as an inverting and noninverting amplifier). Alternative Forms of Transportation Project Financing	or as an amplifier,	operational 2
20Y1AF In will be specifed	logic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transisto amplifier as an inverting and noninverting amplifier).	KZ ents come from i	operational 2 ts budget but
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20Y1AF In will be specifed	logic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transistor amplifier as an inverting and noninverting amplifier). Alternative Forms of Transportation Project Financing such forms of financing in transportation and telecomunications, where the public sector body perform the final debtor, i. e. debt payment a direct participant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of sectors are considered as a constant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of sectors are constant of the transaction and it is not the counterparty of the financial institute which provides the funding.	KZ ents come from i	operational 2 ts budget but
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21X33	Project 3	Z	2
21Y1AM	Aeronautical Information Management (AIM)	KZ	2
	ic overview of AIS and AIM. Transition from AIS to AIM. Regulatory base. Provision of AIS/AIM in the Czech Rep. AIP (Aeronautical Ir IRAC System. NOTAM messages.PIB (Pre-flight Informtion Bulletin). AIC (Aeoronautical Inf. Circulars). Aeronautical Charts. EAD (Eu		
trie Ozech Rep. A	(Quality Mng. System). ADQ (Aeronautical Data Quality). AIXM (Aeronautical Inf. Exchnage Format).	порена Аю ракар	ase). QIVIS
21Y1BC	Aviation safety and security	KZ	2
	f safety and security development in aviation. Modern tools for safety and security management. Research and development of safe		
21Y1BS	Unmanned aircraft systems 1	KZ	2
	n Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division. Op	I .	
	procedures. Practical flights.		
21Y1MP	Matlab for project-oriented study	KZ	2
The subject's sylla	bus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises	1	ccording to
particular examp	les, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvement	ent of students' Ma	tlab skills.
21Y1PA	Air Traffic Control Operating Procedures	KZ	2
Practical exercises	on the ATC simulator with the following focus - getting familiar with the simulation environment, acquiring basic habits, aircraft identi	fication procedures	s, vectoring,
level changes, ATC	C clearance, use of RNAV points. Practical exercises focused on the basis of vectoring, timely application of vertical spacing, EST an	d REV message tra	ansmission.
	Exercises in the APPROACH airspace, arrivals, departures and conflict solutions.		_
21Y1RZ	Human Resources Management	KZ	2
	human resources in the organization and related disciplines file. Substance, importance and challenges of human resources manage		
environment of nun	nan resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and rer	nuneration of staff.	Positioning,
24V4TU	dismissal and redundancies of employees. Education of employees. Planning career management.	KZ	2
21Y1TH	Aircraft Technical Handling	I	2
_	and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and unk Issangers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and techr		ment ioi
21ZALD	Basics of Air Transport	KZ	2
	terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation.	I .	_
• • • • • • • • • • • • • • • • • • • •	timization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, grou	•	
	Airlines and economics. Space technologies.	g,	,
22MEMT	Measurement Methods and Technology in Transportation	KZ	4
	thods in transport, their meaning and use;Geodetic basics in the Czech Republic; Angular, length and height measurements;Principl	I	curacy and
errors of geode	etic measurements; Surveying and setting out; Challenges of localization, navigation and Global Navigation Satellite Systems; Laser so	anning (terrestrial,	mobile,
	UAV);Technical photography and photogrammetry;Dynamic measurements of vehicles;High-speed cameras;		
22PRES	Road Traffic Accidents Prevention	KZ	4
Basic relation cau	ises - prevention, collision diagrams, causes of not giving way, initial speed and breaking influence on speed of impact, downhill grad	e, load transport a	nd fixation,
collisions with peo	destrians, cyclists and motorcyclists, construction of vehicle breaks, winter conditions, inconvenient road parameters, visibility, anti-sli	de properties of ro	ad surface,
	solid barriers, assist systems, technical fault of vehicles.		
22UAN	Road Traffic Accidents Analysis Introduction	KZ	2
	ters of road infrastructure, typical vehicle dimensions, distance-time diagram, response time components, backward projection of acc	· ·	- 1
post-crash deform	nation, impact influence on passengers, video documentation, problem who was the driver, documentation, marks analysis, limits of a	iccidental analysis,	cornering,
22724	critical maneuvring, technical view hindrances, visibility and discriminability, nightfall.	7	2
22X31	Project 1	Z	2
22X32	Project 2	Z	2
22X33	Project 3	Z	2
23X31	Project 1	Z	2
23X32	Project 2	Z	2
23X33	Project 3	Z	2
23Y1KM	Crisis Management	KZ	2
Theory and legal fr	ame of crisis management with direction to Rescue system (IZS). After introduction to safety domain, there are terms and knowledge	on: theory and posi	tion of crisis
	gement and its targets; IZS-crisis management-crisis planning; and basic legislation. Practical part is concentrated to responsibility m	atrix compilation.	
23Y1KO	Quantum Physics and Optoelectronics	KZ	2
	Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics compor		
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2
Types of technolog	ical systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, safe infrastructures.	ty of critical objects	and critical
23Y1VS	Negotiation and Cooperation	KZ	2
Code of conduct for	or negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Inform	1	in the team.
Principles of negoti	iation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", specifi-	cations and bidding	g, the role of
	trust.		
TV-1	Physical Education	Z	1

For updated information see http://bilakniha.cvut.cz/en/FF.html Generated: day 2024-05-18, time 19:49.

TV-2

Physical Education