### Study plan

### Name of study plan: BEZ bak.prez.17/18 - v 1.sem. si NEZAPSALI 14DB

Faculty/Institute/Others: Department: Branch of study guaranteed by the department: Security Technologies in Transportation Garantor of the study branch: doc. Ing. Václav Jirovský, CSc. Program of study: Technology in Transportation and Telecommunications Type of study: Bachelor full-time Required credits: 128 Elective courses credits: 52 Sum of credits in the plan: 180 Note on the plan:

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. 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)	Completion	Credits	Scope	Semester	Role
	Tutors, <b>authors</b> and guarantors (gar.)					
11X31	Project 1	Z	2	0P+1C	L	ZP
12X31	Project 1 Zuzana Čarská, Dagmar Kočárková, Karolína Moudrá, Kristýna Neubergová, Martin Jacura, Vojtěch Novotný, Ondřej Trešl, David Vodák, Tomáš Javořík, 	Z	2	0P+1C	L	ZP
14X31	Project 1 Jana Kaliková, Jan Krčál, Tomáš Zelinka, Martin Šrotýř, Zdeněk Lokaj, Tomáš Brandejský, Vít Fábera, Jan Zelenka, Ota Hajzler	Z	2	0P+1C	L	ZP
15X31	Project 1 Eva Rezlerová	Z	2	0P+1C	L	ZP
16X31	Project 1 Petr Bouchner, Přemysl Toman, Josef Mík	Z	2	0P+1C	L	ZP
17X31	Project 1 Rudolf Vávra, Petr Fridrišek, Dominik Mazel, Stanislav Metelka, Václav Baroch, Dušan Teichmann, Edvard Březina, Michal Drábek, Tomáš Horák,	Z	2	0P+1C	L	ZP
18X31	<b>Project 1</b> Daniel Kytýř, Tomáš Doktor, Jan Šleichrt	Z	2	0P+1C	L	ZP
20X31	Project 1 Patrik Horažďovský	Z	2	0P+1C	L	ZP
21X31	Project 1 Lenka Hanáková, Tereza Topková, Vladimír Socha, Helena Bínová, Jakub Hospodka, Šárka Hulínská, lveta Kameníková, Jakub Kraus, Andrej Lališ,	Z	2	0P+1C	L	ZP
22X31	Project 1 Michal Frydrýn, Luboš Nouzovský, Zdeněk Svatý, Karel Kocián	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 Zuzana Čarská, Dagmar Kočárková, Karolína Moudrá, Kristýna Neubergová, Martin Jacura, Vojtěch Novotný, Ondřej Trešl, David Vodák, Tomáš Javořík, 	Z	2	0P+2C	Z	ZP
14X32	<b>Project 2</b> Jana Kaliková, Jan Krčál, Tomáš Zelinka, Martin Šrotýř, Zdeněk Lokaj, Ota Hajzler, Eva Fantová, Filip Müller	Z	2	0P+2C	Z	ZP
15X32	Project 2 Eva Rezlerová	Z	2	0P+2C	Z	ZP

16X32	Project 2 Josef Mik, Petr Bouchner	Z	2	0P+2C	Z	ZP
17X32	Project 2 Václav Baroch, Dušan Teichmann, Edvard Březina, Michal Drábek, Tomáš Horák, Vít Janoš, Milan Kříž, Olga Mertlová, Zdeněk Michl,	Z	2	0P+2C	Z	ZP
18X32	Project 2	Z	2	0P+2C	Z	ZP
20X32	Project 2 Patrik Horažďovský, Jiří Růžička, Pavel Hrubeš, Martin Leso, Petr Bureš, Martin Langr	Z	2	0P+2C	Z	ZP
21X32	Project 2	Z	2	0P+2C	Z	ZP
22X32	Project 2 Michal Frydrýn, Luboš Nouzovský, Zdeněk Svatý, Karel Kocián, Tomáš Mičunek	Z	2	0P+2C	Z	ZP
23X32	Project 2 Milena Macková, Václav Jirovský	Z	2	0P+2C	Z	ZP
11X33	Project 3	Z	2	0P+1C	L	ZP
12X33	Project 3 Zuzana Čarská, Dagmar Kočárková, Karolína Moudrá, Kristýna Neubergová, Martin Jacura, Vojtěch Novotný, Ondřej Trešl, David Vodák, Tomáš Javořík, 	Z	2	0P+1C	L	ZP
14X33	Project 3 Tomáš Zelinka, Martin Šrotýř, Zdeněk Lokaj, Ota Hajzler	Z	2	0P+1C	L	ZP
15X33	Project 3 Eva Rezlerová	Z	2	0P+1C	L	ZP
16X33	Project 3 Petr Bouchner, Přemysl Toman, Josef Mík, Adam Orlický, Jaroslav Machan	Z	2	0P+1C	L	ZP
17X33	Project 3 Václav Baroch, Dušan Teichmann, Edvard Březina, Michal Drábek, Tomáš Horák, Vít Janoš, Milan Kříž, Olga Mertlová, Zdeněk Michl,	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 Lenka Hanáková, Vladimír Socha, Helena Bínová, Jakub Hospodka, Šárka Hulínská, Iveta Kameníková, Jakub Kraus, Andrej Lališ, Roman Matyáš,	Z	2	0P+1C	L	ZP
22X33	Project 3 Michal Frydrýn, Luboš Nouzovský, Zdeněk Svatý, Karel Kocián	Z	2	0P+1C	L	ZP
23X33	Project 3	Z	2	0P+1C	L	ZP

### Characteristics of the courses of this group of Study Plan: Code=XB 4,5,6 13/14 Name=Projekty bak. 4.5.6.sem. 13/14 (pro B3710)

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

2

Name of the block: Compulsory courses Minimal number of credits of the block: 94 The role of the block: Z

Code of the group: 1.S.BP 15/16 Name of the group: 1.sem.bak.prez. od 15/16 Requirement credits in the group: In this group you have to gain 28 credits Requirement courses in the group: In this group you have to complete 9 courses Credits in the group: 28 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11CAL1	Calculus 1 Magdalena Hykšová, Ondřej Navrátil, Bohumil Kovář, Pavel Provinský, Tomáš Třasák, Olga Vraštilová	Z,ZK	7	2P+4C	Z	Z
11LA	Linear Algebra Pavel Provinský, Martina Bečvářová, Lucie Kárná, Jan Přikryl	Z,ZK	3	2P+1C	Z	Z
12ZYDI	Introduction to Transportation Engineering Zuzana Čarská, Dagmar Kočárková	Z,ZK	2	1P+1C	Z	Z
18MTY	Materials Science and Engineering Jan Šleichrt, Vít Malinovský, Jaroslav Valach, Jan Šleichrt, Marcel Adorna, Jan Falta, Jan Falta, Václav Rada, Václav Rada, Jaroslav Valach (Gar.)	Z,ZK	3	2P+1C	Z	Z
20SYSA	<b>Systems Analysis</b> Patrik Horažďovský, Jiří Růžička, Petr Bureš, Zuzana Bělinová, Zuzana Purkrábková	Z,ZK	5	2P+2C+14B	L	Z
11GIE	Geometry Pavel Provinský, Oldřich Hykš, Šárka Voráčová	KZ	3	2P+2C	Z	Z
18TED	Technical Documentation Vít Malinovský, Tomáš Fíla, Jitka Řezníčková	KZ	2	1P+1C	Z	Z
16UDOP	Introduction into Vehicles Petr Bouchner, Přemysl Toman, Josef Mík, Zuzana Radová Petr Bouchner (Gar.)	z	2	2P+0C	Z	Z
TV-1	Physical Education	Z	1		Z	Z

#### Characteristics of the courses of this group of Study Plan: Code=1.S.BP 15/16 Name=1.sem.bak.prez. od 15/16

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11CAL1	Calculus 1	Z,ZK	7				
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 s	ystem. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several rea	I variables.					
11LA	Linear Algebra	Z,ZK	3				
Vector spaces (linear c	ombinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and	their solvability. D	eterminants and				
their applications. Scala	ar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.						
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2				
Role of transportation in	n 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	on to environment and safety.						
18MTY	Materials Science and Engineering	Z,ZK	3				
Basic course of materia	Is 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. Atter	ition is also paid				
to degradation process	es in materials, to defectoscopy and to main mechanical tests.						
20SYSA	Systems Analysis	Z,ZK	5				
Introduction to system s	sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface ta	sks, processes, s	ystem behaviour				
and its analysis, strong	functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision t	ables, algorithms	for structural				
tasks. Soft and hard sy	stems, methods for soft system analysis.						
11GIE	Geometry	KZ	3				
Orthographic and oblig	ue projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - par	meterization, arc	of the curve,				
torsion and curvature, I	Frenet's trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a c	urved path.					
18TED	Technical Documentation	KZ	2				
Technical standards, in	ternational standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimension	al and geometric	al accuracy,				
arrangement of drawing	g sheets.						
16UDOP	Introduction into Vehicles	Z	2				
Vehicles and transporta	, tion systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and $v$	ater transport. Al	ternative means				
of transport. Lifting equipment and conveyors. Legislation.							
TV-1	Physical Education	Z	1				
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Code of the group: 1.S.BP VÝBĚR 15/16 Name of the group: 1.sem.bak. prez výběr předmětu od 15/16

#### 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 aroup:

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
14AS	Algorithm and Data Structures	KZ	2	0+2	Z	Z
14AZ	Data Analysis and Processing	KZ	2	0+2	Z	Z
14DB	Database Systems	KZ	2	0+2	Z	Z

#### Characteristics of the courses of this group of Study Plan: Code=1.S.BP VYBER 15/16 Name=1.sem.bak. prez výběr předmětu od 15/16

14AS Algorithm and Data Structures ΚZ 2 Students will be familiarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze problems, propose 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 and use the basics of Boolean algebra with forming the conditions for the algorithms.

#### 14AZ Data Analysis and Processing

ΚZ Main aim of this course is learn students how to prepare raw data for following processing and analysis. Knowledge of algorithms for determining the parameters of different data sources; source can be used images, text, time series, etc. The next step is the theoretical skills and knowledge to apply in solving the problem, e. g. extraction parameters from the image data or from the Internet. 14DB **Database Systems** ΚZ 2

2

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.

#### Code of the group: 2.S.BP 15/16

#### Name of the group: 2.sem.bak.prez. 15/16

Requirement credits in the group: In this group you have to gain 28 credits

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

#### Credits in the group: 28

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11CAL2	<b>Calculus 2</b> Magdalena Hykšová, Ondřej Navrátil, Tomáš Třasák, Olga Vraštilová, Martina Bečvářová, Oldřich Hykš <b>Magdalena Hykšová</b> Ondřej Navrátil (Gar.)	Z,ZK	5	2P+3C+20B	L	Z
11FY1	Physics 1 Zuzana Malá, Tomáš Vítů, Marek Honců Zuzana Malá (Gar.)	Z,ZK	4	2P+2C	L	Z
11STAS	Statistics Pavla Pecherková Ivan Nagy	Z,ZK	5	2P+2C	L	Z
12ZTS	Railway Lines and Stations Martin Jacura, Vojtěch Novotný, Ondřej Trešl, Tomáš Javořík, Lukáš Týfa, Martin Vaněk	Z,ZK	4	2P+2C+10B	L	Z
18SAT	<b>Structural Analysis</b> Daniel Kytýř, Tomáš Doktor, Jan Šleichrt, Marcel Adorna, Jan Falta, Václav Rada, Václav Rada, Jitka Řezníčková, Jan Vyčichl,	Z,ZK	4	2P+2C+14B	L	Z
17TEDL	Transport Technology and Logistics Michal Drábek, Vít Janoš, Milan Kříž, Zdeněk Michl, Jiří Pospíšil	KZ	3	2P+1C	L	Z
21ZALD	Basics of Air Transport Tereza Topková, Michaela Šerlová, Sébastien Lán, Sarah Van Den Bergh, Adam Kleczatský	КZ	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 15/16 Name=2.sem.bak.prez. 15/16

11CAL2	Calculus 2	Z,ZK	5				
Antiderivative, Newtonia	Antiderivative, 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 c	differential equation	ons of the first				
order, linear differential	equations with constant coefficients and its systems.						
11FY1	Physics 1	Z,ZK	4				
Kinematics, particle dyn	amics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed electric of	current.					
11STAS	Statistics	Z,ZK	5				
Definition of probability,	random variable and its description, known distributions, random vector, function of random variable. Methods of point estimatio	n. Testing of statis	stical hypothesis.				
Regression and correlat	ion, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linea	r regression, ana	lysis of variance,				
multiple regression, the	use of matrices in regression.						
12ZTS	Railway Lines and Stations	Z,ZK	4				
Rail transport. Railway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. Spatial layout of railway lines.							
Railway control systems 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 of force	General system of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate beams and simple girld						
Principle of virtual work.	Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction	ons. Cross-section	al characteristics				
of planar shapes. Fiber	polygons and chains.						
17TEDL	Transport Technology and Logistics	KZ	3				
Basic terms in transpor	technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight t	ransport, organisa	ation of traffic in				
each transport modus,	technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication u	using various trans	sport modus.				
21ZALD	Basics of Air Transport	KZ	2				
History, definitions, term	inology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigat	ion. Weight, balan	ce, performance				
Flight planning, optimiza	ation of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, g	ground handling, s	ecurity. Air crew				
Airlines and economics	. Space technologies.						
TV-2	Physical Education	Z	1				
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#### Code of the group: 2.S.BP VÝBĚR 15/16

#### Name of the group: 2.sem.bak. prez výběr předmětu od 15/16

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
14KSP	<b>Constructing with Computer Aid</b> Filip Müller, Martin Brumovský, Lukáš Kozel, Radek Kratochvíl, Drahomír Schmidt, Lukáš Svoboda, Monika Stambolidis	KZ	2	0P+2C	Z	Z
14PRG	<b>Programming</b> Jana Kaliková, Martin Šrotýř, Zdeněk Lokaj, Vít Fábera, Jan Zelenka, Lukáš Svoboda, Radek Holý, Michal Jeřábek, Marek Kalika Jana Kaliková (Gar.)	KZ	2	0P+2C+8B	L	Z

#### Characteristics of the courses of this group of Study Plan: Code=2.S.BP VYBER 15/16 Name=2.sem.bak. prez výběr předmětu od 15/16

14KSP	Constructing with Computer Aid	KZ	2					
"CAD systems" term determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common work rules in graphic applications								
and CA systems. Co-or	and CA systems. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possibilites, AutoCAD environment							
profiles, drawings with	aster foundaments).							
14PRG	Programming	KZ	2					
Algorithm development, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables, conditions, cycles, arrays,								
functions), programming techniques, complexity.								

#### Code of the group: 3.S.BP 17/18

Name of the group: 3.sem.bak.prez. 17/18 (bez Fyziky; v 1.sem. se NEzapsali 14DB) 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) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
15DPLG	Transportation Psychology Jan Feit, Jana Štikarová	Z	2	2P+0C	Z	Z
23BDIS	Safety Technologies of Transportation and Information Systems	KZ	3	2+0	Z	Z
12MDE	Transport Models and Transport Excesses Josef Kocourek, Milan Dont	Z,ZK	3	2P+1C	Z	Z
17TGA	Graph Theory and its Applications in Transport Dušan Teichmann, Denisa Mocková, Alena Rybičková Alena Rybičková (Gar.)	Z,ZK	4	2P+2C	Z	Z
18PZP	Elasticity and Strength Daniel Kytýř, Tomáš Doktor, Jan Šleichrt, Jan Šleichrt, Marcel Adorna, Jan Falta, Jan Falta, Jitka Řezníčková, Jan Vyčichl, Ondřej Jiroušek (Gar.)	Z,ZK	3	2P+1C	Z	Z
20UITS	Introduction to Intelligent Transport Systems Tomáš Zelinka, Patrik Horažďovský, Jiří Růžička, Pavel Hrubeš, Martin Langr, Zuzana Purkrábková, Vladimír Faltus Vladimír Faltus (Gar.)	Z,ZK	7	3P+2C	Z	Z
12PPOK	Designing Roads, Highways and Motorways Jiří Čarský, Tomáš Padělek, Jan Gallia, Petr Kumpošt, Petr Šatra	KZ	3	1P+2C	Z	Z
14DATS	Database Systems Jana Kaliková, Jan Krčál, Martin Šrotýř Jana Kaliková (Gar.)	KZ	2	1P+1C	Z	Z

15JZ1A <b>Foreign Language - English 1</b> Eva Rezlerová, Jan Feit, Klára Lancová, Lenka Monková, Marie Michlová, Jitka Heřmanová, Dana Boušová, Barbora Horáčková, Marek Tomeček, Jitka Heřmanová (Gar.)	Z	3	0P+4C	Z	Z
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### Characteristics of the courses of this group of Study Plan: Code=3.S.BP 17/18 Name=3.sem.bak.prez. 17/18 (bez Fyziky; v 1.sem. se

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	c conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport c	peration.	
23BDIS	Safety Technologies of Transportation and Information Systems	KZ	3
Safety of transportation	means - principles, testing, evaluation. Safety of infrastructures, critical structures, crisis scenarios. Safety of information systematical structures and structures are structures and structures are	ems and their ro	bustness.
12MDE	Transport Models and Transport Excesses	Z,ZK	3
Parameters of the traffic	flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of	queues, shock w	aves. Quality of
transport and its assess	ment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consec	uences. Improvir	ng of transport
safety and fluency.			
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4
Basic terms of graph the	eory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in oth	ner scientific disci	plines.
18PZP	Elasticity and Strength	Z,ZK	3
Tension and compression	n. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bo	Ited and welded	oint of structure.
Analysis of deflection cu	Irve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic fo	undation. Strengt	h analysis.
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
Terminology and legislat	ive framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of in	formation and tel	ecommunication
systems for ITS. Princip	les and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examp	les of possible ap	plications of the
principles of ITS.			
12PPOK	Designing Roads, Highways and Motorways	KZ	3
Definition, types, owners	ship, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standa	rd speed. Route	in rural areas.
Range of vision for stop	ping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Sa	fety device. Cros	sings, junctions,
intersections.			
14DATS	Database Systems	KZ	2
Basic concepts of databa	ase systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and ir	ntegrity of data, da	atabase queries,
relational algebra, SQL	language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW.		
15JZ1A	Foreign Language - English 1	Z	3
Grammatical structures	and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and	communicative s	kills. Elementary
stylistics forms. Oral and	d written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.		

### Code of the group: 4.S.BBEZ VÝBĚR 17/18

Name of the group: 4.sem bak. BEZ výběr předmětu (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
11EMO	Electromagnetic Field and Optics Zuzana Malá, Tomáš Vítů, Marek Honců Tomáš Vítů (Gar.)	Z,ZK	4	2P+1C	L	Z
17SFID	Public Administration and Financing in Transport Olga Mertlová, Rudolf F. Heidu	Z,ZK	4	2P+1C+12B	L	Z

# Characteristics of the courses of this group of Study Plan: Code=4.S.BBEZ VÝBĚR 17/18 Name=4.sem bak. BEZ výběr předmětu (od)17/18

11EMO	Electromagnetic Field and Optics	Z,ZK	4
Electric field. Electric cu	rrent. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.		
17SFID	Public Administration and Financing in Transport	Z,ZK	4
Basic issues of transpo	rt and transport policy in the social context, environmental issues in transport, economical aspects of transport, public admini	stration and finan	cing of transport.

Name of the block: Compulsory courses in the program Minimal number of credits of the block: 22 The role of the block: P

Code of the group: 4.S.BBEZ 17/18 Name of the group: 4.sem.BEZ bak.prez.(od)17/18 Requirement credits in the group: In this group you have to gain 22 credits Requirement courses in the group: In this group you have to complete 7 courses Credits in the group: 22

#### 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
11MSP	Modeling of Systems and Processes Bohumil Kovář, Lucie Kárná, Jan Přikryl, Marek Honců, Elena Alexeeva Bohumil Kovář Bohumil Kovář (Gar.)	Z,ZK	4	2P+2C+12B	L	Р
18KAD	Kinematics and Dynamics Vít Malinovský, Petr Zlámal, Stanislav Hračov, Vít Malinovský	Z,ZK	4	2P+1C	L	Р
11LP	Linear Programming Ivan Nagy Ivan Nagy Ivan Nagy (Gar.)	KZ	3	2P+1C+12B	L	Р
14OJEM	Object Modelling	KZ	3	2+1	L	Р
23BER	Safety and Ergonomical Solutions in Transport	KZ	3	2+1	L	Р
23PSOB	Psychology and Sociology in the Security	Z	2	2+0	L	Р
15JZ2A	Foreign Language - English 2 Eva Rezlerová, Jan Feit, Lenka Monková, Marie Michlová, Jitka Heřmanová, Dana Boušová, Barbora Horáčková, Marek Tomeček, Peter Morpuss,	Z,ZK	3	0P+4C+10B	L	Р

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

11MSP	Modeling of Systems and Processes	Z,ZK	4
Mathematical methods z-transform, and the rec	and algorithms as a basis for system analysis. Methods for modelling and evaluating the systems in continuous and discrete b cursive algorithms in solution of differential and difference equations, as an instrument for system description. Practical use of	time domain. Lap technical compu	blace transform, ting environment
(MATLAB).			
18KAD	Kinematics and Dynamics	Z,ZK	4
Motion along a line, mot	ion along a curve. Kinematics of rigid plane, kinematics of rigid body. Point mass kinematics, system of point masses. Point ma	ass dynamics and	d system of point
masses, equation of mo	tion. Method of Newton. Princle of D'Alembert. Free and forced vibration with one degree of freedom. Viscous damping. Impa	act theory. Introd	uction to the
solution of vibration with	n multiple degrees of freedom.		
11LP	Linear Programming	KZ	3
Formulation of the prob	em of linear programming, transcription of some practical problems to the linear programming problems. Simplex and convex	polyedra. Simple	ex method, basic
solutions, duality princip	le in linear programming, stability of solution of linear programming problem. Traffic problem.		
14OJEM	Object Modelling	KZ	3
Programming and mode	Iling, method and attribute, object and encapsulation, class, inheritance, polymorphism, perzistence, preconditions, postcondition	ons, consistence	checks, abstract
classess, design pattern	ns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.		
23BER	Safety and Ergonomical Solutions in Transport	KZ	3
Safety principles in tran	sport and ergonomy. Basics of human-machine interface (HMI). Vehicle design from passengers safety point of view. Evaluat	ion of safety crite	eria and vehicle
parameters.			
23PSOB	Psychology and Sociology in the Security	Z	2
The role of sociology and	d psychology as a discipline in the discourse of security. Security of information in cyberspace from the perspective of social psyc	hology. Application	on of sociological
and psychological meth	odology in communication security in cyberspace.		
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 s	kills. Elementary
stylistics forms. Oral an	d 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: 6 The role of the block: PV

Code of the group: Y1-BBEZ 17/18 Name of the group: PVP bak.prez.BEZ 17/18 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
17Y1AF	Alternative Forms of Transportation Project Financing	KZ	2	2+0	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 Tomáš Musil	KZ	2	2P+0C	Z	PV
14Y1BE	Barrierless Transport Jan Krčál	KZ	2	2P+0C	L	PV
15Y1BO	Work Safety and Health Protection in Transportation Eva Rezlerová, Jan Feit, Petr Musil	KZ	2	2P+0C	L	PV

14Y1BM	Biometric Methods	KZ	2	2P+0C	Z	PV
23Y1DZ	Data and Their Processing for Engineering Fields Needs	KZ	2	2P+0C	Z	PV
12Y1DS	Project Documentation in Practice	KZ	2	2P+0C	Z	PV
15Y1DU	History of Art and Society	KZ	2	2+0	Z	PV
15Y1DZ	History of Railway Martin Jacura, Eva Rezlerová, Jan Feit	KZ	2	2P+0C	L	PV
17Y1EV	Public Sector Economy	KZ	2	2P+0C	Z	PV
20Y1EK	Qualification in Electrical Engineering Jindřich Sadil	KZ	2	2P+0C	L	PV
16Y1EN	Energy Requirements of Vehicles Jaroslav Opava	KZ	2	2P+0C	L	PV
20Y1EA	Environmental Aspects of Transport	KZ	2	2P+0C	Z	PV
15Y1EH	European Integration within Historical Context Eva Rezlerová, Jan Feit	KZ	2	2P+0C	Z	PV
18Y1EM	Experimental Methods in Mechanics Daniel Kytýř, Stanislav Hračov	KZ	2	2P+0C	Z	PV
21Y1FN	Factors Affecting the Rate of Accidents in Aviation	KZ	2	2+0	Z	PV
15Y1FD	French Area Studies and Transportation Irena Veselková	KZ	2	2P+0C	L	PV
14Y1HW	Computer Hardware Vít Fábera	KZ	2	2P+0C	L	PV
15Y1HL	History of Air Transport Eva Rezlerová, Jakub Kraus, Vladimír Plos, Jan Feit	KZ	2	2P+0C	L	PV
15Y1HD	History of City Mass Transport	KZ	2	2P+0C	Z	PV
12Y1HD	Traffic Noise Libor Ládyš	KZ	2	2P+0C	L	PV
15Y1HE	Work Hygiene and Ergonomics in Traffic Eva Rezlerová, Jan Feit, Petr Musil	KZ	2	2P+0C	Z	PV
16Y1IS	Interactive Systems and Simulations	KZ	2	2P+0C	L	PV
12Y1KN	Combined Transportation	KZ	2	2P+0C	Z	PV
23Y1KO	Quantum Physics and Optoelectronics	KZ	2	2P+0C	L	PV
21Y1LA	Aerobatics	KZ	2	2+0	L	PV
21Y1LR	Radio Technology in Aviation	KZ	2	2+0	L	PV
17Y1LL	Logistics of Passenger and Freight Air Transport Petra Skolilová	KZ	2	2P+0C	L	PV
20Y1LN	Location and Navigation Petr Bureš	KZ	2	2P+0C	L	PV
21Y1MZ	Managerial Ethics	KZ	2	2+0	Z	PV
17Y1MD	Marketing in Transportation Petra Skolilová	KZ	2	2P+0C	Z	PV
11Y1MM	Mathematical Models in Economy	KZ	2	2P+0C	Z	PV
18Y1MT	Engineering Materials Jaroslav Valach	KZ	2	2P+0C	L	PV
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2	2P+0C	Z	PV
15Y1NE	German in the Economy and Society	KZ	2	2P+0C	Z	PV
21Y10L	Security of Air Transport	KZ	2	2+0	L	PV
23Y10K	Protection of Critical Objects and Infrastructures	KZ	2	2P+0C	L	PV
20Y1OI	Fare Collection and Information Systems Milan Sliacky	KZ	2	2P+0C	L	PV
14Y10P	Operating System	KZ	2	2P+0C	Z	PV
17Y10F	Personal Finance	KZ	2	2P+0C	Z	PV
11Y1PV	Parametrical and Multicriterial Programming	KZ	2	2P+0C	Z	PV
17Y1PM	Personnel Management	KZ	2	2P+0C		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 Kristýna Neubergová	KZ	2	2P+0C	Z	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
20Y1PK	Product Quality Management Processes Martin Leso	KZ	2	2P+0C	Z	PV

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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
12Y1PU	Organization Disposition of Railway Stations	KZ	2	2P+0C	L	PV
12Y1PC	Pedestrian and Cycling Transport	KZ	2	2P+0C	L	PV
17Y1ST	Titan Simulation	KZ	2	2P+0C	L	PV
20Y1SC	Sensors and Actuators Pavel Hrubeš	KZ	2	2P+0C	L	PV
11Y1SI	Transportation Software Engineering	KZ	2	2P+0C	Z	PV
22Y1SZ	Forensic Expertise	KZ	2	2P+0C	L	PV
16Y1KS	Quality and Reliability of Vehicles Jaroslav Machan	KZ	2	2P+0C	Z	PV
12Y1SU	Road Management and Maintenance Martin Höfler, Otakar Vacín	KZ	2	2P+0C	L	PV
21Y1TH	Aircraft Technical Handling Anna Polánecká	KZ	2	2P+0C	Z	PV
11Y1TG	Graph Theory	KZ	2	2P+0C	L	PV
14Y1TI	Creating Interactive Internet Applications	KZ	2	2P+0C	L	PV
12Y1VC	Waterways and Shipping	KZ	2	2P+0C	Z	PV
23Y1VS	Negotiation and Cooperation	KZ	2	2P+0C	Z	PV
14Y1VM	Development of Applications for Mobile Devices	KZ	2	2P+0C	Z	PV
16Y1VT	Development in Railroad Vehicles Jaroslav Opava	KZ	2	2P+0C	L	PV
14Y1W1	Webdesign 1	KZ	2	2P+0C	Z	PV
14Y1W2	Webdesign 2	KZ	2	2P+0C	L	PV
16Y1ZL	Vehicle Testing, Legislation and Construction Josef Mik	KZ	2	2P+0C	Z	PV
16Y1ZG	Introduction into Applied Computer Graphics Adam Orlický, Stanislav Novotný	KZ	2	2P+0C	L	PV
14Y1ZM	Fundamentals of Parametric and Adaptive Programming	KZ	2	2P+0C	L	PV
11Y1ZM	Foundation of MATLAB Programming	KZ	2	2P+0C	L	PV
12Y1ZU	Principles of Urbanism Karel Hájek	KZ	2	2P+0C	Z	PV
21Y1UT	Airports Maintenance	KZ	2	2+0	L	PV
14Y1UP	Editing of Theses in MS Word	KZ	2	2P+0C	L	PV
18Y1UK	Introduction of Rail Vehicles Josef Kolář	KZ	2	2P+0C	L	PV
16Y1RE	Control and Electronic Vehicle Systems Josef Mik, Jiří First	KZ	2	2P+0C	Z	PV
21Y1RZ	Human Resources Management Šárka Hulínská	KZ	2	2P+0C	L	PV
Characteristics of the	courses of this group of Study Plan: Code=Y1-BBEZ 17/18 Na	me=PVP bak	.prez.BE	Z 17/18	K7	2
There will be specifed such for	orms of financing in transportation, where the public sector body perform the final debi	tor, i. e. debtor pa	yments cor	ne from its b	udget, but the	final debtor
is not a direct participant of th	e transaction and it is not the counterparty of the financial institute which provides the f	unding. Issue of s	ecurities as	an alternativ	e source of t	ansportation
18Y1AM Ana	atomy. Mobility and Safety of Man				K7	2
Survey of tissues. Anatomical	I structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical s	structure of muscle	es. 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 neans and traffic safety regulations	accidents. Mobili	ty of ill and	injured man	and his treatr	nent. Human
14Y1AV Ani	mation and Visualization				KZ	2
Introducing and basic 3D prin	nitives and their basic modifications and transformations. Creating 3D scenes. Transfor	ormations of 3D p	rimitives, co	onnection / in	iteraction / co	mbination of
Camera settings, moving in the	he scene. Rendering and making animation.	ignunings. Setting	or light and	materiarpar	ameters. Sce	ne capturing.
20Y1AE Apr	blied Electronics				KZ	2
Basic electronic semiconduct amplifiers, basic logic gates.	tor components, their principles, characteristics and typical connection diagrams. Sem Functions of basic electronic circuits and methods for their designs (rectifiers, voltage	niconductor PN jui regulator with Ze	nction diode ner diode, t	es, transistor ransistor as	s, thyristor, or an amplifier, o	perational perational
amplifier as an inverting and	noninverting amplifier).				<b>Z</b> 7	
I4T ID⊏   Bar   The issue of barrierless acces	ssible public transportation in terms of architectural barriers and also for transportation-	technological poir	nt of view. S	ا ل tudents will d	r∧∠   gain theoretic	∠ al knowledge
of barrierless environment roa	ads, railway stations, public transport stops, terminal buildings, vehicles, public transport	t, information and	orientation	systems and	transportatio	n technology.
Theoretical knowledge will be	e supplemented by practical examples.					

15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
Fundamental legislative	e, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation	. Health protection	n programmes,
health insurance of hor	ne and foreign business trips, statistics, working practice.	·	
14Y1BM	Biometric Methods	KZ	2
Basic biometric terms,	authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies,	hand geometry, ir	is recognition,
retina recognition meth	od, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavio	ral methods, the u	se of biometrics
in transport application	s, safety and risks of biometric technologies.		
23Y1DZ	Data and Their Processing for Engineering Fields Needs	KZ	2
Courses of risk, basic t	erms, data collection, data sets, data random uncertainty and data epistemic uncertainty, data processing, hazard, risk, value	scales, analytica	l, empirical and
heuristic methods, haz	ard determination and risk determination, methods for variants' creation, decision support systems.		
12Y1DS	Project Documentation in Practice	KZ	2
Project documentation	creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining proce	ss. Budget and pr	icing. Practical
creation of some project	t documentation parts.	0 1	0
15Y1DU	History of Art and Society	K7	2
History of art - definition	is terminology division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic, Sta	ations, bridges, ind	ustrial buildings.
Design of transport ver	ijcles.		
15V1D7	History of Railway	K7	2
Horse-drawn railways	I hadon you had way a share the second s	enublic" electric t	raction World
War II railways, railway	development in the 2nd half of 20th century, high-speed railway origins, railway loss closing, important long-distance train con	ections railway lir	es construction
railway accidents railw	available for the second of second strain of second strain and second strain and second strain of second str	colloris, raiway in	
	Dublic Sector Se	K7	<u>ົ</u>
	Public Sector Economy		
tax avatam of the CP	i medy or public sector, public choice medy, externames, decisions about public minute anocation, economic assessment or tatto hudant management of public projects a their company of choice anocation, economic assessment or public transferrations of DDB projects funding	a from El fundo	BA, WICA, CEA),
lax system of the CR, s	tate budget, management of public projects a trein economic enciency assessment, way of elaboration of PPP projects, funding	g Irom EO Iunas, p	
20Y1EK	Qualification in Electrical Engineering	KZ	2
Practical experience wi	th measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock haza	rd, symbols and la	abeling, nominal
voltage, maximum allo	wed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legisl	ation, standards a	and regulations
in relation to health and	I safety and electrical engineering.		
16Y1EN	Energy Requirements of Vehicles	KZ	2
Dynamics and the drivi	ng inertial of the vehicles. Types of energy - kinetic, static, heat, chemical and others. Ways of energy change into kinetic ene	ergy. Combustion	engine, electric
drive, steam engine, ai	r engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW analysis.		
20Y1EA	Environmental Aspects of Transport	KZ	2
State of the atmosphere	e, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabili	stic forecasts, fore	ecast evaluation.
Air quality, main polluta	ints and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp	ortation in climate	e change.
15Y1EH	European Integration within Historical Context	KZ	2
Versailles system, form	ation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism	n. Little Entente, if	s principles and
goals. Europe after Hitl	er's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war an	d its consequence	es for Europe.
New quality of French-	German relationship - a driving power of starting European integration.		
18Y1EM	Experimental Methods in Mechanics	K7	2
The purpose and role of	f experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destruct	ive testing of mate	erials. Design of
experimental procedure	es and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement.	Fatique and lifetin	ne prediction.
Instrumented hardness	testina. Introduction to electron microscopy. Errors in measurement.		
21Y1EN	Eactors Affecting the Rate of Accidents in Aviation	K7	2
Introduction The scope	of international and national organizations in civil aviation. The scope of the investigation organisations within the state and	international comr	nittees Analysis
and interpretation of IC	A Annexes 13 and 19 Analysis and interpretation of the Regulation (FC) Regulation (FL) Human factor Utilization of info	rmation from the i	nvestigation
reports			General
	French Area Studies and Transportation	K7	2
	relicit Area Studies and Transportation		ے terminology
French society and cult	u regions, transport ministructure. Fails and its signs, city public transport. Noai traine, motoways, raiway traine, i Gy, an t bure, current political system. Suctom of education, studying in Erance, Solected authors of Ereach literature. Fronch assteration		terminology.
	the Comment pointed system. System of education, studying in Hance. Selected adulors of Hench iterature. Theref gastronic		0
	Computer Hardware	rz	
Design combinational a	and sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of complementation on FPGA, VHDL language.	uter components -	controller, ALU,
memories, i/O subsyste	ent, typical interfaces and buses (PCI express, i2C, SPI, USB).		
15Y1HL	History of Air Transport	KZ	2
Aeronautics. Beginning	is of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of airports in the Czech Republic. World airports	. Airlines of the wo	orld. Helicopters.
CSA airplanes. Famou	s aviators. Classic era of aviation. Golden era of civil aviation. Supersonic fiying, Modern era of civil aviation. Hying in the wo		
15Y1HD	History of City Mass Transport	KZ	2
History of city mass tra	nsport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current tren	ds and developme	ents of tariff and
clearance systems. His	tory of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Republic and S	lovakia.	
12Y1HD	Traffic Noise	KZ	2
Acoustic introduction, t	pasic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regula	tions. Creation ac	oustic climate in
area, principles of urbar	n acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area of i	nterest. Methodolo	ogy of computing
and measurement of tr	ansport noise. Acoustic studies, measuring protocol.		
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
Basic knowledge of oc	cupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of the	e factors on healt	h of workers.
Creation and protection			
	n of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology t	o possibilities and	skills of a man.
Practical examples from	n of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology t n the field of transportation; relevant legislature.	o possibilities and	skills of a man.
Practical examples from 16Y1IS	of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology t n the field of transportation; relevant legislature.	to possibilities and	skills of a man.
Practical examples from 16Y1IS Principles of vehicle mo	n of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology t n the field of transportation; relevant legislature. Interactive Systems and Simulations ovement. Forces in moving vehicle, origin, classification, assesment. Adhesion. Traction output. Drives, source systems, classi	to possibilities and KZ fication, structure,	skills of a man. 2 operational and
Practical examples from 16Y1IS Principles of vehicle more energetic singularity. So	n of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to n the field of transportation; relevant legislature. Interactive Systems and Simulations ovement. Forces in moving vehicle, origin, classification, assesment. Adhesion. Traction output. Drives, source systems, classi ources of energy. Calculations to assess output quantities and energetic intensity. Auxiliary systems energy consumption.	to possibilities and KZ fication, structure,	skills of a man. 2 operational and
Practical examples from 16Y1IS Principles of vehicle model energetic singularity. S 12Y1KN	n of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to n the field of transportation; relevant legislature. Interactive Systems and Simulations ovement. Forces in moving vehicle, origin, classification, assessment. Adhesion. Traction output. Drives, source systems, classi ources of energy. Calculations to assess output quantities and energetic intensity. Auxiliary systems energy consumption. Combined Transportation	to possibilities and KZ fication, structure,	skills of a man. 2 operational and 2
Practical examples from 16Y1IS Principles of vehicle model energetic singularity. S 12Y1KN Combined transport str	n of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to n the field of transportation; relevant legislature.  Interactive Systems and Simulations ovement. Forces in moving vehicle, origin, classification, assessment. Adhesion. Traction output. Drives, source systems, classi ources of energy. Calculations to assess output quantities and energetic intensity. Auxiliary systems energy consumption.  Combined Transportation ategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transplaning area	to possibilities and KZ fication, structure, KZ as. Multimodal log	skills of a man. 2 operational and 2 istic centres.
Practical examples from 16Y1IS Principles of vehicle models energetic singularity. S 12Y1KN Combined transport str 23Y1KO	or of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to n the field of transportation; relevant legislature.     Interactive Systems and Simulations     ovement. Forces in moving vehicle, origin, classification, assessment. Adhesion. Traction output. Drives, source systems, classi     ources of energy. Calculations to assess output quantities and energetic intensity. Auxiliary systems energy consumption.     Combined Transportation     ategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping area     Output Physics and Optoelectronics	to possibilities and KZ fication, structure, KZ as. Multimodal log	skills of a man. 2 operational and 2 jistic centres. 2
Practical examples from 16Y1IS Principles of vehicle model energetic singularity. S 12Y1KN Combined transport str 23Y1KO Ground of quentum pho-	of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to     n the field of transportation; relevant legislature.     Interactive Systems and Simulations     worment. Forces in moving vehicle, origin, classification, assessment. Adhesion. Traction output. Drives, source systems, classi     ources of energy. Calculations to assess output quantities and energetic intensity. Auxiliary systems energy consumption.     Combined Transportation     ategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping area     Quantum Physics and Optoelectronics     weise. Application of quantum physics in practice. Ontrelectronics	to possibilities and KZ fication, structure, KZ KZ	skills of a man. 2 operational and 2 jistic centres. 2

21Y1LA Aerobatics	KZ	2
Methodology of flying aerobatic figures. Aerodynamics and flight mechanics of aerobatic figures. Aerobatic training syllabi and aerobatic competition	is. Creating an aer	obatic sequence.
Safety in aerobatics, accidents related to aerobatics. Physiological aspects of flying aerobatics. Aircraft structure loads and construction fatigue str	ength of aerobatic	aircraft. Upset
recovery training (UPRT) for commercial pilots and related accidents.	•	·
21Y11 R Radio Technology in Aviation	K7	2
Electric signals and the wave spectrum Analog and digital modulations. Noises Eilters Resonance circuits Electromagnetic field Electromagnetic	c wave propagation	Nave ranges
in aviation radiation and reception of electromagnetic field. Antennas in aviation, receivers and transmitters	s nave propagation	. Wave rangee
17V11	<b>K</b> 7	2
17 TTLL   LOUISIUS OF FASSEINGET AND FIELD THATSPOIL		
Logistics anime passenger and cargo. And an and an port terminals for passenger and cargo transport. Animes in terms of logistics systems. Acid	transport process	passengers and
an cargo, mornation systems in an unapport. Global distribution systems.	1/7	0
20 Y ILIN   Location and Navigation		∣ ∠
Description and examples of road networks, localization on the network. Routing algorithms, their properties and implementation. Description and	examples of datase	ets for finding
transport connections, routing algorithms, their properties and implementation.		
21Y1MZ   Managerial Ethics	KZ	2
The basic terminology of managerial ethics. Basics of etiquette and rules of social contact. Social events. Etiquette of working contacts. The art of pre-	sentation and nego	otiation. Personal
image. Diplomatic protocol. Managerial ethics. Business ethics.	<u> </u>	1
17Y1MD   Marketing in Transportation	KZ	2
General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transp	ort and the resultin	g differences in
the application of marketing.		
11Y1MM Mathematical Models in Economy	KZ	2
The goal of the course is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their programming.	gram implementati	ion. The outcom
of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained optimization.		
18Y1MT Engineering Materials	KZ	2
Systematic overview of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymer	s and composites,	attention is paid
to biological materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's selection	on charts.	
14Y1MP Modeling Complex Assemblies and Models in Parametric Modeller	K7	2
Assemblies programming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pi	pelines, and distrib	ution lines.
Photorealistic output rendering - physical and material properties, lighting sources, MKP - visual example.		
15Y1NE German in the Economy and Society	K7	2
Derived and social issues of German speaking countries and of the ELL Reading and listening of texts. Lexical grammatical and semant	ic analysis of texts	
receit economic and social issues of Cerman speaking Councies and of the LC. Reading and isterning of texts. Lexical, grammatical and seman	ic analysis of texts.	
21V10L Scourity of Air Transport	K7	2
21110L Security of All Transport		C Z
The development of civil aviation. Delimitoris and regulations, miscoly of acts of unlawin interference, reprofism in aviation, vational security prograt aviation, exercised preventing and expression of acts of unlawin interference. Terrorism in aviation, vational security prograt aviation, exercised preventing and expression of acts of unlawin interference.	am. Chsis manage	ment. Protection
23Y10K   Protection of Critical Objects and Infrastructures	KZ	2
lypes of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection	, safety of critical of	ojects and critical
infrastructures.		1
20Y10I   Fare Collection and Information Systems	KZ	2
Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components	ents for users (time	tables, maps,
panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parki	ng).	
14Y1OP Operating System	KZ	2
Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Progr	ams and processe	ss. OS boot,
runlevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, g	raphic editors, sour	nd, video and
communication. Services management. Safe and secure configuration of OS. Remote administration.		
17Y1OF Personal Finance	KZ	2
Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of	housing (rent, mor	tgage, savings,
consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability	and adequacy), se	ecuring the future
(retirement savings and insurance).		
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 constrain	ts. Computation of	efficient solution.
17Y1PM Personnel Management	K7	2
Human sources, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation teamwork interc	ultural communica	tion.
14V1PI Cornorate Information System	<b>K</b> 7	2
Tet information koulded a components of information system sustain and semantic same of data structure of compared information system of	INZ	
Data-internation-knowledge, components of monitation system, syntatic and information service of conformation system, p	articular information s	vetem operation
(personalistic, production, storage, etc.), corporate momentor pointe and momentor control, risks or momentor system operation, regarementor the storage environmentor system operation, regarementor de storage environmentor system operation, regarementor de storage environmentor environm	sint of information 5	ystern operation,
Advance information system, information system account, data protection, safety pointes.	L/7	
141 TPZ AVAILED Data Processing in Spreadshet Creating fits the table approaches formatting of numbers insertion of features		
Suddens will be raminial with principles of working in a spreadsheet. Graphic rayour of the table appearance, formatung of numbers, insertion of no	mulas and function	
addressing, error detection. working with large spreadsneets, niters, advanced niters, database functions. Pivot tables and charts, conditional formati	ing, solution finding	, solver, macros,
data analysis. Examples and questions from various companies and training.		
12Y1PD Assessment of Transport Structures	KZ	2
Assessment of transport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWO1 analysis. Landscape character, possibili	les of its protection	and assessment
transport structures on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples	of assessment of tra	affic buildings on
		-
14Y1PG Computer Graphics	KZ	2
Basic tormats of graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with	editing programs (v	within the user
Ievel scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.	• • • • • • • • • • • • • • • • • • •	
14Y1P2   Computer Aid of Transportation Projecting 2	KZ	2
14Y1P2 Computer Aid of Transportation Projecting 2 Overview of CAx application for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting	KZ	2 Advanced blocks
14Y1P2   Computer Aid of Transportation Projecting 2 Overview of CAx application for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting modification (attributes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic tra	KZ J, data exchange). / Isition curve, cross	2 Advanced blocks and longitudinal
14Y1P2 Computer Aid of Transportation Projecting 2 Overview of CAx application for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting modification (attributes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic tra section). Basics of 3D modelling.	KZ , data exchange). / nsition curve, cross	2 Advanced blocks -and longitudinal

18Y1PS Computer Simulations in Mechanics	KZ	2
Principles and overview of programs for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model de	velopment and ac	laptation of
geometry from other CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary	conditions and ap	plication of the
load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.		
20Y1PK Product Quality Management Processes	KZ	2
General principles of organization management. Management systems and international standards; quality management systems. Quality products,	processes, syster	ms. A framework
of standards for systems management, management principles. Principles of process management, monitoring and measurement systems management	nt. Uniform framev	ork of standards
for systems management. Process management principles. Metrology and testing. Product certification.		-
14Y1PJ C Programming Language	KZ	2
C programming language. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation,	string, files, struct	ures and unions.
Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.		-
12Y1C1 Designing Roads in Civil 3D I	KZ	2
The course is devoted to the trainic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through the base of the buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through the base of the bas	igh the complete	design of this
particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. If	ne course also inc	ciudes a basic
explanation of the traine building design in the real-life profession.	1/7	0
12 T T C Designing Roads in Civil 3D II	NZ	Z
The course is devoted to the train building south at the specification of the model as such, by the means of a building from the initial situation source the provide structure specification to the model and work sections and the cubic capacity calculation.	be proviously acqu	uirod skills aro
particular linear building, nom the initial studation, over the iongradinal section, to the model and work sections and the cubic capacity calculation. In		
1/V1PA 3D Modeling in AutoCAD	<b>K</b> 7	2
Work in 3D non-narametric modeller (AutoCAD) environment scenes rendering creation of planar and volumetric objects user setun creation obje	ct data creation y	vork with data
connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.		
16V1PV Operation Construction and Maintenance of Vehicles	K7	2
Methods of vehicle production. Vehicle maintenance. Vehicle diagnostics. Maintenance and repair plans. Engine maintenance and emission measur	ement Transmiss	sion mechanism
General principles of engine diagnostics.	ement. Hunomie	
12Y1PLI Organization Disposition of Railway Stations	K7	2
Connecting station. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Z	one stations. Forr	nation vards.
Reserve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic railway	network.	ilation yarao.
12Y1PC Pedestrian and Cycling Transport	K7	2
Ruites for pedestrians Pedestrian crossings Modifications for blind dim-sighted and disabled people. Design of cycle routes network. Ways of cycle r	oute layout and de	sion parameters
for cyclists. Separation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossi	ings with other tra	nsport modes,
crossroads. Traffic signs and road marking for cyclists.	U	• •
17Y1ST Titan Simulation	KZ	2
Titan is a management game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same produce	uct. Students set a	a price and
determine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequences	nces of their decis	ions by the form
		ions by the form
of financial corporate reports and they use this information for other business decisions.		iono by the form
of financial corporate reports and they use this information for other business decisions.         20Y1SC       Sensors and Actuators	KZ	2
of financial corporate reports and they use this information for other business decisions.         20Y1SC       Sensors and Actuators         Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor	KZ	2 electro-magnetic,
of financial corporate reports and they use this information for other business decisions.         20Y1SC       Sensors and Actuators         Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.	KZ rs of mechanical, e	2 electro-magnetic,
of financial corporate reports and they use this information for other business decisions.         20Y1SC       Sensors and Actuators         Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.         11Y1SI       Transportation Software Engineering	KZ rs of mechanical, e KZ	2 electro-magnetic, 2
of financial corporate reports and they use this information for other business decisions.         20Y1SC       Sensors and Actuators         Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.         11Y1SI       Transportation Software Engineering         Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and imple	KZ rs of mechanical, e KZ mentation using fo	2 electro-magnetic, 2 ormal techniques
of financial corporate reports and they use this information for other business decisions.         20Y1SC       Sensors and Actuators         Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.         11Y1SI       Transportation Software Engineering         Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and imple and practical usuage.	KZ rs of mechanical, e KZ mentation using fo	2 electro-magnetic, 2 ormal techniques
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of financial corporate reports and they use this information for other business decisions.         20Y1SC       Sensors and Actuators         Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.         11Y1SI       Transportation Software Engineering         Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and imple and practical usuage.         22Y1SZ       Forensic Expertise         Historical evolution of forensic engineering, forensic activity, current legislature in the Czech Republic, different disciplines, notion of forensic, forensic expert role in the obtaining proofs, forensic methodology. Notion of the evidence, general principles of evidence obtaining, metrology, protocol, evide forensic report, elements. Finding, expert testimony / report.         16Y1KS       Quality and Reliability of Vehicles         Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability.	KZ rs of mechanical, e KZ mentation using fo KZ ic legislation, bas ences collection, s KZ Key legislation. F	2 electro-magnetic, 2 ormal techniques c forensic acts, ite inspection, 2 MEA (Failure
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of financial corporate reports and they use this information for other business decisions.         20Y1SC       Sensors and Actuators         Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.         11Y1SI       Transportation Software Engineering         Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and imple and practical usuage.         22Y1SZ       Forensic Expertise         Historical evolution of forensic engineering, forensic activity, current legislature in the Czech Republic, different disciplines, notion of forensic, forensic expert role in the obtaining proofs, forensic methodology. Notion of the evidence, general principles of evidence obtaining, metrology, protocol, evide forensic report, elements. Finding, expert testimony / report.         16Y1KS       Quality and Reliability of Vehicles         Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. Mode and Effects Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other method Knowledge-based systems of quality and reliability, data collection.         12Y1SU       Road Management and Maintenance         Getting familiar with ownership of roads in the Czech Republic and the administration of the road at the state and county leve	KZ rs of mechanical, e KZ mentation using fo KZ ic legislation, basi ences collection, s Key legislation. F s used in industria KZ popment of road ne	2 electro-magnetic, 2 ormal techniques 2 c forensic acts, ite inspection, 2 MEA (Failure al applications. 2 twork, short,
of financial corporate reverts and they use this information for other business decisions.         20Y1SC       Sensors and Actuators         Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.         11Y1SI       Transportation Software Engineering         Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implein and practical usuage.         22Y1SZ       Forensic Expertise         Historical evolution of for-ensic engineering, forensic activity, current legislature in the Czech Republic, different disciplines, notion of forensic, forensic expert role in the obtaining proofs, forensic methodology. Notion of the evidence, general principles of evidence obtaining, metrology, protocol, evide forensic report, elements. Finding, expert testimony / report.         16Y1KS       Quality and Reliability of Vehicles         Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. data collection.         12Y1SU       Road Management and Maintenance         Getting familiar with ower ship of roads in the Czech Republic and the administration of the road at the state and county level. It is presented develor medium and long-term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, speciffics, possibilities and recommend on this	KZ rs of mechanical, e KZ mentation using fo KZ ic legislation, basi ences collection, s Key legislation. F s used in industria KZ opment of road ne pair methods are	2 electro-magnetic, 2 ormal techniques 2 c forensic acts, ite inspection, 2 MEA (Failure al applications. 2 twork, short, discussed in the
of financial corporate reports and they use this information for other business decisions.         20Y1SC       Sensors and Actuators         Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.         11Y1SI       Transportation Software Engineering         Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and imple and practical usuage.         22Y1SZ       Forensic Expertise         Historical evolution of forensic engineering, forensic activity, current legislature in the Czech Republic, different disciplines, notion of forensic, forensic expert role in the obtaining proofs, forensic methodology. Notion of the evidence, general principles of evidence obtaining, metrology, protocol, evide forensic report, elements. Finding, expert testimony / report.         16Y1KS       Quality and Reliability of Vehicles         Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability.         Mode and Effects Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other method Knowledge-based systems of quality and reliability, data collection.         12Y1SU       Road Management and Maintenance         Getting familiar with ownership of roads in the Czech Republic and the administration of the	KZ rs of mechanical, e KZ mentation using fo KZ ic legislation, basis ences collection, s Key legislation. F s used in industria KZ opment of road ne epair methods are	2 electro-magnetic, 2 ormal techniques 2 c forensic acts, ite inspection, 2 MEA (Failure al applications. 2 etwork, short, discussed in the
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16Y12G   Introduction into Applied Computer Graphics	KZ	2
Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colours	chemes, models,	principles of 2D
and 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HVV bas	ics. Introduction to	2D and 3D
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Adv/4704	1/7	0
TYTZW   Foundation of MAILAB Programming	KZ	2
To explain the principle of algorithmization, now charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators,	matrices and elem	ients operations,
Control now, inputs and outputs, graphics, optimization and program code debugging.	1/7	0
12Y12U Principies of Urbanism	KZ	2
Survey on history of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spa	cial arrangement o	of settlements.
Types of towns of clues with a certain prevailing function, forms of their development. Bher overview of rand-use planning.	1/7	0
21Y101   Airports Maintenance	KZ	2
Summer airport maintenance. Summer maintenance equipment. Winter airport maintenance. Winter maintenance equipment. De-icing / anti-icing of	aircraπ. De-icing	anti-icing liquid.
Operang procedures, immations, practices.	1/7	0
14Y10P   Editing of Theses in MS Word	KZ	2
Students will be introduced to the principles of creating and editing targe documents and basic typographic rules. I ney will properly apply styles, creat	e tables of content	s, lists of figures,
tables, graphs, etc. Footnotes, captions, more, they practice conections of minimed documents. The goal is to prepare students for seamless equilibrium they are able to expendence mainly on writing a theorie.	g dissertations and	u meses, so mai
and a de lo concentrate mainty on whiting a utests.	1/7	2
167 TUK   Introduction of Rail venicles	KZ	Z Dolling and
basic characteristics and parameters rail transport systems - railway and urban transport. Basis cirving mechanics rail vehicles - equation or motion track resistance.		ns. Rolling and
ladk resistance. Total unining resistance. Acceleration force. An arguing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle and electric drive. Design concepts rail vehicles and drive of whoel set	se - nyurumecham	c, nyuruuynamic
and electric drive. Design concept rail vehicles and drive of wheel sectors	1/7	0
To YTRE   Control and Electronic venicle Systems	KZ	2
Elementary concepts or regulation. Tools for analytical solution, linear system description. Basic types of a regulator (FID), properties, advantages, dis-	advantages, function	on. Conventional
and hybrid drive control. Electric drive. Vehicle contributication bus (CAN, Lin, FlexRay, ISObus, NVP2000 protocole etc.). Vehicle electronic control,	salety, communica	mon and comfort
Systems.	K7	2
ZITIKZ   HUITIATI KESOURCES MANAGEMENT	KZ	ک ام مید
The position of numar resources in the organization and related disciplines file. Substance, importance and challenges of human resources manage	ement. Internal ar	
dismissal and redundancies of employees. Education of employees. Blanning, Search, recruitment and selection of employees. Motivation, evaluation and	a remuneration of s	all. Positioning,
dismissar and redundancies of employees. Education of employees. Planning career management.		

## List of courses of this pass:

Code	Name of the course	Completion	Credits	
11CAL1	Calculus 1	Z,ZK	7	
Sequence of real n	unbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dim	iensional Euklidear	n space and	
Cartesia	an coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of sev	veral real variables	•	
11CAL2	Calculus 2	Z,ZK	5	
Antiderivative, Ne	Antiderivative, 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.				
11EMO	Electromagnetic Field and Optics	Z,ZK	4	
	Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.			
11FY1	Physics 1	Z,ZK	4	
Kinen	Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed electric current.			
11GIE	Geometry	KZ	3	
Orthographic and oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - parameterization, arc of the curve,				
torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a curved path.				

11LA	Linear Algebra	Z,ZK	3
Vector spaces (line	ar combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and the	ir solvability. Deter	minants and
	their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classificat	ion.	-
11LP	Linear Programming	KZ	3
Formulation of the	problem of linear programming, transcription of some practical problems to the linear programming problems. Simplex and convex po solutions, duality principle in linear programming, stability of solution of linear programming problem. Traffic	iyedra. Simplex m	ethod, dasic
11MSP	Modeling of Systems and Processes	7 7K	4
Mathematical met	hods and algorithms as a basis for system analysis. Methods for modelling and evaluating the systems in continuous and discrete tim	e domain. Laplace	e transform.
z-transform, and th	e recursive algorithms in solution of differential and difference equations, as an instrument for system description. Practical use of tec	chnical computing	environment
,	(MATLAB).	1 0	
11STAS	Statistics	Z,ZK	5
Definition of probat	, ility, random variable and its description, known distributions, random vector, function of random variable. Methods of point estimation. T	festing of statistical	hypothesis.
Regression and co	rrelation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linear re	gression, analysis	of variance,
44)/04	multiple regression, the use of matrices in regression.	-	•
11X31	Project 1	<u> </u>	2
11X32	Project 2	<u> </u>	2
11X33	Project 3	Z	2
11Y1MM	Mathematical Models in Economy	KZ	2
The goal of the co	urse is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their program	n implementation.	The outcom
	Decompetitional and Multipritorial Programming		2
Solution to the prof	Parameter in objective function on right sides and in the matrix of coeficients of linear constraints. Co	n C moutation of effici	ent solution
	Transportation Software Engineering	K7	2
Basic concepts of s	software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implement	ntation using forma	L techniques
	and practical usuage.		
11Y1TG	Graph Theory	KZ	2
Directed and und	irected graphs, weighted graphs, matrices descripting graphs, minimal spanning tree, minimal path, Eulerian paths, graph traversing,	matching in bipart	ite graphs,
	flow networks. Algorithms for problems of existence and optimization. Solving of NP-hard problems, heuristic approach.		
11Y1ZM	Foundation of MATLAB Programming	KZ	2
To explain the prine	ciple of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, mat	rices and elements	operations,
(0) (5)	control flow, inputs and outputs, graphics, optimization and program code debugging.		-
12MDE	Iransport Models and Iransport Excesses	Z,ZK	3
transport and its a	tranic now and methods for their measurement. Models of the tranic now, communications load, line and urban systems. Theory of quees seems the consequences the causes identify and minimize the consequences their analysis the causes identify and minimize the consequences.	ences Improving	s. Quality of
	safetv and fluency.	chees. Improving (	
12PPOK	Designing Roads, Highways and Motorways	K7	3
Definition, types,	pownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard	d speed. Route in i	ural areas.
Range of vision for	stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safet	y device. Crossing	s, junctions,
	intersections.		
12X31	Project 1	Z	2
12X32	Project 2	Z	2
12X33	Project 3	Z	2
12Y1C1	Designing Roads in Civil 3D I	KZ	2
The course is de	voted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go throug	h the complete des	sign of this
particular linear b	uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The	course also includ	les a basic
12V102	Designing Reads in Civil 2D II	K7	2
The course is de	UCSIGNING ROADS IN CIVILISD II.	h the complete dev	∠ sign of this
particular linear b	uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The	previously acquire	d skills are
	improved and developed. Students learn to design intersections.		
12Y1DS	Project Documentation in Practice	KZ	2
Project document	ation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining process.	Budget and pricin	g. Practical
	creation of some project documentation parts.		
12Y1HD	Traffic Noise	KZ	2
Acoustic introducti	on, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulation	s. Creation acoust	ic climate in
area, principies or t	and measurement of transport noise. Acoustic studies, measuring protocol	est. Methodology t	licomputing
12Y1KN	Combined Transportation	K7	2
Combined transp	ort strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas	. Multimodal logist	ic centres.
12Y1PC	Pedestrian and Cycling Transport	KZ	2
Routes for pedestri	ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route	layout and design	parameters
for cyclists. Separ	ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing	s with other transp	ort modes,
	crossroads. Traffic signs and road marking for cyclists.		
12Y1PD	Assessment of Transport Structures	KZ	2
Assessment of tran	isport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWO I analysis. Landscape character, possibilities o	T its protection and	assessment
	s on the randocape. Italing magnemation and randocape connectivity in the preparation of linear structures. Practical examples of ass the environment		ballall 195 ON
12Y1PU	Organization Disposition of Railway Stations	K7	2
Connecting statio	n. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zor	ne stations. Forma	tion yards.
Reser	ve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic	c railway network.	
		-	

Getting familiar \	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 develop	oment of road netw	ork, short,
medium and long-	term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and repai classroom as well as investment activity in highway engineering.	r methods are disci	ussed in the
12Y1VC	Waterways and Shipping	KZ	2
Basic modes of tra	ansport. The position of water transport in the transport system of the Czech Republic and the EU. Advantages and disadvantages of	water transport. Ba	sic systems
of waterways in Eu	urope, a network of waterways in the Czech Republic. Construction of the waterway and its equipment. Management of waterways and	its operation. The I	egal regime
	in inland navigation, navigation rules of operation, navigation maps.		-
12Y1ZU	Principles of Urbanism	KZ	2
Survey on history	or city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacia	arrangement of se	ettlements.
12779	Pailway Lines and Stations	77K	1
Rail transport R	ndiiway Lines and Stations	∠,∠r∖ Spatial lavout of rai	lway lines
	Railway roots point of parameters. Force by our of railway meets realiway meet construction railway substructure and superstructure. Operating and carriage points. Railway lines net and category. Traction in rail	transport.	way mes.
127YDI	Introduction to Transportation Engineering	7.7K	2
Role of transportat	tion in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, p	bublic mass transpo	ort. Negative
	impacts of transportation to environment and safety.		Ū.
14AS	Algorithm and Data Structures	KZ	2
Students will be fai	miliarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze	e problems, propose	e theoretical
solutions to the s	set task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart a	nd use the basics of	of Boolean
	algebra with forming the conditions for the algorithms.		1
14AZ	Data Analysis and Processing	KZ	2
Main aim of this	course is learn students how to prepare raw data for following processing and analysis. Knowledge of algorithms for determining the	parameters of diffe	erent data
sources; source c	an be used images, text, time series, etc. The next step is the theoretical skills and knowledge to apply in solving the problem, e. g. e	extraction paramete	ers from the
140470		K7	2
Basic concepts of	Database systems, concentual model, relational data model, the principles of normal forms, relational database design, security and inte	n CL	
	relational algebra. SQL language, client / server, multilaver architectures, distributed database systems. Access to data via the	WWW.	use queries,
14DB	Database Systems	K7	2
Basic concepts of	database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and inte	grity of data, databa	ase queries,
	relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the	WWW.	•
14KSP	Constructing with Computer Aid	KZ	2
"CAD systems" te	rm determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common wo	rk rules in graphic a	applications
and CA systems	. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possib	oilites, AutoCAD en	vironment
	profiles, drawings with raster foundaments).		-
140JEM	Object Modelling	KZ	3
Programming and	modelling, method and attribute, object and encapsulation, class, inneritance, polymorphism, perzistence, preconditions, postconditions	c concletence choi	
	classess, design patterns, annotations, C++, lava, Eifel, LIML and others object oriented languages and tools		cks, abstract
14000	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.		cks, abstract
14PRG Algorithm develo	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.	KZ	2 es. arrays.
14PRG Algorithm develo	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools. Programming pment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity.	KZ kconditions, cycle	cks, abstract 2 es, arrays,
14PRG Algorithm develo	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.  Programming pment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity.  Project 1	KZ s, conditions, cycle	cks, abstract 2 es, arrays, 2
14PRG Algorithm develo 14X31 14X32	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.  Programming pment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity.  Project 1 Project 2	KZ es, conditions, cycle Z Z	cks, abstract 2 es, arrays, 2 2 2 2
14PRG Algorithm develo 14X31 14X32 14X33	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.  Programming pment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity.  Project 1  Project 2  Project 3	KZ es, conditions, cycle Z Z Z	cks, abstract 2 es, arrays, 2 2 2
14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.  Programming pment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity.  Project 1 Project 2 Project 3 Animation and Visualization	KZ s, conditions, cycle Z Z KZ	2 es, arrays, 2 2 2 2 2
14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV Introducing and ba	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.  Programming opment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity.  Project 1 Project 2 Project 3 Animation and Visualization asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio	KZ s, conditions, cycle Z Z KZ n / interaction / cor	2 es, arrays, 2 2 2 2 2 nbination of
14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV Introducing and ba 3D primitives, crea	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.  Programming pment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity.  Project 1 Project 2 Project 3 Animation and Visualization asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio ting 3D bodies as non-primitives. Using of surfaces. Working with materials and material editors. Lightnings. Setting of light and material	KZ KZ KZ Z KZ N / interaction / cor I parameters. Scen	2 es, arrays, 2 2 2 2 nbination of e capturing.
14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV Introducing and ba 3D primitives, crea	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.  Programming ppment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity.  Project 1 Project 2 Project 3 Animation and Visualization asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio ting 3D bodies as non-primitives. Using of surfaces. Working with materials and material editors. Lightnings. Setting of light and material Camera settings, moving in the scene. Rendering and making animation.	KZ es, conditions, cycle Z Z KZ n / interaction / cor I parameters. Scen	2 es, arrays, 2 2 2 2 nbination of e capturing.
14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV Introducing and ba 3D primitives, crea 14Y1BE	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.  Programming pement, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity.  Project 1  Project 2  Project 3  Animation and Visualization asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio ting 3D bodies as non-primitives. Using of surfaces. Working with materials and material editors. Lightnings. Setting of light and materia Camera settings, moving in the scene. Rendering and making animation. Barrierless Transport	KZ es, conditions, cycle Z Z KZ n / interaction / cor Il parameters. Scen	2 es, arrays, 2 2 2 2 nbination of e capturing. 2
14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV Introducing and ba 3D primitives, crea 14Y1BE The issue of barrie	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools.  Programming pment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity.  Project 1  Project 2  Project 3  Animation and Visualization asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio ting 3D bodies as non-primitives. Using of surfaces. Working with materials and material editors. Lightnings. Setting of light and materia Camera settings, moving in the scene. Rendering and making animation. Barrierless Transport reless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students	KZ es, conditions, cycle Z Z KZ on / interaction / cor Il parameters. Scen KZ will gain theoretica	2 es, arrays, 2 2 2 2 2 mbination of e capturing. 2 l knowledge
14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV Introducing and ba 3D primitives, crea 14Y1BE The issue of barrie of barrierless envir	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools. Programming periodic design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools. Programming periodic design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools. Programming periodic design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools. Programming periodic design patterns, annotations, programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity. Project 1 Project 2 Project 3 Animation and Visualization asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations. Setting of light and material Camera settings, moving in the scene. Rendering and making animation. Barrierless Transport reless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students comment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems comment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport defended to the path.	KZ         es, conditions, cycle         Z         Z         KZ         on / interaction / cor         I parameters. Scen         KZ         will gain theoretica         and transportation	2 es, arrays, 2 2 2 2 mbination of e capturing. 2 I knowledge technology.
14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV Introducing and ba 3D primitives, crea 3D primitives, crea 14Y1BE The issue of barrie of barrierless envir	classes, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools. Programming pment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity. Project 1 Project 2 Project 3 Animation and Visualization asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio ting 3D bodies as non-primitives. Using of surfaces. Working with materials and material editors. Lightnings. Setting of light and materia Camera settings, moving in the scene. Rendering and making animation. Barrierless Transport reless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students toroment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems Theoretical knowledge will be supplemented by practical examples.	KZ es, conditions, cycle Z Z KZ n / interaction / cor Il parameters. Scen KZ will gain theoretica a and transportation	2 es, arrays, 2 2 2 2 mbination of e capturing. 2 I knowledge technology.
14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV Introducing and ba 3D primitives, crea 3D primitives, crea 14Y1BE The issue of barrie of barrierless envir	classes, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools. Programming period of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity. Project 1 Project 2 Project 3 Animation and Visualization asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio ting 3D bodies as non-primitives. Using of surfaces. Working with materials and material editors. Lightnings. Setting of light and materia Camera settings, moving in the scene. Rendering and making animation. Barrierless Transport reless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students onment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems Theoretical knowledge will be supplemented by practical examples. Biometric Methods	KZ KZ KZ KZ KZ KZ KZ will gain theoretica and transportation KZ KZ KZ	2 es, arrays, 2 2 2 2 2 2 2 2 2 2 1 bination of e capturing. 2 I knowledge technology. 2
14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV Introducing and ba 3D primitives, crea 3D primitives, crea 14Y1BE The issue of barrie of barrierless envir 14Y1BM Basic biometric te	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools. Programming pment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity. Project 1 Project 2 Project 3 Animation and Visualization asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio titing 3D bodies as non-primitives. Using of surfaces. Working with materials and material editors. Lightnings. Setting of light and materia Camera settings, moving in the scene. Rendering and making animation. Barrierless Transport erless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students onment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems Theoretical knowledge will be supplemented by practical examples. Biometric Methods erms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies, ha method 2D and 3D face recognition, yein patterns on the wrist, ear biometrics fingerprint recognition, sin spectroscopy, behavioral l	KZ KZ KZ KZ KZ KZ KZ will gain theoretica and transportation KZ MARCA KZ KZ KZ KZ KZ KZ KZ KZ KZ KZ	2 es, arrays, 2 2 2 2 2 2 2 2 1 8 1 8 1 8 1 8 1 8 1 8
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14PRG Algorithm develo 14X31 14X32 14X33 14Y1AV Introducing and ba 3D primitives, crea 14Y1BE The issue of barrie of barrierless envir 14Y1BM Basic biometric to retina recognition	classess, design patterns, annotations, C++, Java, Eifel, UML and others object oriented languages and tools. Programming proment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variable functions), programming techniques, complexity. Project 1 Project 2 Project 3 Animation and Visualization asic 3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connectio ting 3D bodies as non-primitives. Using of surfaces. Working with materials and material editors. Lightnings. Setting of light and materia Camera settings, moving in the scene. Rendering and making animation. Barrierless Transport reless accessible public transport stops, terminal buildings, vehicles, public transport, information and orientation systems Theoretical knowledge will be supplemented by practical examples. Biometric Methods erms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies, ha method, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavioral r in transport applications, safety and risks of biometric technologies. Computer Hardware	KZ KZ KZ KZ KZ KZ KZ Will gain theoretica and transportation KZ KZ KZ	2 es, arrays, 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 1 knowledge technology. 2 ecognition, of biometrics
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14Y1PA	3D Modeling in AutoCAD	KZ	2
Work in 3D non-p	parametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object	data creation, work	with data
	connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.		
14Y1PG	Computer Graphics	KZ	2
Basic formats of	graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editi	ng programs (withi	n the user
	Corporato Information System		2
Data-informatic	COLICITIALION SYSTEM	ן ב∧ת ticular information	Z system
(personalistic, proc	duction, storage, etc.), corporate information politic and information control, risks of information system operation, legal environment of	information system	n operation.
(P , P , P ,	state information system, information system security, data protection, safety politics.		,
14Y1PJ	C Programming Language	KZ	2
C programming lar	nguage. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation, strir	g, files, structures	and unions.
	Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise op	rerators.	
14Y1PZ	Advanced Data Processing in Spreadsheets	KZ	2
Students will be	familiar with principles of working in a spreadsheet. Graphic layout of the table appearance, formatting of numbers, insertion of formu	las and functions,	including
addressing, error d	letection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatting, s	olution finding, solv	/er, macros,
	data analysis. Examples and questions from various companies and training.		
	Creating Interactive Internet Applications	KZ	2
Possibilities of scri	pting language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions. You	own application p	rogrammed
	Editing of Thospe in MS Word	<b>V</b> 7	
Students will be int	EUILING OF THE SECOND CONTRACT AND A	∧∧ Ies of contents list	Z s of figures
tables, graphs, etc	. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless editing dis	sertations and the	ses, so that
, g ,	they are able to concentrate mainly on writing a thesis.		,
14Y1VM	Development of Applications for Mobile Devices	KZ	2
Object oriented	programming, Java programming language, development environment, operating system Android, development application - widgets	containers, thread	ds, menu,
	permissions, services, GUI.		
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 accessibility	and usability, CS	S properties
and selectors	, the issue of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practice	d on practical exa	mples.
14Y1W2	Webdesign 2	KZ	2
Students will learn	advanced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web ser	ver installation + c	onfiguration
	directives. Topics will be practiced on practical examples.		
14Y1ZM	Fundamentals of Parametric and Adaptive Programming	KZ	2
Basics of work at p	from and to another systems. Fundamentals of assemblies creation	D sketches. Impon	and export
	Transportation Psychology	7	2
Subject of psychological	and its basic concepts. Information intake, decision-making and behaviour. Performance, Engineering psychology and vehicle const	ruction. Psycholog	ical aspects
of trave	el route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in tr	ansport operation.	
15JZ1A	Foreign Language - English 1	Z	3
Grammatical struct	tures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and col	nmunicative skills.	Elementary
	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of	of rhetoric.	
15JZ2A	Foreign Language - English 2	Z,ZK	3
Grammatical struct	tures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and con	nmunicative skills.	Elementary
	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of	of rhetoric.	
15X31	Project 1	Z	2
15X32	Project 2	Z	2
15X33	Project 3	Z	2
15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
Fundamental legis	slative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. H	ealth protection pro	ogrammes,
	health insurance of home and foreign business trips, statistics, working practice.		
15Y1DU		1/7	2
History of art - defir	History of Art and Society	KZ	
	HISTORY OF ART and Society nitions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station	K∠ ∣ s, bridges, industri	al buildings.
	HIStory of Art and Society nitions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles.	KZ	al buildings.
15Y1DZ	History of Art and Society itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles. History of Railway vays, steam railways, railway, network development in the 2nd half of 19th century, regional railways, encode railways of the "Eirst Ben	KZ s, bridges, industri KZ	al buildings.
15Y1DZ Horse-drawn railw War II railways rail	History of Art and Society itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connection	KZ   s, bridges, industri KZ   ublic", electric tract	al buildings. 2 tion, World
15Y1DZ Horse-drawn railv War II railways, rail	History of Art and Society itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti railway accidents, railway junctions. Excursions and projections.	KZ   s, bridges, industri KZ   ublic", electric tract ons, railway lines c	al buildings. 2 tion, World onstruction,
15Y1DZ Horse-drawn railw War II railways, rail 15Y1EH	History of Art and Society itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti railway accidents, railway junctions. Excursions and projections. European Integration within Historical Context	KZ   s, bridges, industri KZ   ublic", electric tract ons, railway lines c KZ	al buildings. 2 tion, World onstruction, 2
15Y1DZ Horse-drawn railw War II railways, rail Usy1EH Versailles system,	History of Art and Society itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti 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	KZ   s, bridges, industri KZ ublic", electric tract ons, railway lines c KZ   ttle Entente, its pri	al buildings. 2 tion, World onstruction, 2 nciples and
15Y1DZ Horse-drawn railw War II railways, rail 15Y1EH Versailles system, goals. Europe aft	History of Art and Society itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti 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 er Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and i	KZ   s, bridges, industri KZ   ublic", electric tract ons, railway lines c KZ   ttle Entente, its pri ts consequences fi	2 ion, World onstruction, 2 nciples and or Europe.
15Y1DZ Horse-drawn railw War II railways, rail 15Y1EH Versailles system, goals. Europe aft	History of Art and Society         itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles.         History of Railway         vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep         way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti         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         er Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and i         New quality of French-German relationship - a driving power of starting European integration.	KZ   s, bridges, industri KZ   ublic", electric tract ons, railway lines c KZ   ttle Entente, its pri ts consequences fr	2 tion, World onstruction, 2 nciples and or Europe.
15Y1DZ Horse-drawn railw War II railways, rail 15Y1EH Versailles system, goals. Europe aft 15Y1FD	History of Art and Society         itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles.         History of Railway         ways, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecting 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. Lear Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and i New quality of French-German relationship - a driving power of starting European integration.         French Area Studies and Transportation	KZ s, bridges, industri KZ ublic", electric tract ons, railway lines c KZ ttle Entente, its pri is consequences for KZ	al buildings. 2 tion, World onstruction, 2 nciples and or Europe. 2
15Y1DZ Horse-drawn railw War II railways, rail 15Y1EH Versailles system, goals. Europe aft 15Y1FD France - geograf	History of Art and Society itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti 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. L er Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and i New quality of French-German relationship - a driving power of starting European integration. French Area Studies and Transportation phy and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tra	KZ   s, bridges, industri KZ ublic", electric tract ons, railway lines c KZ ttle Entente, its pri is consequences fo KZ fic, specialised ter	al buildings. 2 tion, World onstruction, 2 nciples and or Europe. 2 minology.
15Y1DZ Horse-drawn railv War II railways, rail 15Y1EH Versailles system, goals. Europe aft 15Y1FD France - geograp Free	History of Art and Society itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti 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. L er Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and i New quality of French-German relationship - a driving power of starting European integration. French Area Studies and Transportation ohy and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air transport and culture. Current political system. System of education, studying in France. Selected authors of French literature. Frence	KZ s, bridges, industri KZ ublic", electric tract ons, railway lines c KZ ttle Entente, its pri ts consequences fr KZ fic, specialised ter ch gastronomy.	al buildings. 2 ion, World onstruction, 2 nciples and or Europe. 2 minology.
15Y1DZ Horse-drawn railw War II railways, rail 15Y1EH Versailles system, goals. Europe aft 15Y1FD France - geograp Free 15Y1HD	History of Art and Society itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti 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. L er Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and i New quality of French-German relationship - a driving power of starting European integration. French Area Studies and Transportation ohy and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tra nch society and culture. Current political system. System of education, studying in France. Selected authors of French literature. Fren History of City Mass Transport	KZ s, bridges, industri KZ ublic", electric tract ons, railway lines c KZ ttle Entente, its pri ts consequences fr KZ fic, specialised ter ch gastronomy. KZ	al buildings. 2 ion, World onstruction, 2 nciples and or Europe. 2 minology. 2
15Y1DZ Horse-drawn railw War II railways, rail 15Y1EH Versailles system, goals. Europe aft 15Y1FD France - geogra <sub>F</sub> Frei 15Y1HD History of city mas	History of Art and Society itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles. History of Railway vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti 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. L er Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and i New quality of French-German relationship - a driving power of starting European integration. French Area Studies and Transportation ohy and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tra nch society and culture. Current political system. System of education, studying in France. Selected authors of French literature. Fren History of City Mass Transport s transport networks in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current trends a	KZ KZ s, bridges, industri KZ ublic", electric tract ons, railway lines c KZ ttle Entente, its pri ts consequences fr KZ ffic, specialised ter ch gastronomy. KZ	al buildings. 2 ion, World onstruction, 2 nciples and or Europe. 2 minology. 2 of tariff and

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 o	f workers.
Creation and prote	ction of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to public heat the field of transportation, relevant legislature	ossibilities and skill	ls of a man.
	Plactical examples from the field of transportation, relevant legislature.	<b>V7</b>	<u> </u>
	INSULY OF All TRAISPORT	l NZ	Z Helicopters
CS/	A airplanes. Famous aviators. Classic era of aviation. Golden era of civil aviation. Supersonic flying. Modern era of civil aviation. Flying	ng in the world.	riencopters.
15Y1NF	German in the Economy and Society	K7	2
Recent economic	and social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic ar	alysis of texts. Dis	cussion on
	selected topics.		
16UDOP	Introduction into Vehicles	Z	2
Vehicles and trans	portation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and wate	r transport. Alterna	ative means
	of transport. Lifting equipment and conveyors. Legislation.		
16X31	Project 1	Z	2
16X32	Project 2	Z	2
16X33	Project 3	Z	2
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 energy	y. Combustion engi	ne, electric
161/110	unve, steam engine, all engine. Energy accumulation means, accumulator, hywneer, ruer cell. Energy recuperation. why anal		2
Principles of vehicle	IIIIEI ACUVE SYSTEMS AND SIMUATIONS a movement Forces in moving vehicle, origin, classification, assessment Adhesion, Traction output, Drives, source systems, classification	tion structure one	Z rational and
	energetic singularity. Sources of energy. Calculations to assess output quantities and energetic intensity. Auxiliary systems energy co	onsumption.	
16Y1KS	Quality and Reliability of Vehicles	KZ	2
Quality and reliab	ility theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. K	ey legislation. FME	A (Failure
Mode and Effects	Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other methods u	ised in industrial ap	plications.
	Knowledge-based systems of quality and reliability, data collection.		
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2
Methods of vehicle	production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measureme	ent. Transmission r	nechanism.
	General principles of engine diagnostics.	1/7	0
TOYTRE Elementary concern	CONTROL AND Electronic Venicle Systems	KZ	Z
and hybrid drive co	to regulation. Tools for analytical solution, lineal system description. Dasic types of a regulator (FID), properties, advantages, disadva	ty communication	and comfort
	systems.	-,,	
16Y1VT	Development in Railroad Vehicles	KZ	2
Railroad vehicles	traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trai	nsportation. Critica	l situation
	assesment. New materials in design. International standardization.		
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2
Computer graphics	s, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour sche	mes, models, princ	ciples of 2D
and 3D generation	on, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HVV basics	s. Introduction to 2	D and 3D
16V17	Vohiolo Tosting Logislation and Construction	K7	2
Vehicle, bus and mo	ptorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal c	ars. trucks. buses.	∠ motorbikes.
legi	slation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical mode	elling in testing.	,
17SFID	Public Administration and Financing in Transport	Z,ZK	4
Basic issues of trar	isport and transport policy in the social context, environmental issues in transport, economical aspects of transport, public administration	tion and financing	of transport.
17TEDL	Transport Technology and Logistics	KZ	3
Basic terms in tran	sport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight tran	sport, organisation	of traffic in
each transport m	odus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication usi	ing various transpo	rt modus.
171GA	Graph Theory and its Applications in Transport	Z,ZK	4
Basic terms of	graph theory, paths in graphs, nows in networks, location problems, design problems on graphs, optimum routing, use of graphs in C		iplines.
17X31	Project 1	<u> </u>	2
17X32	Project 2	<u> </u>	2
17X33	Project 3		2
1/Y1AF	Alternative Forms of Transportation Project Financing	KZ	2 final dahtar
is not a direct partic	inant of the transaction and it is not the counternarty of the financial institute which provides the funding. Issue of securities as an alter	native source of tra	ansportation
	project.		
17Y1EV	Public Sector Economy	KZ	2
Economic and final	ncial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of public	lic projects (CBA, I	MCA, CEA),
tax system of the C	R, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding from	om EU funds, progr	am HDM-4.
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
Logistics airline pas	ssenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial trans	sport process pass	engers and
	air cargo. Intormation systems in air transport. Global distribution systems.		
1/Y1MD	Marketing applied to transport issues, marketing tools suitable for transportation	KZ	2 foronooc in
	the application of marketing	na me resulting dif	ICICIICES III
17Y10F	Personal Finance	K7	2
Personal finance (	budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of hous	ا محکیہ ا sing (rent, mortqad	e, savings.
consumer loans, re	financing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and	adequacy), securir	ig the future
	(retirement savings and insurance).		

17Y1PM	Personnel Management	KZ	2
Human sour	ces, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, inter	cultural communic	ation.
17Y1SI Titan is a manar	I Itan Simulation I ten Simulation the husiness decisions. Lets 2-8 student arouns to produce and compete in the market with the same produce	KZ	2 price and
determine the quar	tity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequences	s of their decisions	by the form
	of financial corporate reports and they use this information for other business decisions.		
18KAD	Kinematics and Dynamics	Z,ZK	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 sys	tem of point
masses, equation	n 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.	ct theory. Introduct	tion to the
18MTY	Materials Science and Engineering	7.7K	3
Basic course of ma	terials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructur	re. However the ma	ain attention
is paid to metals as	s the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and com to degradation processes in materials, to defectoscopy and to main mechanical tests	posites. Attention	is also paid
18P7P	Flasticity and Strength	7.7K	3
Tension and compr	ession. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bolte	d and welded joint	of structure.
Analysis of defle	ction curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic for	undation. Strength	analysis.
18SAT	Structural Analysis	Z,ZK	4
General system of	of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate are kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truck constructions	e beams and simp	le girders.
	of planar shapes. Fiber polygons and chains	Cross-sectional ch	aracteristics
18TFD	Technical Documentation	K7	2
Technical standa	rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensiona	al and geometrical	accuracy,
	arrangement of drawing sheets.		
18X31	Project 1	Z	2
18X32	Project 2	Z	2
18X33	Project 3	Z	2
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues. A	Anatomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation of muscular skeletal system during traffic accidents. Mobility of ill and injured a	and nervous system	m. Structure
	ioint prostheses. Protective means and traffic safety regulations.		
18Y1EM	Experimental Methods in Mechanics	KZ	2
The purpose and r	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive	testing of material	s. Design of
experimental proc	cedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fa	tigue and lifetime	prediction.
	Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.		-
18Y1MI	Engineering Materials	KZ	2 ation is paid
to biol	ogical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's	s selection charts.	nion is paid
18Y1PS	Computer Simulations in Mechanics	KZ	2
Principles and o	verview of programs for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model dev	elopment and ada	ptation of
geometry from oth	er CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary cor	nditions and applic	ation of the
10/11/2	load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.	K7	2
Basic characteristi	Introduction of Rail Venicles	in and unit trains	∠ Rolling and
track resistance. To	tal running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle - h	hydromechanic, hy	drodynamic
	and electric drive. Design concept rail vehicles and drive of wheel set.		
20SYSA	Systems Analysis	Z,ZK	5
Introduction to syst	em sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks,	, processes, syster	n behaviour
and its analysis, s	tasks. Soft and hard system and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tat	bies, algorithms for	structural
20UITS	Introduction to Intelligent Transport Systems	Z.ZK	7
Terminology and leg	gislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of infor	mation and telecon	nmunication
systems for ITS. Pr	inciples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples	of possible application	ations of the
	principles of ITS.		-
20X31	Project 1	<u> </u>	2
20X32	Project 2	<u> </u>	2
20X33	Project 3	<u> </u>	2
20Y1AE	Applied Electronics	isistors thuristor o	Z
amplifiers, basic lo	being gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transisto	or as an amplifier.	operational
	amplifier as an inverting and noninverting amplifier).		
20Y1EA	Environmental Aspects of Transport	KZ	2
State of the atmosp	where, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabilistic	forecasts, forecast	evaluation.
	i poliutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp	ortation in climate	cnange.
2UY IEK	UUAIIFICATION IN ELECTRICAL ENGINEERING	symbols and label	
voltage, maximum	allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid. legislatio	on, standards and	regulations
	in relation to health and safety and electrical engineering.		<b>-</b> · ·
20Y1LN	Location and Navigation	KZ	2
Description and e	examples of road networks, localization on the network. Routing algorithms, their properties and implementation. Description and exa	mples of datasets	for finding
1	transport connections, routing algorithms, their properties and implementation		

20Y1OI	Fare Collection and Information Systems	KZ	2
Fare collection sy	stems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components	for users (timetabl	les, maps,
par DOVADIA	hels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance syst	ems (parking).	0
20Y1PK	Product Quality Management Processes	KZ	2 framowork
of standards for sys	tems management. management orinciples. Principles of process management, monitoring and measurement systems management.	Jniform framework	of standards
	for systems management. Process management principles. Metrology and testing. Product certification.		
20Y1SC	Sensors and Actuators	KZ	2
Principles of sensor	's and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of	f mechanical, electr	o-magnetic,
	state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators and solid phase electrical previous state (temperature) and hydraulic actuators actuator	ements.	
21X31	Project 1	Z	2
21X32	Project 2	Z	2
21X33	Project 3	Z	2
21Y1FN	Factors Affecting the Rate of Accidents in Aviation	KZ	2
Introduction. The s	cope of international and national organizations in civil aviation. The scope of the investigation organisations within the state and inter	rnational committee	es. Analysis
and interpretation	n of ICAO Annexes 13 and 19. Analysis and interpretation of the Regulation (EC), Regulation (EU). Human factor. Utilization of inform reports	nation from the inv	estigation
211/11	Aerobatics	K7	2
Methodology of flvi	na aerobatic figures. Aerodynamics and flight mechanics of aerobatic figures. Aerobatic training syllabi and aerobatic competitions. Cr	eating an aerobati	c sequence.
Safety in aerobati	cs, accidents related to aerobatics. Physiological aspects of flying aerobatics. Aircraft structure loads and construction fatigue streng	th of aerobatic airc	raft. Upset
	recovery training (UPRT) for commercial pilots and related accidents.		
21Y1LR	Radio Technology in Aviation	KZ	2
Electric signals an	d the wave spectrum. Analog and digital modulations. Noises. Filters. Resonance circuits. Electromagnetic field. Electromagnetic wa	ve propagation. W	ave ranges
	in aviation, radiation and reception of electromagnetic field. Antennas in aviation, receivers and transmitters.		
21Y1MZ	Managerial Ethics	KZ	2
The basic terminolo	by of managerial ethics. Basics of etiquette and rules of social contact. Social events. Etiquette of working contacts. The art of presenta	ation and negotiation	on. Personal
	image. Diplomatic protocol. Managerial ethics. Business ethics.		-
21Y10L	Security of Air Transport	KZ	2
The development of	of civil aviation. Definitions and regulations. History of acts of unlawful interference. Terrorism in aviation. National security program. C	frisis management	. Protection
21V1D7		K7	2
	UITIAIT RESOURCES WAITAGETHETIL	ment Internal and	ے external
environment of hun	name resources and the organization and related alsophiles me, outstance, importance and enalitinges of name resources manage nan resource management. Human resource planning, Search, recruitment and selection of employees. Motivation, evaluation and ren	nuneration of staff.	Positionina.
	dismissal and redundancies of employees. Education of employees. Planning career management.		J,
21Y1TH	Aircraft Technical Handling	KZ	2
Aircraft towing a	and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and unit	bading units. Equip	ment for
ра	ssangers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and techn	ical progress.	
21Y1UT	Airports Maintenance	KZ	2
Summer airport ma	intenance. Summer maintenance equipment. Winter airport maintenance. Winter maintenance equipment. De-icing / anti-icing of airc	raft. De-icing / anti-	-icing liquid.
04741 D	Operating procedures, limitations, practices.	1/7	0
ZIZALD	Basics of Air Transport terminology basic rules VEP/IEP. Basics of acrodynamics. Propulsion of aircraft Aircraft design. Basics of pavigation, radio pavigation	KZ	Z
Flight planning, opt	imization of speed and heights, minimum fuel, Limitations of operation, maintenance, service life of aircraft. Traffic management, grou	nd handling, secur	ity. Air crew.
	Airlines and economics. Space technologies.	ina nananing, eeean	
22X31	Project 1	Z	2
22X32	Project 2	Z	2
22X33	Project 3	Z	2
22Y1S7	Forensic Expertise	K7	2
Historical evolution	of forensic engineering, forensic activity, current legislature in the Czech Republic, different disciplines, notion of forensic, forensic lo	egislation, basic fo	rensic acts,
expert role in the	obtaining proofs, forensic methodology. Notion of the evidence, general principles of evidence obtaining, metrology, protocol, evidence	es collection, site	inspection,
	forensic report, elements. Finding, expert testimony / report.		
23BDIS	Safety Technologies of Transportation and Information Systems	KZ	3
Safety of transp	ortation means - principles, testing, evaluation. Safety of infrastructures, critical structures, crisis scenarios. Safety of information sys	tems and their rob	ustness.
23BER	Safety and Ergonomical Solutions in Transport	KZ	3
Salety principles in	r transport and ergonomy, basics or numan-machine interface (HMI), venicle design from passengers safety point of view. Evaluation parameters	i oi salety criteria a	anu venicie
230500	Perchology and Sociology in the Security	7	2
The role of sociolog	y and psychology as a discipline in the discourse of security. Security of information in cyberspace from the perspective of social psychology.	logy. Application of	ے sociological
	and psychological methodology in communication security in cyberspace.		<b>J</b>
23X31	Project 1	Z	2
23X32	Project 2	Z	2
23X33	Project 3	Z	2
23Y1DZ	Data and Their Processing for Engineering Fields Needs	KZ	2
Courses of risk, ba	sic terms, data collection, data sets, data random uncertainty and data epistemic uncertainty, data processing, hazard, risk, value sc	ales, analytical, en	npirical and
	heuristic methods, hazard determination and risk determination, methods for variants' creation, decision support systems		
23Y1KO	Quantum Physics and Optoelectronics	KZ	2
	Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics compor	ients.	
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	ty of critical objects	and critical
	infrastructures.		

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23Y1VS	Negotiation and Cooperation	KZ	2		
Code of conduct fo	Code of conduct for negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Informal and formal role in the team.				
Principles of negoti	ation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", specific	ations and bidding	g, the role of		
	trust.				
TV-1	Physical Education	Z	1		
TV-2	Physical Education	Z	1		

For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 02. 06. 2020, time 20:53.