Study plan

Name of study plan: AUT bak. prez.12/13

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page Garantor of the study branch: doc. Dr. Ing. Tomáš Brandejský

Program of study: Technology in Transportation and Telecommunications

Type of study: Bachelor full-time

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

Note on the plan:

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

The role of the block: ZP

Code of the group: XP4,5,6 11/12

Name of the group: Projekty prez.4.5.6.sem.11/12

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:

Note on the		ı			1	
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Titles authors and guaranters (car.)	Completion	Credits	Scope	Semester	Role
15X31	Tutors, authors and guarantors (gar.) Project 1	Z	2	0P+1C	L	70
10/01	Eva Rezlerová			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
13X31	Project 1	Z	2	0+1		ZΡ
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
11X31	Project 1 Ondřej Přibyl	Z	2	0P+1C	L	ZP
23X31	Project 1 Milena Macková	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	Project 1 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, Iveta 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
16X31	Project 1 Petr Bouchner, Přemysl Toman, Josef Mik	Z	2	0P+1C	L	ZP
15X32	Project 2 Eva Rezlerová	Z	2	0P+2C	Z	ZP
14X32	Project 2 Jana Kaliková, Jan Krčál, Tomáš Zelinka, Martin Šrotýř, Zdeněk Lokaj, Ota Hajzler, Eva Fantová, Filip Müller	Z	2	0P+2C	Z	ZP
13X32	Project 2	Z	2	0+2		ZP

12X32	Project 2 Zuzana Čarská, Dagmar Kočárková, Karolina Moudrá, Kristýna Neubergová, Martin Jacura, Vojtěch Novotný, Ondřej Trešl, David Vodák, Tomáš Javořík,	Z	2	0P+2C	Z	ZP
11X32	Project 2	Z	2	0P+2C	Z	ZP
16X32	Project 2 Josef Mik, Petr Bouchner	Z	2	0P+2C	Z	ZP
23X32	Project 2 Milena Macková, Václav Jirovský	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
21X32	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
18X32	Project 2	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
11X33	Project 3 Ondřej Přibyl	Z	2	0P+1C	L	ZP
12X33	Project 3 Zuzana Čarská, Dagmar Kočárková, Karolina Moudrá, Kristýna Neubergová, Martin Jacura, Vojtěch Novotný, Ondřej Trešl, David Vodák, Tomáš Javořík,	Z	2	0P+1C	L	ZP
13X33	Project 3	Z	2	0+1		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
23X33	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
20X33	Project 3	Z	2	0P+1C	L	ZP
18X33	Project 3	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
16X33	Project 3 Petr Bouchner, Přemysl Toman, Josef Mík, Adam Orlický, Jaroslav Machan	Z	2	0P+1C	L	ZP
22X33	Project 3 Michal Frydrýn, Luboš Nouzovský, Zdeněk Svatý, Karel Kocián	Z	2	0P+1C	L	ZP

Characteristics of the courses of this group of Study Plan: Code=XP4,5,6 11/12 Name=Projekty prez.4.5.6.sem.11/12

15X31	Project 1	Z	2
14X31	Project 1	Z	2
13X31	Project 1	Z	2
12X31	Project 1	Z	2
11X31	Project 1	Z	2
23X31	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
16X31	Project 1	Z	2
15X32	Project 2	Z	2
14X32	Project 2	Z	2
13X32	Project 2	Z	2
12X32	Project 2	Z	2
11X32	Project 2	Z	2
16X32	Project 2	Z	2
23X32	Project 2	Z	2
22X32	Project 2	Z	2
21X32	Project 2	Z	2
20X32	Project 2	Z	2
18X32	Project 2	Z	2
17X32	Project 2	Z	2
11X33	Project 3	Z	2
12X33	Project 3	Z	2

13X33	Project 3	Z	2
14X33	Project 3	Z	2
15X33	Project 3	Z	2
23X33	Project 3	Z	2
21X33	Project 3	Z	2
20X33	Project 3	Z	2
18X33	Project 3	Z	2
17X33	Project 3	Z	2
16X33	Project 3	Z	2
22X33	Project 3	Z	2

Name of the block: Compulsory courses Minimal number of credits of the block: 152

The role of the block: Z

Code of the group: 1.S.BP 10/11

Name of the group: 1.sem.bak.prez.10/11

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 12 courses

Credits in the group: 30 Note on the group:

Note on the gr	oup.					
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
13E	Economics	Z,ZK	3	2+1	Z	Z
11GIE	Geometry Oldřich Hykš, Šárka Voráčová, Pavel Provinský	KZ	3	2P+2C	Z	Z
14KSP	Constructing with Computer Aid Filip Müller, Martin Brumovský, Lukáš Kozel, Radek Kratochvíl, Drahomír Schmidt, Lukáš Svoboda, Monika Stambolidis	KZ	2	0P+2C	Z	Z
11LA	Linear Algebra Pavel Provinský, Martina Bečvářová, Lucie Kárná, Jan Přikryl	Z,ZK	3	2P+1C	Z	Z
11MTA	Mathematical Analysis	Z,ZK	4	2+2	Z	Z
18MRI1	Materials 1	Z,ZK	3	2+1	Z	Z
18TTED	Creation of Technical Documentation	KZ	2	2+1	Z	Z
00TVC1	Physical Education 1	Z	1	0+2	Z	Z
12ZADI	Introduction to Transportation Engineering	Z,ZK	3	2+1	Z	Z
14ZINF	Fundamentals of Informatics	KZ	2	0+2	Z	Z
21ZLD	Introduction to Air Transport	KZ	2	2+1	Z	Z
22UN	Traffic Accidents Introduction	Z	2	2+0	Z	Z

Characteristics of the courses of this group of Study Plan; Code=1.S.BP 10/11 Name=1.sem.bak.prez.10/11

13E	Economics	Z,ZK	3
Microeconomic an	d macroeconomic interpretation of economic relations. Method and subject of the economics. Economic decision making of consu	imers and produce	ers. Market
structures. Labour	and capital, efficiency, ownership, public choice.		
11GIE	Geometry	KZ	3
Orthographic and	oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - para	ameterization, arc	of the curve,
torsion and curvat	ure, Frenet's trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a c	curved path.	
14KSP	Constructing with Computer Aid	KZ	2
and CA systems.	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting posswith raster foundaments).	• .	
11LA	Linear Algebra	Z,ZK	3
Vector enaces (line	ear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and	their solvability. De	
	Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.	their solvability. De	eterminants an
their applications.		Z,ZK	4
their applications.	Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.	Z,ZK	4
their applications. 11MTA Sequences and se	Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification. Mathematical Analysis	Z,ZK	4
their applications. 11MTA Sequences and seseries and foundar	Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification. Mathematical Analysis ries of real numbers and its convergence. Basic properties of functions. Differential and integral calculus of the real function of one real numbers.	Z,ZK	4
their applications. 11MTA Sequences and se series and founda 18MRI1	Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification. Mathematical Analysis ries of real numbers and its convergence. Basic properties of functions. Differential and integral calculus of the real function of one rions of Fourier transform.	Z,ZK eal variable. Powe	4 r series, Fouri
their applications. 11MTA Sequences and seseries and founda 18MRI1 Crystal structure. I	Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification. Mathematical Analysis ries of real numbers and its convergence. Basic properties of functions. Differential and integral calculus of the real function of one rions of Fourier transform. Materials 1	Z,ZK eal variable. Powe	4 r series, Fourie
their applications. 11MTA Sequences and seseries and founda 18MRI1 Crystal structure. I steel and cast iron	Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification. Mathematical Analysis	Z,ZK eal variable. Powe	4 r series, Fourie
their applications. 11MTA Sequences and seseries and founda 18MRI1 Crystal structure. I steel and cast iron 18TTED	Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification. Mathematical Analysis	Z,ZK eal variable. Powe Z,ZK olutions. Heating p	4 r series, Fourier 3 processing of

00TVC1	Physical Education 1	Z	1
Practical instruction	and training in a wide variety of sports and games: from basic recreational coaching to competitive top level training. Included a	are: basketball, voll	eyball, soccer,
tennis, squash, floor	ball, bodybuilding, swimming, canoeing, aerobic.		
12ZADI	Introduction to Transportation Engineering	Z,ZK	3
Traffic survey. Terres	strial roads. Residential zone. Land - use planning. Railway transport. Public mass transport. Integrated traffic systems. Traffic pro	gnosis. Traffic safe	ty. Air transport.
Traffic and environn	ent.		
14ZINF	Fundamentals of Informatics	KZ	2
Introduction to facul	y network, MS-Word and Open Office, use of styles and advanced features, computer functions and information transmission. I	Number systems ir	ıcl. arithmetic
	y network, MS-Word and Open Office, use of styles and advanced features, computer functions and information transmission. I Ims and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and proced	•	
	ims and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and procedure	•	
calculations. Algorith	ims and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and procedure	•	
calculations. Algorithms graphs, calculations 21ZLD	ims and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and proced functions.	dures. Work with M	S-Excel - tables,
calculations. Algorithms graphs, calculations 21ZLD Air transport as a co	ims and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and proced, functions. Introduction to Air Transport	dures. Work with M	S-Excel - tables,
calculations. Algorithms graphs, calculations 21ZLD Air transport as a co	oms and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and proceded functions. Introduction to Air Transport Introduction to Air Transport Introduction to Air Transport International organizations in Europe and worldwide	dures. Work with M	S-Excel - tables,
calculations. Algoriti graphs, calculations 21ZLD Air transport as a co Commercial air tran 22UN	oms and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and procedure functions. Introduction to Air Transport Imponent of complex transport system. International status of civil aviation. International organizations in Europe and worldwide sport. Technical operations of aeroplanes.	KZ Characteristics of	S-Excel - tables, 2 fair transport.

Code of the group: 2.S.BP 10/11

Name of the group: 2.sem.bak.prez.10/11

of sections. Geometry of cross sections. Plane fiber polygons and catenary cables.

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 12 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
13EDOT	Economy, Transport, Telecommunications	KZ	2	2+0	L	Z
11FY1	Physics 1 Zuzana Malá, Tomáš Vítů, Marek Honců Zuzana Malá (Gar.)	Z,ZK	4	2P+2C	L	Z
11MVP	Mathematical Analysis of Function of More Variables	Z,ZK	3	2+2	L	Z
18MRI2	Materials 2	KZ	2	2+0	L	Z
11PT	Probability	Z	2	1+1	L	Z
12PKD	Rail Transport Designing	Z,ZK	3	2+2	L	Z
18ST	Statics	Z,ZK	3	2+1	L	Z
14SIAP	Networks and Protocols	KZ	2	1+1	L	Z
17TDL	Transport Technology and Logistics	Z,ZK	3	2+2	L	Z
00TVC2	Physical Education 2	Z	1	0+2	L	Z
20UIS	Introduction to ITS	Z,ZK	3	2+1	L	Z
14UPRO	Introduction to Programming	KZ	2	0+2	L	Z

13EDOT	Economy, Transport, Telecommunications	KZ	2
Transport, telecom	munications, demand, supply, indicators, economic development, legislation, European union, regulation, liberalisation, transport	modes, ITS, susta	inability.
11FY1	Physics 1	Z,ZK	4
Kinematics, particle	e dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed electric	current.	
11MVP	Mathematical Analysis of Function of More Variables	Z,ZK	3
Metric spaces, seq	uences in metric spaces, limit of sequence in metric space. Differential calculus of functions of several variables, differential of fur	ction, partial deriva	ations, implici
lefined functions,	extremes of functions of several variables. Integral calculus of functions of several variables, Riemann integral, integral over curve	es and surfaces in	R3, application
of integral calculus	in physics.		
18MRI2	Materials 2	KZ	2
undamental conc	epts, notions. The main materials groups. Semiconductors. Polymers. Special types of steel. Properties and application of the co	mposite materials.	
11PT	Probability	Z	2
Descriptive statistic	s. Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, proba	bility distribution, p	robability ma
and density, mome	nts, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matri:	k. Mixed distribution	ns, mixture o
distributions. Law o	f large numbers, central limit theorem.		
12PKD	Rail Transport Designing	Z,ZK	3
Railway lines netwo	ork. Vehicle and track relation. Traction. Track geometrical parameters. Clearance profile. Railway lines routing. Superstructure an	d substructure of th	ne railway line
Switches. Railway	stations. City rail transport.		
18ST	Statics	Z,ZK	3
General system of	force's. Calculation of reactions of mass objects and compound systems. Assessment of internal forces on statically determinate	beam and simple f	ramework.
	yorks. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constru		

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Networks and Protocols Basic communication model, history and development of the Internet, principle of data transfer through computer networks (TCP/IP), performance of basic network protocols (ARP, RARP, TCP, UDP, Telnet, FTP, DNS, DHCP POP3, IMAP), data acquirement from the Internet sources, communicating ability via the Internet and fundamentals of own web presentation design by the means of web sites Transport Technology and Logistics Basic terms in transport technology and logistics. Particular steps of transport planning. Quantification of carriage relations. Line planning. Timetabling. Planning in pasanger and freight transport. Organisation of traffic in each transport means. Technological factors from the point of view of operator and client. Organisation of public city transport. Logistic technologies and their application using various transport means. 00TVC2 Physical Education 2 Practical instruction and training in a wide variety of sports and games: from basic recreational coaching to competitive top level training. Included are: basketball, volleyball, soccer, tennis, squash, floorball, bodybuilding, swimming, canoeing, aerobic. **20UIS** Introduction to ITS Z,ZK Intelligent Transport Systems (ITS), their objectives and vision. ITS in the world, in Europe and in the Czech Republic. Architecture of ITS and the role of standardization. Information and navigation systems. ITS in road, rail and combine transport. Design of ITS, organization, preparation and implementation of the project. Current projects in the Czech Republic. Introduction to Programming Algorithm development, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables, conditions, cycles, arrays,

Code of the group: 3.S.BP 11/12

functions), programming techniques, complexity.

Name of the group: 3.sem.bak.prez.11/12

Requirement credits in the group: In this group you have to gain 27 credits

Requirement courses in the group: In this group you have to complete 10 courses

Credits in the group: 27 Note on the group:

NOTE OIL THE (r		
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
11DAD	Differential and Difference Equations	Z,ZK	3	2+1	Z	Z
11FY2	Physics 2	Z,ZK	4	2+2	Z	Z
12MDE	Transport Models and Transport Excesses Josef Kocourek, Milan Dont	Z,ZK	3	2P+1C	Z	Z
12PPOK	Designing Roads, Highways and Motorways Jiří Čarský, Tomáš Padělek, Jan Gallia, Petr Kumpošt, Petr Šatra	KZ	3	1P+2C	Z	Z
18PZP	Elasticity and Strength Daniel Kytýř, Tomáš Doktor, Jan Šleichrt, Josef Jira, Ondřej Jiroušek, Jan Šleichrt, Petr Koudelka, Petr Zlámal, Jan Vyčichl, Ondřej Jiroušek (Gar.)	Z,ZK	3	2P+1C	Z	Z
11SIS	Statistics	Z,ZK	2	1+1	Z	Z
20SSA	Systems Analysis	Z,ZK	3	2+1	Z	Z
14ZAET	Fundamentals of Electrotechnics	KZ	2	2+1	Z	Z
14UATT	Introduction to Automatization and Telecommunication Systems	KZ	2	3+0	Z	Z
16UDDM	Introduction to Transportation and Manipulation Technics	ZK	2	2+0	Z	Z

14UATT	Systems	KZ	2	3+0	Z	Z
16UDDM	Introduction to Transportation and Manipulation Technics ZK 2				Z	Z
Characteristics o	of the courses of this group of Study Plan: Code=3.S.BP 11/12 Name	e=3.sem.bak	.prez.11/	12		
11DAD	Differential and Difference Equations			Z	,ZK	3
Difference equations a	nd its systems. Some solvable types of differential equations of the first order. Linear differential	equations of the	n-th order. M	lethods for so	lution of th	e homogeneous
equation, solution of in	phomogeneous equation by means of variation of constants. Power series and their use for solu	ution of differentia	ıl equation. E	Boundary valu	e problem	ı. Eigennumbers
and function for differe	ential equation. Fourier series of function.					
11FY2	Physics 2			Z	,ZK	4
Magnetic field, electro	magnetic field. Optics, quantum character of electromagnetic radiation. Introduction into qua	ntization, hydrog	en atom. Mu	ılti-electron at	oms, the	nuclei. Basics o
solid body physics.						
12MDE	Transport Models and Transport Excesses			Z	,ZK	3
	fic flow and methods for their measurement. Models of the traffic flow, communications load,	line and urban s	vstems. The	1		aves. Quality of
	ssment. Statistical characteristics of transport. Transport excesses, their analysis, the causes		•			•
safety and fluency.		-		•	-	
12PPOK	Designing Roads, Highways and Motorways			l l	ΚZ	3
Definition, types, owner	ership, maintenance, management and categorization of roads and highways. Curve and tra	nsition curve. Sir	nuosity and	standard spe	ed. Route	in rural areas.
Range of vision for sto	opping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drain	nage and compo	nents of roa	ds. Safety de	vice. Cros	sings, junctions
intersections.						
18PZP	Elasticity and Strength			Z	,ZK	3
Tension and compress	sion. Bending of beam. Shear stress during bending of beam. Design and analysis of cross se	ction of beam. De	esign of rivet	ed, bolted an	d welded j	oint of structure
Analysis of deflection	curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed ba	ar and buckling. E	Beam on ela	stic foundatio	n. Streng	h analysis.
11SIS	Statistics			Z	,ZK	2
Point estimation, prop	erties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test,	independence to	est. Regress	sion and corre	lation, lin	ear regression
correlation coefficient,		alysis of variance	e, multiple re	gression, use	of matric	our regression,
20SSA	coefficient of determination, general linear model, statistical inference in linear regression, an					0
0				Z	,ZK	
Systems identification	Systems Analysis Typical tasks of systems analysis: on the interface, routes in system, decomposition and interface.	tegration, on syst	tems feedba	1	' 1	es in regression

14ZAET	Fundamentals of Electrotechnics	KZ	2			
Basic electrotechnic ter	Basic electrotechnic terms, circuit quantities. Periodic courses characteristics. Electric circuits elements and basic circuit members. Assignating of bipoles and basic circuit elements.					
Solution to direct current	t circuits with a help of circuit analysis elementar methods: method of consecutive reduction, unloaded voltage divider, current div	vider. Transfigurati	on star-triplangel			
and principle of superpo	osition in direct current circuits.					
14UATT	Introduction to Automatization and Telecommunication Systems	KZ	2			
Basic axioms of technic	al cybernetics, automatization in transportation, human as the weakest element, signalling in transpotation, modelling and pr	ojecting of transp	ort systems,			
integrated technologica	integrated technological and infromation system in post, principle of telecommunication signal transmission, solving of telecommunication networks, modulating methods, multimedial					
networks and services, NGN networks.						
16UDDM	Introduction to Transportation and Manipulation Technics	ZK	2			
Means of transportation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Water transportation. Manipulating						

Code of the group: 4.S.BAUT 12/13

technics. Principles of lifting machines and conveyors. Legislature.

Name of the group: 4.sem. AUT bak.prez. 12/13

Requirement credits in the group: In this group you have to gain 19 credits

Requirement courses in the group: In this group you have to complete 7 courses

Credits in the group: 19 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
14ANM	Numerical Methods Application	Z,ZK	3	2+2	L	Z
14ELN	Electronics	Z,ZK	3	2+1	L	Z
18KIAD	Kinematics and Dynamics	Z,ZK	2	2+1	L	Z
11MSP	Modeling of Systems and Processes Lucie Kárná, Jan Přikryl, Marek Honců, Bohumil Kovář, Elena Alexeeva Bohumil Kovář Bohumil Kovář (Gar.)	Z,ZK	4	2P+2C+12E	L	Z
11MDS	Collection and Processing of Traffic Data Ondřej Přibyl Ondřej Přibyl Ondřej Přibyl (Gar.)	KZ	2	2P+0C	L	Z
14OJM	Object Oriented Modelling	Z,ZK	3	2+1	L	Z
20TRS	Control Theory	KZ	2	2+0	L	Z

Numerical methods and their application, implementation of vectors and matrices in C/C++ using STL library, linear equation system solving, interpolating, approximation, numerical derivative and integration, differential equation solving, stability of methods. 14ELN Electronics Z,ZK 3 Semiconductor diodes and thyristor and their applications. Transistors, their basic connecting and applications. Operational amplifiers, their linear and non-linear applications and frequency characteristics. Passive and active frequency filters. AD and DA converters. 18KIAD Kinematics and Dynamics Z,ZK 2 Motion along a line, motion along a curve. Kinematics of rigid plane, kinematics of rigid body. Point mass kinematics, system of point masses. Point mass dynamics and system of pomasses, equation of motion. Method of Newton. Princle of D'Alembert. Free and forced vibration with one degree of freedom. Viscous damping. Impact theory. Introduction to the solution of vibration with multiple degrees of freedom. 11MSP Modeling of Systems and Processes Z,ZK 4 Mathematical methods and algorithms as a basis for system analysis. Methods for modelling and evaluating the systems in continuous and discrete time domain. Laplace transform carriansform, and the recursive algorithms in solution of differential and difference equations, as an instrument for system description. Practical use of technical computing environme (MATLAB). 11MDS Collection and Processing of Traffic Data KZ 2 Basic principles of traffic detection and data collection, specific problems of the filed of traffic data. Data preprocessing and analysis for use in additional applications. 14OJM Object Oriented Modelling Z,ZK 3 Fundamentals of object oriented SW development, fundamentals of object oriented approach. Explanation of basic classes, polymorphism, inheriting, complementation. Modelling fundamnetals in UML. Principles and processing use case diagrams, sequention diagrams, classes and states diagrams. Use of CASE tools for complex analysis. Usability of OM an proces	14ANM	Numerical Methods Application	Z,ZK	3
14ELN Electronics Z,ZK 3	Numerical methods	and their application, implementation of vectors and matrices in C/C++ using STL library, linear equation system solving, interpr	olating, approxima	ition, numerical
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18KIAD Kinematics and Dynamics Z,ZK 2			ind non-linear app	lications and
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Introduction to theory systems, linear, non-linear and causal systems. Signal theory, regulation circuits and regulators. Stability and criteria of stability. Management, principles of	11MSP Mathematical methor z-transform, and the (MATLAB). 11MDS Basic principles of to 14OJM Fundamentals of ob fundamnetals in UM	Modeling of Systems and Processes and algorithms as a basis for system analysis. Methods for modelling and evaluating the systems in continuous and discrete recursive algorithms in solution of differential and difference equations, as an instrument for system description. Practical use of Collection and Processing of Traffic Data raffic detection and data collection, specific problems of the field of traffic data. Data preprocessing and analysis for use in additational Collection and Modelling plect oriented SW development, fundamentals of object oriented approach. Explanation of basic classes, polymorphism, inheriting	e time domain. Lap of technical comput KZ ional applications. Z,ZK ng, complementation	ace transform ting environments 2 3 3 on. Modelling
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Code of the group: 4.S. BPAUT VÝBĚR 12/

Name of the group: 4.sem.AUT výběr předmětu 12/13

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
14CAD1	CAD 1	KZ	2	0+2	L	Z
14OS1	Operating Systems 1	KZ	2	0+2	L	Z

Characteristics of the courses of this group of Study Plan: Code=4.S. BPAUT VÝBĚR 12/ Name=4.sem.AUT výběr předmětu 12/13

14CAD1CAD 1KZ2Modelling principles and techniques in non-parametric modeller (AutoCAD), Boolean operations, planar vs. volumetric objects. Illuminated scenes - light types and illumination methods.Creation and use of materials for 3D objects. Ways of texture mapping. Final models rendering.14OS1Operating Systems 1KZ2

OS, their function and architecture, process and memory management, virtual memory, threads, interprocess communication, synchronizzation, file systems, architecture of OS Windows and Linux, start of PC and OS, networking, safety in S, terminals in MS Win and Linux, batch files.

Code of the group: 5.S.BAUT 12/13

Name of the group: 5.sem.AUT bak.prez. 12/13

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

Requirement courses in the group: In this group you have to complete 7 courses

Credits in the group: 18 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
14DB	Database Systems	KZ	2	0+2	Z	Z
14IFSD	Information Systems in Transportation	KZ	2	2+0	Z	Z
14SE	High Voltage Electrical Engineering	KZ	2	2+0	Z	Z
14TSJ	Communication Technologies	Z	2	2+0	Z	Z
14TC	Telecommunications	Z,ZK	3	2+2	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
20ZC	Base of Digital Technique	Z,ZK	3	2+1	Z	Z

Characteristics of the courses of this group of Study Plan: Code=5.S.BAUT 12/13 Name=5.sem.AUT bak.prez. 12/13

14DBDatabase SystemsKZ2Basic 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.14IFSDInformation Systems in TransportationKZ2

Transportation demands, IS types for transport area, common IS structures. Continuous and discrete simulation. Visualization, coding and encryption, secured vs. open comminication channel. Optimizing by help of GA. Theory of games, Paret selections. IS's life cycle. Legal frame of IS at transportation. Government IS. Development of secure and relevant ISs at transportation. Real time operating IS. IS certification and validation.

14SE | High Voltage Electrical Engineering | KZ | 2
Three-phase system, single- and three-phase transformer, automatic transformer, electromagnet (solenoid), direct current generator and overview of types, direct current motor and

overview of types, alternate current motors, rotary magnetic field of three-phase winding, synchronous and asynchronous (induction) motor, alternate current generator (alternator).

14TSJ Communication Technologies Z 2

Technology of post shipment submission, transport, and delivery in physical and electronic way, virtual post operation. Technology of information transmission via electronic way, application of new information and communication technologies in an offer of permanent, mobile, and NGN e-communication networks, solution to e-communication network interfaces technological principles of end telecommunication devices.

14TC Telecommunications Z.ZK 3

Introduction of present stage and new trends in telecommunications systems. Legal conditions for telecommunications services provisioning and applications are introduced. Telecommunications key elements applied in hierarchical architecture are introduces and relations between networks elements parameters and performance of the whole telecommunications systems are explained in context with their typical applications in the transportations systems.

17TGA Graph Theory and its Applications in Transport Z,ZK 4
Basic terms of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in other scientific disciplines.

20ZC Base of Digital Technique Z,ZK 3

Introduction to logical systems. Design of combinational and sequential logic circuits. Computer architecture - von Neumann concept, RISC architecture. Processor, computer arithmetics, controller, memories, instruction set, base cycle of computer. Digital circuits, A/D and D/A converters. One-chip microcontrollers. Programmable logical circuits - FPGA, CPLD. Displays.

Code of the group: 5.S.BAUT VÝBĚR 12/1

Name of the group: 5.sem.AUT výběr předmětu 12/13

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

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

Credits in the group: 5 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
14CAD2	CAD 2	KZ	2	0+2	Z	Z
14CA	CAx Systems	KZ	3	1+2	Z	Z
14OS2	Operating Systems 2	KZ	2	0+2	Z	Z
20ZTH	Railway Interlocking Plants	KZ	3	2+1	Z	Z

Characteristics of the courses of this group of Study Plan: Code=5.S.BAUT VÝBĚR 12/1 Name=5.sem.AUT výběr předmětu 12/13

14CAD2 Introduction to different approaches at parametric and adaptive modelling. Sketch drawing with a help of geometric relations and parametric dimensions. Theory of work in working

planes, axes, and points frameworks. Parts and assemblies modelling, possibilities of adaptive modelling. Creation of presentations and drawings.

14CA **CAx Systems** ΚZ 3 Programming tools for development of CAx applications superstructures and user interfaces, systems openness, use of C/C++, VBA, and LISP languages, possibilities of scripts and cooperation with spreadsheet programs, relation to database systems.

140S2 Operating Systems 2 Domains and workgroups in MS Windows, users and their rights, configuration of networks (NFS, Samba, Firewall, FTP, http, DHCP, DNS), Windows register, remote deskttop,

configuration files, programming - networking, threads

20ZTH Railway Interlocking Plants

Characteristics of components and parts of interlocking plants for control and command of railways transport. Rail transport; standards and principles of rail security. I., II. and III. categories of interlocking plants and future technologies. Components for interlocking plants. Compatibility and interoperability. Data security. Situation in the Czech Republic and in the world. Intelocking plants in public transport in cities.

ΚZ

Code of the group: 6.S.BAUT 13/14

Name of the group: 6.sem.AUT bak.prez. 13/14

Requirement credits in the group: In this group you have to gain 17 credits

Requirement courses in the group: In this group you have to complete 7 courses

Credits in the group: 17 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
20BAS	Safety and Reliability of Systems	KZ	2	2+0	L	Z
14DM	Datamining	KZ	2	2+0	L	Z
17DAS	Transportation and Communication Law	Z	1	2+0	L	Z
17ERP	Company Economy and Management	Z,ZK	3	2+1	L	Z
14ISYS	Information Systems	KZ	2	2+0	L	Z
14RVD	Robotics in Transportation	Z,ZK	3	2+2	L	Z
14TLSY	Telecommunication Systems	Z,ZK	4	2+2	L	Z

Characteristics of the courses of this group of Study Plan: Code=6.S.BAUT 13/14 Name=6.sem.AUT bak.prez. 13/14

20BAS Safety and Reliability of Systems Basic concepts of safety and reliability in transport and its application. Basic scheme and the types of diagnostic systems. Acceptability and reliability of prediction. The sensitivity of

transport and sensitivity analysis. Neural networks and optimization algorithms. Human factors in transport. Human - system interaction. Testing of the simulator operator and testing in real situations.

14DM Datamining

Types of data sources and acquired knowledge, data stores and OLAP technology for knowledge acquiring from data, data preprocessing at knowledge acquiring process, datamining systems, classes characteristics mining, mining of asocial rules from data stores and databases, classification (decision-making tree, Bayes classification, use of neuron networks). Prediction. Cluster analysis. Mining in complex structured data, multimedial dbf, www.

17DAS Transportation and Communication Law Ζ Transportation and communication law - railway, road transport, ropeway, water road, air transport, telecommunication, post, patent

17ERP Z,ZK Company Economy and Management

3 Company and its neighbourhood, structure of assets and liabilities, depreciation, costs, revenues and profit, break-even point, costing, inventory, financial management, investment

appraisal, basics of management, organizational structures, human resources management, marketing, company strategy, business plan. 14ISYS K7 2 Information Systems

State-of-the-art tools of objects control (control and planning) including problems related to these toole use, theory of information and knowledge, knowledge and expert systems, IS planning methodologies, transaction systems, theory of computer networks, semantic webs and sensitivity analysis.

Robotics in Transportation

Understanding the following topics: robot and industrial manupulator, classification, mobile robot. Robot kinematics, co-ordinate systems. Special robot sensors. Action members, transmissions. Tactile recognition, woring head. Industrial robots' control systems. Spatial orientation. Visual information processing. Mobile robots. Particularities of mobile robot control systems. Artificial intelligence in robotics. Reactive systems.

14TLSY **Telecommunication Systems**

Characteristics of metallic and fiber lines, network passive and active elements. Physical layer design tools, Terrestrial and wireless (fixed and mobile) systems - network architecture Most frequently used protocols, their properties and mutual relations. Protocols application in e-communications systems for data and voice services and support of the ITS systems. Code of the group: 6.S.BAUT VÝBĚR 13/14

Name of the group: 6.sem.AUT výběr předmětu 13/14

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 at least 1 course (at most 2)

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
14VZ	3D Vizualization	Z,ZK	4	2+2	L	Z
23SBIS	Information Systems Security Standards	KZ	2	2+0	L	Z
20TZ	Technology of Control of the Railway Traffic Systems	ZK	2	2+0	L	Z

Characteristics of the courses of this group of Study Plan: Code=6.S.BAUT VÝBĚR 13/14 Name=6.sem.AUT výběr předmětu 13/14

Ondiactoristics of	the courses of this group of olday Flant. Code-0.0.DAGT TIBER TO/14 Nume-0.3cm.AGT	Vyber pream	10tu 10/14				
14VZ	3D Vizualization	Z,ZK	4				
Description and principl	Description and principles of 3D modelling. Basic 3D primitiva and basic modification and transformation functions. SW tools for 3D visualization. Creation of 3D scene. Modificati						
and combination of 3D	primitiva. Decsription of planes and work with them. Use of material editors and work with textures. Illumination of 3D scenes	s, setup of lumino	us and material				
parameters. Application	of cameras for scanning. Rendering and animations creation.						
23SBIS	Information Systems Security Standards	KZ	2				
Security, reliability, acce	ssibility and servicebility of information systems. Physical versus information security, open versus closed system. Basic prir	nciples of security	and threats for				
information systems. Se	ecurity of information systems - standards, development of standards, application of standards.						
20TZ	Technology of Control of the Railway Traffic Systems	ZK	2				
Legislation in the railway transport. Technological process of rail transport control. Service and technology of control. Regional Railways. Rail communication equipment. Rail information							
systems. Fundamentals	ystems. Fundamentals of rail control. Application of train driving automation.						

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 10

The role of the block: PV

Code of the group: Y1-BAUT 11/12

Name of the group: PVP bak.prez. AUT od 11/12

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

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

Credits in the group: 10

	Name of the course / Name of the group of courses					
Code	(in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
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
14Y1AP	Automatization in Mail	KZ	2	2+0	Z	PV
17Y1BB	Banks and Banking	KZ	2	2+0	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
17Y1DZ	Transported Commodities Cognization	KZ	2	2+0	L	PV
18Y1D1	Dynamics of Routes and Vehicles 1	KZ	2	2+0	Z	PV
15Y1DU	History of Art and Society	KZ	2	2+0	Z	PV
15Y1DZ	History of Railway Eva Rezlerová, Martin Jacura, Jan Feit	KZ	2	2P+0C	L	PV
13Y1EA	Economic - Energetic Analysis of Land Transport	KZ	2	2+0	Z	PV
13Y1EV	Public Sector Economy	KZ	2	2+0	Z	PV
17Y1EV	Public Sector Economy	KZ	2	2P+0C	Z	PV
15Y1EH	European Integration within Historical Context Eva Rezlerová, Jan Feit	KZ	2	2P+0C	Z	PV
18Y1EV	Experimental Methods and Numerical Modelling	KZ	2	2+0	L	PV

15Y1FD	French Area Studies and Transportation	KZ	2	2P+0C	L	PV
14Y1GD	GIS and Maps Digitalization	KZ	2	2+0	Z	PV
20Y1GI	Geographical Information Systems	KZ	2	2+0	L	PV
14Y1HW	Computer Hardware Vit 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
20Y1IC	Human Machine Interaction	KZ	2	2+0	L	PV
16Y1KJ	Railroad Vehicles	KZ	2	2+0	L	PV
12Y1KN	Combined Transportation	KZ	2	2P+0C	Z	PV
20Y1K	Cybernetics	KZ	2	2+0	Z	PV
21Y1LM	Aviation Meteorology	KZ	2	2+0	L	PV
21Y1LR	Radio Technology in Aviation	KZ	2	2+0	L	PV
21Y1L	Airports - Design and Operation	KZ	2	2+0	L	PV
21Y1LC	Human Factor	KZ	2	2+0	Z	PV
11Y1LP	Linear Programming	KZ	2	2+0	L	PV
17Y1LL	Logistics of Passenger and Freight Air Transport Petra Skolilová	KZ	2	2P+0C	L	PV
11Y1MM	Mathematical Models in Economy	KZ	2	2P+0C	Z	PV
18Y1MT	Engineering Materials Jaroslav Valach	KZ	2	2P+0C	L	PV
14Y1NP	Non-parametric 3D Modelling	KZ	2	2+0	Z	PV
20Y1NS	Neural Networks	KZ	2	2+0	Z	PV
17Y1ND	Maritime Transportation	KZ	2	2+0	Z	PV
14Y1NH	Databases Design and Programming	KZ	2	2+0	L	PV
14Y1NB	Databases Design and Programming	KZ	2	2+0	L	PV
20Y1OI	Fare Collection and Information Systems Milan Sliacky	KZ	2	2P+0C	L	PV
14Y1OL	Linux Operating System	KZ	2	2+0	Z	PV
14Y1OS	Operating Systems	KZ	2	2+0	Z	PV
15Y1OP	Turning Points of the Czech Nation	KZ	2	2+0	L	PV
11Y1PV	Parametrical and Multicriterial Programming	KZ	2	2P+0C	Z	PV
13Y1PM	Personal Management	KZ	2	2+0	L	PV
13Y1PD	The Participation of Transport in Tourist Trade Management	KZ	2	2+0	L	PV
14Y1PM	Advanced Methods of Parametric Programming	KZ	2	2+0	L	PV
21Y1PU	Aircraft Maintenance Technology	KZ	2	2+0	L	PV
12Y1PD	Assessment of Transport Structures Kristýna Neubergová	KZ	2	2P+0C	Z	PV
20Y1PO	Weather, Air Quality and Transportation	KZ	2	2+0	Z	PV
14Y1PG	Computer Graphics	KZ	2	2P+0C	L	PV
11Y1PE	Computer Controlled Experiments	KZ	2	2+0	L	PV
14Y1PJ	C Programming Language	KZ	2	2P+0C	Z	PV
12Y1C1	Designing Roads in Civil 3D I Tomáš Honc	KZ	2	2P+0C	L	PV
12Y1C2	Designing Roads in Civil 3D II Tomáš Honc	KZ	2	2P+0C	Z	PV
18Y1P1	Design of Structures 1	KZ	2	2+0	L	PV
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2	2P+0C	L	PV
12Y1PU	Organization Disposition of Railway Stations Martin Jacura	KZ	2	2P+0C	L	PV
12Y1PC	Pedestrian and Cycling Transport	KZ	2	2P+0C	L	PV
12Y1RZ	Railway Lines Reconstruction	KZ	2	2+0	Z	PV
13Y1SM	MESE Simulation	KZ	2	2+0	Z	PV

20Y1SC	Sensors and Actuators Pavel Hrubeš	KZ	2	2P+0C	L	PV
11Y1SI	Transportation Software Engineering	KZ	2	2P+0C	Z	PV
12Y1SU	Road Management and Maintenance Martin Höfler, Otakar Vacín	KZ	2	2P+0C	L	PV
18Y1SN	Statically Nondeterminated Structures	KZ	2	2+0	Z	PV
16Y1TJ	Technological Quality Aspects	KZ	2	2+0	Z	PV
20Y1TE	Technology of Electronic Systems	KZ	2	2+0	L	PV
20Y1TD	Telematics Databases	KZ	2	2+0	Z	PV
11Y1TG	Graph Theory	KZ	2	2P+0C	L	PV
16Y1TR	Theory of Railroad Vehicle Driving	KZ	2	2+0	Z	PV
16Y1TZ	Transporting Devices	KZ	2	2+0	L	PV
14Y1TI	Creating Interactive Internet Applications	KZ	2	2P+0C	L	PV
14Y1VB	Visual Basic	KZ	2	2+0	L	PV
12Y1VC	Waterways and Shipping	KZ	2	2P+0C	Z	PV
14Y1VM	Development of Applications for Mobile Devices	KZ	2	2P+0C	Z	PV
21Y1ZT	ATM Systems	KZ	2	2+0	Z	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
18Y1ZD	Basics of Two-Dimensional Design	KZ	2	2+0	Z	PV
11Y1ZF	Introduction to Solid State Physics	KZ	2	2+0	Z	PV
14Y1ZM	Fundamentals of Parametric and Adaptive Programming	KZ	2	2P+0C	L	PV
18Y1ZT	Basics of Three-Dimensional Design	KZ	2	2+0	L	PV
12Y1ZU	Principles of Urbanism Karel Hájek	KZ	2	2P+0C	Z	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
16Y1RV	Railroad Vehicles Driving	KZ	2	2+0	L	PV
21Y1RL	Air Traffic Control	KZ	2	2+0	L	PV

Characteristics of	of the courses of this group of Study Plan: Code=Y1-BAUT 11/12 Name=PVP bak.prez. AUT	od 11/12	
17Y1AF	Alternative Forms of Transportation Project Financing	KZ	2
There will be specifed	such forms of financing in transportation, where the public sector body perform the final debtor, i. e. debtor payments come fi	om its budget, bu	t the final debtor
is not a direct participa	ant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of securities as an	alternative source	of transportation
project.			
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues. Ana	tomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circula	tion and nervous	system. Structure
and biomechanics of	muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injur	ed man and his tr	eatment. Human
joint prostheses. Prote	ective means and traffic safety regulations.		
14Y1AV	Animation and Visualization	KZ	2
Introducing and basic	3D primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, conne	ction / interaction	/ combination of
3D primitives, creating	3D bodies as non-primitives. Using of surfaces. Working with materials and material editors. Lightnings. Setting of light and mat	terial parameters.	Scene capturing.
Camera settings, mov	ing in the scene. Rendering and making animation.		
14Y1AP	Automatization in Mail	KZ	2
Technology of post sh	ipment submission, transport, and delivery via physic and electronic way, virtual post operation. Technology of information tra	nsmission by elec	tronic way,
application of new info	rmation and communication technologies in an offer of permanent, mobile, and NGN e-communication networks, solutions to e-	communication ne	twork interfaces,
technological principle	es of end telecommunication devices.		
17Y1BB	Banks and Banking	KZ	2
Banks and banking sy	stem. Balance sheet, income statement, bank's capital and its functions. Banking risks. Banking products. Interest types, pay-c	off and loan securi	ng, financial loan
products. Banking dep	posit products. Banking payment-clearing products. Financial intermediation, open-end and closed-end funds, collective inves	tment schemes. C	Central bank and
its role. Bank regulation	on and supervision. International banking.		
14Y1BE	Barrierless Transport	KZ	2
The issue of barrierles	is accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude	ents will gain theor	etical knowledge
of barrierless environn	nent roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation syst	ems and transport	ation technology.
Theoretical knowledge	e will be supplemented by practical examples.		
15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
Fundamental legislativ	ve, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation	n. Health protection	n programmes,
health insurance of ho	ome and foreign business trips, statistics, working practice.		
17Y1DZ	Transported Commodities Cognization	KZ	2
Useful features. Quali	ty. Testing. Standardization. Features relevant for the transport. Packing. Stress. Protection of goods and damage prevention	during the carriag	e. Optimization
of the choice and effe	ctive transport means utility.		

Theory and analysis of vibration of multimass systems. Dynamical model of vehicle and interaction with transport structure. Assessment of stru	KZ	2
	cture vibration and allo	wable criteria.
Vibroisolation and absorbers of dynamical effects. Methods of experimental dynamics. FEM in structure dynamics. 15Y1DU History of Art and Society	KZ	2
History of art - definitions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic		
Design of transport vehicles.		3 .
15Y1DZ History of Railway	KZ	2
Horse-drawn railways, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "Fi	· ·	
War II railways, railway development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train	connections, railway lir	nes construction,
railway accidents, railway junctions. Excursions and projections. 13Y1EA Economic - Energetic Analysis of Land Transport	KZ	2
Vehicle traction systems, traction-energetic properties, laws of vehicle motion, assessment of energy demands, traction-energetic conceptions, te	I I	
13Y1EV Public Sector Economy	KZ	2
Summary of basic economic findings, public goods - definition, public sector domains, state budget, taxes, public goods and externalities, exter	nalities in transportation	on and their
treatment, methods of assessment of public projects, transport projects and their funding, benefits of transport projects, the assessment of transport projects and their funding, benefits of transport projects, the assessment of transport projects and their funding, benefits of transport projects, the assessment of transport projects and their funding, benefits of transport projects, the assessment of transport projects are transported by the contract of transport projects are transported by the contract of transported by	sport projects by the C	BA method,
HDM-4, CSHS. 17Y1EV Public Sector Economy	KZ	2
Economic and financial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assessment	1	
tax system of the CR, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, fu	ınding from EU funds, p	orogram HDM-4.
15Y1EH European Integration within Historical Context	KZ	2
Versailles system, formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, commi		
goals. Europe after Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold w New quality of French-German relationship - a driving power of starting European integration.	ar and its consequence	es for Europe.
18Y1EV Experimental Methods and Numerical Modelling	KZ	2
Physical properties measured in structural mechanics and dynamics. Principles of strain gauge measurement. Theory of photoelasticimetry, exper	I I	
Basic principles of numerical methods in structural mechanics and dynamics. Finite element method in statics and dynamics. Geometry develop	ment, discretization to	elements, types
of structural elements. Boundary conditions. Material models. Solution of problems.	1/7	
15Y1FD	air traffic specialised	2 terminology
French society and culture. Current political system. System of education, studying in France. Selected authors of French literature. French gas	-	terriiriology.
14Y1GD GIS and Maps Digitalization	KZ	2
Work with map sources and their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of data	abases. Interlinking ext	ernal references
with drawings containing maps.		_
20Y1GI Geographical Information Systems	KZ	2
Introduction to geographical information systems, creating real-world model, data models, storage of geographical data, methods of data entry, systems, map projections, raster and vector representation, spatial algorithms and operations, and general transport roles in GIS.	ulgilization, geograpm	carcoordinate
14Y1HW Computer Hardware	KZ	2
Design combinational and sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of c	omputer components -	controller, ALU,
memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB).		
	147	
15Y1HL	KZ	2
Aeronautics. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of airports in the Czech Republic. World air	ports. Airlines of the wo	
Aeronautics. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of airports in the Czech Republic. World airports airplanes. Famous aviators. Classic era of aviation. Golden era of civil aviation. Supersonic flying. Modern era of civil aviation. Flying in the	ports. Airlines of the wo	
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Aeronautics. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of airports in the Czech Republic. World air CSA airplanes. Famous aviators. Classic era of aviation. Golden era of civil aviation. Supersonic flying. Modern era of civil aviation. Flying in the 15Y1HD History of City Mass Transport History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, curren clearance systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Republic and transport in the world.	ports. Airlines of the wo e world. KZ t trends and development of Slovakia.	orld. Helicopters. 2 ents of tariff and
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21Y1L	Airports - Design and Operation	KZ	2
	for development of planning of runway systems and terminal facilities. Road construction, approximate analysis of RWY distand if international airports - standard checking. Unexpected events and their handling.	ce. Investment pla	nning - operator
21Y1LC	Human Factor	KZ	2
	np; limitations, ability & mp; competence, accident statistics, flight safety, basics of flight physiology, individuals & mp; environ	ı	
sensory system, health	& amp; hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, r	nemory & lea	arning, theory
	error, biorhythms & sleep, stress, fatigue, working methods.		_
11Y1LP	Linear Programming	KZ	2
	ation problem of linear programming, application of the linear programming on economic and technical problems, normal traf trical interpretation of linear programming problems, simplex method, duality principle.	nc problems and t	ranic problems
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
	ger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial ti	ı	
air cargo. Information sy	ystems in air transport. Global distribution systems.		
11Y1MM	Mathematical Models in Economy	KZ	2
=	s to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their progr	ram implementation	on. The outcom
	ity to implement and solve basic tasks from the queue theory, graph theory and both free and constrained optimization.	V7	2
18Y1MT	Engineering Materials main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers	KZ and composites a	
-	nd to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's selection	•	itterition is paid
14Y1NP	Non-parametric 3D Modelling	KZ	2
Work in 3D non-parame	stricmodeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object	t data creation, w	ork with data
	database. Basic definition of work with lights, materials and reflexes. Models presentation.		
20Y1NS	Neural Networks	KZ	2
	function of human brain and its main functional blocks and building elements - neurons. Models of neurons, modelling their n	ietworks and the b	asic paradigms
of artificial neural netwo		KZ	2
	Maritime Transportation of the maritime transportation, theoretical discipline in maritime transportation, seafaring vessels, maritime ports and their uti		_
	t corridors and link by maritime, river and rail transport I and II, global maritime corridors, logistics of maritime transportation,		
containers, ITS in mariti		·	
14Y1NH	Databases Design and Programming	KZ	2
	will deepen their knowledge and skills in database design and learn the procedural extension of SQL, PL/SQL, which makes	it possible to ensu	re data integrity
on the level of the datab		1/7	
14Y1NB	Databases Design and Programming n his own application - that means design database, programme basic graphical interface and requested application behavio	KZ	2
20Y1OI	Fare Collection and Information Systems	KZ	2
	in public transport and their components (on-board units, validators, turnstiles,). Information systems and their component		
panels) and operator	s (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parking	J).	
14Y1OL	Linux Operating System	KZ	2
	x system installation. X-window system. Rights - Users and Groups, ACL rights. Filesystems and file attributes. Programs and	•	
	ls. Configuration files. Managing SW system. Programs in graphic mode - tools for text, graphics, sound, video, communication. ion. Remote administration.	Services manage	ment. Principies
14Y10S	Operating Systems	KZ	2
	r function and architecture, process and memory management, virtual memory, threads, interprocess communication, synchro		
of operating systems W	in and Linux, start of PC and operating systems, networking, safety in OS, terminals in MS Win and Linux, batch files. Domai	ins and workgroup	s in MS Win,
users and their rights, c	onfiguration of networks, Windows registry, remote desktop.		
15Y1OP	Turning Points of the Czech Nation	KZ	2
	re than a thousand-year long history of Western Slavs in Central Europe. Emphasis on relations to bordering nations and Europe. Explanation of Czechoslovakia. Disputes over	-	
	ch Crown as a part of Habsburgh monarchy. 19th century political programmes. Foundation of Czechoslovakia. Disputes ove cture in Europe during 20th century and the position of the Czech nation.	Title sense of C26	ech history.
11Y1PV	Parametrical and Multicriterial Programming	KZ	2
	of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints.		
13Y1PM	Personal Management	KZ	2
Basic overview of leade	rship issue from the viewpoint of an employee as well as a manager. The accent at the experience of basic situations through	h a simulation gar	ne. Systemic
	al management, the assessment as a process, SWOT analysis, basic principles of personal management, theory and practice of	motivation, manaç	gerial leadership
styles.	The Burgles of Transaction To 1947 and Management	1/7	
13Y1PD	The Participation of Transport in Tourist Trade Management typology, market, marketing mix, transport service providers, contract cooperation, reservation systems, transport valuables,	KZ	2 are low cost air
carriers, IATA, ICAO, ro		Standard all Carri	ers, low cost all
14Y1PM	Advanced Methods of Parametric Programming	KZ	2
	ng - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipe		
Photorealistic output rei	ndering - physical and material properties, lighting sources. MKP - visual example.		
21Y1PU	Aircraft Maintenance Technology	KZ	2
	enance technology, legislation, aircraft release into operation, safety, equipment.		
12Y1PD	Assessment of Transport Structures	KZ	2
•	t structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilitie the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of	· ·	
the environment.	and randocapo. I wanty nagmonitation and randocapo connectivity in the preparation of linear structures. I facilitat examples of	accessment or tra	o bununiya on
20Y1PO	Weather, Air Quality and Transportation	KZ	2
State of the atmosphere	e, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabilis		cast evaluation.
Air quality main pollutar	ots and their effects, atmospheric chemistry traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp	ortation in climate	change

14Y1PG	Computer Graphics	KZ	2
	and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with ed	liting programs (w	thin the user
11Y1PE	s, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards. Computer Controlled Experiments	KZ	2
	riment consisting of designing, measurement method selection according to required results accuracy and available measure	Į.	
	meters, data acquisition and results calculation. Evaluation of measurement method accuracy and result uncertainty.	,	
14Y1PJ	C Programming Language	KZ	2
C programming language	e. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation, s	string, files, structu	res and unions.
	ract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.		
12Y1C1	Designing Roads in Civil 3D I	KZ	2
	o the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go throu , from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. Th	-	- 1
	building design in the real-life profession.	ie course also ilici	udes a basic
12Y1C2	Designing Roads in Civil 3D II	KZ	2
	to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go throu	l l	esign of this
	, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The	e previously acqu	ired skills are
	d. Students learn to design intersections.		_
18Y1P1	Design of Structures 1	KZ	2
	lements, virtual work. Strength method. Frame analysis by strength method. Deformation method. Frame analysis by deform 's foundation. Calculation of beam on elastic foundation. Basics of the mathematical elasticity. Wall as a structural element.		
	s foundation. Calculations of beam on elastic foundation. Basics of the mathematical elasticity. Wall as a structural element. s. Examples of calculations.	riale as a siluciui	ai illeilibei.
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2
	uction. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measure	ement. Transmissi	on mechanism.
General principles of er	gine diagnostics.		
12Y1PU	Organization Disposition of Railway Stations	KZ	2
_	senger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zo		ation yards.
	ology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic railway		
12Y1PC	Pedestrian and Cycling Transport Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle routes.	KZ	2 sign parameters
· ·	of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing.	=	
	s and road marking for cyclists.	igo mai oailoi alai	,
12Y1RZ	Railway Lines Reconstruction	KZ	2
Principles of track maint	inance technology. Track maintainance machinery, superstructure and substructure building machinery and special rail vehicles	s. Degradation of tr	ack geometrical
	d elimination principles. Track sections and station tracks exclusion planning. Reconstruction timetable design of railway sup		
13Y1SM	MESE Simulation	KZ	2
research and developm	ulating corporate decision making. Groups of students produce the same product, give the volume of available production cap ent	acity, pian budget	s for marketing,
20Y1SC	Sensors and Actuators	KZ	2
	I actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor		
state (temperature, hum	idity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.		
11Y1SI	Transportation Software Engineering	KZ	2
	are engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and impler	nentation using for	mal techniques
and practical usuage.	Dood Management and Maintenance	1/7	2
12Y1SU Getting familiar with ow	Road Management and Maintenance hership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented developed to the road at the state and county level. It is presented developed to the road at the state and county level.	KZ	2 work short
-	strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and re	-	
_	restment activity in highway engineering.		
18Y1SN	Statically Nondeterminated Structures	KZ	2
	m element, virtual work. Strength method. Frame analysis by strength method. Deformation method. Frame analysis by defo		
=	inkler's foundation. Calculation beam on elastic foundation. Basement of the mathematical elasticity. Calculation of walls. Ca	lculation of plates	. Cylindrical
shells. Examples of calc	Technological Quality Aspects	KZ	2
	reclinological Quality Aspects	rv I	_
Certification and acredita	ation, Quality management, Standards of Quality Management and its application, Quality system creation, Tools and methods of		ent Conformity
	ation. Quality management. Standards of Quality Management and its application. Quality system creation. Tools and methods of tal certification. Workplace certification. QMS integration. Classification, certification of products and producers.		ent. Conformity
verification. Environmer			nent. Conformity
verification. Environmer 20Y1TE	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers.	of quality improven	2
verification. Environmer 20Y1TE Characteristics of the te electronic elements. Ba	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers. Technology of Electronic Systems chnological process, the relation of the design, construction and technology. General scheme of technological process. Principle technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, or	of quality improven	2 eristics of basic
verification. Environmer 20Y1TE Characteristics of the te electronic elements. Ba aspects of electronic sy	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers. Technology of Electronic Systems chnological process, the relation of the design, construction and technology. General scheme of technological process. Principle technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, certems.	of quality improven	2 eristics of basic lity. Operational
verification. Environmer 20Y1TE Characteristics of the te electronic elements. Ba aspects of electronic sy 20Y1TD	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers. Technology of Electronic Systems chnological process, the relation of the design, construction and technology. General scheme of technological process. Principle technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, cestems. Telematics Databases	of quality improven	2 eristics of basic
verification. Environment 20Y1TE Characteristics of the te electronic elements. Ba aspects of electronic sy 20Y1TD Issue of telematics data	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers. Technology of Electronic Systems chnological process, the relation of the design, construction and technology. General scheme of technological process. Principle technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, obstems. Telematics Databases bases, work with OpenStreetMap layer, use of Linux OS and PostgreSQL with PostGIS extension, real traffic data.	of quality improven KZ iples and characte diagnostics, reliabi	2 eristics of basic lity. Operational
verification. Environment 20Y1TE Characteristics of the telectronic elements. Ba aspects of electronic sy 20Y1TD Issue of telematics data 11Y1TG	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers. Technology of Electronic Systems chnological process, the relation of the design, construction and technology. General scheme of technological process. Principle technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, of stems. Telematics Databases bases, work with OpenStreetMap layer, use of Linux OS and PostgreSQL with PostGIS extension, real traffic data. Graph Theory	KZ iples and characted diagnostics, reliable KZ KZ KZ	2 eristics of basic lity. Operational 2
verification. Environment 20Y1TE Characteristics of the telectronic elements. Ba aspects of electronic sy 20Y1TD Issue of telematics data 11Y1TG Directed and undirected	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers. Technology of Electronic Systems chnological process, the relation of the design, construction and technology. General scheme of technological process. Principle technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, obstems. Telematics Databases bases, work with OpenStreetMap layer, use of Linux OS and PostgreSQL with PostGIS extension, real traffic data.	KZ iples and characted diagnostics, reliable KZ KZ KZ	2 eristics of basic lity. Operational 2
verification. Environment 20Y1TE Characteristics of the telectronic elements. Ba aspects of electronic sy 20Y1TD Issue of telematics data 11Y1TG Directed and undirected flow networks. Algorithm	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers. Technology of Electronic Systems chnological process, the relation of the design, construction and technology. General scheme of technological process. Principles technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, of stems. Telematics Databases bases, work with OpenStreetMap layer, use of Linux OS and PostgreSQL with PostGIS extension, real traffic data. Graph Theory graphs, weighted graphs, matrices descripting graphs, minimal spanning tree, minimal path, Eulerian paths, graph traversing	KZ iples and characted diagnostics, reliable KZ KZ KZ	2 eristics of basic lity. Operational 2
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verification. Environment 20Y1TE Characteristics of the telectronic elements. Ball aspects of electronic sylvantom s	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers. Technology of Electronic Systems choological process, the relation of the design, construction and technology. General scheme of technological process. Principle in technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, of stems. Telematics Databases bases, work with OpenStreetMap layer, use of Linux OS and PostgreSQL with PostGIS extension, real traffic data. Graph Theory graphs, weighted graphs, matrices descripting graphs, minimal spanning tree, minimal path, Eulerian paths, graph traversing for problems of existence and optimization. Solving of NP-hard problems, heuristic approach. Theory of Railroad Vehicle Driving ansportation. Technical condition of railroad vehicles and responsibility for their condition. Railroad traffic regulations. Railroad stem. Powering system. Power distribution.	KZ iples and characted diagnostics, reliable KZ KZ g, matching in bip KZ d traffic safety. Sig	2 eristics of basic lity. Operational 2 artite graphs, 2 anal systems.
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verification. Environment 20Y1TE Characteristics of the telectronic elements. Ball aspects of electronic sylvantic s	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers. Technology of Electronic Systems choological process, the relation of the design, construction and technology. General scheme of technological process. Principle in technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, of stems. Telematics Databases bases, work with OpenStreetMap layer, use of Linux OS and PostgreSQL with PostGIS extension, real traffic data. Graph Theory graphs, weighted graphs, matrices descripting graphs, minimal spanning tree, minimal path, Eulerian paths, graph traversing for problems of existence and optimization. Solving of NP-hard problems, heuristic approach. Theory of Railroad Vehicle Driving ansportation. Technical condition of railroad vehicles and responsibility for their condition. Railroad traffic regulations. Railroad stem. Powering system. Power distribution. Transporting Devices altransport technology, loose material transport - conveyors with tractive elements, conveyors without tractive elements, transport devices, crane mechanisms, steel constructions. Vertical transport, transport in mines, long-distance conveyor bel	KZ ciples and characted diagnostics, reliabilities KZ g, matching in bip KZ d traffic safety. Signers of piece mates to transport.	2 eristics of basic lity. Operational 2 artite graphs, 2 anal systems. 2 erial - continual
verification. Environment 20Y1TE Characteristics of the telectronic elements. Ba aspects of electronic sy 20Y1TD Issue of telematics data 11Y1TG Directed and undirected flow networks. Algorithm 16Y1TR Legislation in railroad to Radiocommunication sy 16Y1TZ Flow of masses, materitransport devices, cyclic 14Y1TI	tal certification. Workplace certification. QMS integration. Classification, certification of products and producers. Technology of Electronic Systems choological process, the relation of the design, construction and technology. General scheme of technological process. Principle in technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, of stems. Telematics Databases bases, work with OpenStreetMap layer, use of Linux OS and PostgreSQL with PostGIS extension, real traffic data. Graph Theory graphs, weighted graphs, matrices descripting graphs, minimal spanning tree, minimal path, Eulerian paths, graph traversings for problems of existence and optimization. Solving of NP-hard problems, heuristic approach. Theory of Railroad Vehicle Driving ansportation. Technical condition of railroad vehicles and responsibility for their condition. Railroad traffic regulations. Railroad stem. Powering system. Power distribution. Transporting Devices altransport technology, loose material transport - conveyors with tractive elements, conveyors without tractive elements, transport technology, loose material transport - conveyors with tractive elements, conveyors without tractive elements, transport.	KZ ciples and characted diagnostics, reliabilities KZ g, matching in bip KZ d traffic safety. Signer KZ sport of piece mate transport. KZ	2 eristics of basic lity. Operational 2 2 artite graphs, 2 anal systems. 2 erial - continual 2

14Y1VB Applications develo	Visual Basic	KZ	2
	ping for Visual Basic on MS-Windows .NET platform with use of .NET libraries or Visual Studio tools for graphic or console mo	1	_
	olications. Work with VBA at superstructures creation for MS-Windows applications supporting VBA.	de. i ditilei, creatioi	1 Of Illistaliation
12Y1VC	Waterways and Shipping	KZ	2
	port. The position of water transport in the transport system of the Czech Republic and the EU. Advantages and disadvantage	I	_
	ope, a network of waterways in the Czech Republic. Construction of the waterway and its equipment. Management of waterways	-	' -
=	navigation rules of operation, navigation maps.	s and its operation.	The legal regime
14Y1VM		KZ	2
	Development of Applications for Mobile Devices pramming, Java programming language, development environment, operating system Android, development application - widg	1	_
permissions, service		jets, containers, till	eaus, menu,
		1/7	
21Y1ZT	ATM Systems	KZ	2
	es classical and modern facilities, systems and technologies designed for ATS. Student obtains knowledge of technical princip	ies and solutions of	communication,
	eillance systems used in aviation.	177	
16Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2
	torbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of pers		ises, motorbikes,
	and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical modelling in te		
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2
	division and applications with emphasis on transport, including development and research. Colours, colour perception, colour		
and 3D generation,	elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW ba	sics. Introduction to	2D and 3D
graphics software.			
18Y1ZD	Basics of Two-Dimensional Design	KZ	2
The comprehensive	teaching method includes primary creative principles and the introduction to the logic of free shapes in the plane. The "step-by-	step"procedure pas	sing from simple
relatioships to more	complex ones. The topics are closed by two-dimensional variations on basic conceptual elements and other tasks of the creat	tive character.	
11Y1ZF	Introduction to Solid State Physics	KZ	2
Structure of solids,	crystal lattice, Bloch function, Brillouin zones. Bend theory of solids. Dynamics of 1D lattice. Phonons. Thermodynamic propert	ies of solids. Semic	onductors.
Magnetism.			
14Y1ZM	Fundamentals of Parametric and Adaptive Programming	KZ	2
Basics of work at pr	oducts and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models f	rom 2D sketches. Ir	nport and export
from and to another	systems. Fundamentals of assemblies creation.		
10V17T			
101121	Basics of Three-Dimensional Design	KZ	2
18Y1ZT The design tasks fo	Basics of Three-Dimensional Design cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dime	KZ	_
The design tasks fo	Basics of Three-Dimensional Design cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional design in defined space.	1	_
The design tasks fo modelling.	cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dime	nsional elements a	nd correct shape
The design tasks for modelling.	cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dime Principles of Urbanism	KZ	nd correct shape
The design tasks for modelling. 12Y1ZU Survey on history or	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Sp.	KZ	nd correct shape
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or comments.	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Speties with a certain prevailing function, forms of their development. Brief overview of land-use planning.	KZ acial arrangement o	nd correct shape 2 f settlements.
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or content to the second	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Speties with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles	KZ acial arrangement o	2 of settlements.
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or company to the same tasks. The same tasks for model in the same tasks for the same tasks for the same tasks for model in the same tasks for model	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Species with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles s and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion	KZ acial arrangement of KZ KZ acial arrangement of KZ no train and unit train	2 of settlements. 2 ns. Rolling and
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or complete the task and the task resistance. To the model task resistance. To the model task resistance.	Principles of Urbanism cut it is and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Species with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles s and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motical running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicles.	KZ acial arrangement of KZ KZ acial arrangement of KZ no train and unit train	2 of settlements. 2 ns. Rolling and
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or content to the task resistance. To and electric drive. Expenditure of the task resistance.	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Species with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles s and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motical running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehesign concept rail vehicles and drive of wheel set.	KZ acial arrangement of KZ KZ by train and unit traiticle - hydromechani	ond correct shape 2 of settlements. 2 ns. Rolling and c, hydrodynamic
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or content to the task resistance. To and electric drive. En 16Y1RE	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Species with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles s and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motical running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehesign concept rail vehicles and drive of wheel set. Control and Electronic Vehicle Systems	KZ acial arrangement of KZ by train and unit traicicle - hydromechani	2 of settlements. 2 ns. Rolling and c, hydrodynamic
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or content to the task resistance. To and electric drive. Elementary concept	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Species with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles s and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motical running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicles in concept rail vehicles and drive of wheel set. Control and Electronic Vehicle Systems s of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, die	KZ acial arrangement of KZ train and unit traiticle - hydromechani	2 of settlements. 2 ns. Rolling and c, hydrodynamic 2 on. Conventional
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or control 18Y1UK Basic characteristic track resistance. To and electric drive. Control 16Y1RE Elementary concept and hybrid drive cor	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Species with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles s and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motical running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehesign concept rail vehicles and drive of wheel set. Control and Electronic Vehicle Systems	KZ acial arrangement of KZ train and unit traiticle - hydromechani	2 of settlements. 2 ns. Rolling and c, hydrodynamic 2 on. Conventional
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or construction 18Y1UK Basic characteristic track resistance. To and electric drive. Construction 16Y1RE Elementary concept and hybrid drive consystems.	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Species with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles s and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motical running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicles oncept rail vehicles and drive of wheel set. Control and Electronic Vehicle Systems s of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, distrol. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control	KZ acial arrangement of KZ on train and unit traicle - hydromechani KZ sadvantages, function, safety, communications	2 f settlements. 2 ns. Rolling and ic, hydrodynamic 2 on. Conventional attion and comfort
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or construction 18Y1UK Basic characteristic track resistance. To and electric drive. Design 16Y1RE Elementary concept and hybrid drive consystems.	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Specifies with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles s and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motical running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicles in concept rail vehicles and drive of wheel set. Control and Electronic Vehicle Systems s of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, distrol. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control Railroad Vehicles Driving	KZ acial arrangement of KZ by train and unit traiticle - hydromechanics KZ sadvantages, function, safety, communication	2 In a correct shape 2 If settlements. 2 Ins. Rolling and ic, hydrodynamic 2 Ins. Conventional ation and comfort
The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or construction 18Y1UK Basic characteristic track resistance. Totand electric drive. Elementary concept and hybrid drive consystems. 16Y1RV Electric circuits in resistance.	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Specifies with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles s and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motical running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicles oncept rail vehicles and drive of wheel set. Control and Electronic Vehicle Systems s of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, distrol. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control Railroad Vehicles Driving ilroad vehicles. Railroad vehicle parametres regulation. Servicing and operation of the railroad vehicles. Rail traction technolog	KZ acial arrangement of KZ by train and unit traiticle - hydromechanics KZ sadvantages, function, safety, communication	2 of settlements. 2 ons. Rolling and ic, hydrodynamic 2 on. Conventional ation and comfort
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The design tasks for modelling. 12Y1ZU Survey on history or Types of towns or continuous of the track resistance. Totand electric drive. Elementary concept and hybrid drive consystems. 16Y1RV Electric circuits in researching and solvid 21Y1RL Air traffic services a	Principles of Urbanism city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Speties with a certain prevailing function, forms of their development. Brief overview of land-use planning. Introduction of Rail Vehicles and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motical running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicles oncept rail vehicles and drive of wheel set. Control and Electronic Vehicle Systems s of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, distrol. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control Railroad Vehicles Driving ilroad vehicles. Railroad vehicle parametres regulation. Servicing and operation of the railroad vehicles. Rail traction technologing faults. Air Traffic Control nd their distribution. Organization of air traffic, flow and capacity management. Airspace management. System support for aircriving and their distribution. Organization of air traffic, flow and capacity management. Airspace management. System support for aircriving and their distribution.	KZ acial arrangement of KZ britain and unit traiticle - hydromechanics KZ sadvantages, function, safety, communication, KZ britain and KZ substantial KZ britain and KZ britain and KZ britain arrangement of KZ britain arrangeme	and correct shape 2 of settlements. 2 ns. Rolling and c, hydrodynamic 2 on. Conventional ation and comfort 2 gency situations. 2 pace. Flight plan,
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Name of the block: Jazyky

Minimal number of credits of the block: 12

The role of the block: J

Code of the group: JZ-B-3.4 12/13

Name of the group: Jazyk bak. 5.6.sem. od 12/13

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

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

Credits in the group: 6

Note on the group:

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
15JZ3A	Foreign Language - English 3	Z	3	0+4	Z	J
15JZ4A	Foreign Language - English 4	Z,ZK	3	0+4	L	J

15JZ3F	Foreign Language - French 3 Eva Rezlerová, Jan Feit, Irena Veselková	Z	3	0P+4C	Z	J
15JZ4F	Foreign Language - French 4 Eva Rezlerová, Jan Feit, Irena Veselková	Z,ZK	3	0P+4C+10B	L	J
15JZ3N	Foreign Language - German 3 Eva Rezlerová, Jan Feit, Jana Štikarová, Alexej Kusák, Petra Mračková Vavroušová Eva Rezlerová (Gar.)	Z	3	0P+4C	Z	J
15JZ4N	Foreign Language - German 4 Eva Rezlerová, Jan Feit, Jana Štikarová	Z,ZK	3	0P+4C+10B	L	J
15JZ3R	Foreign Language - Russian 3 Eva Rezlerová, Jan Feit, Marie Michlová	Z	3	0P+4C	Z	J
15JZ4R	Foreign Language - Russian 4 Eva Rezlerová, Jan Feit, Marie Michlová	Z,ZK	3	0P+4C+10B	L	J
15JZ3S	Foreign Language - Spanish 3 Eva Rezlerová, Jan Feit, Petra Mračková Vavroušová, Nina Hricsina Puškinová Petra Mračková Vavroušová (Gar.)	Z	3	0P+4C	Z	J
15JZ4S	Foreign Language - Spanish 4 Eva Rezlerová, Jan Feit, Nina Hricsina Puškinová Nina Hricsina Puškinová (Gar.)	Z,ZK	3	0P+4C+10B	L	J

15JZ3A	Foreign Language - English 3	Z	3
Grammar structure	e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Fa	culty's fields of study	y. Focus on
mprovement in pe	erceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both	oral and written form	ns. Technical
exts and their fea	tures; practice of oral and written presentation.		
15JZ4A	Foreign Language - English 4	Z.ZK	3
Grammar structure	e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Fa	culty's fields of study	y. Focus on
mprovement in pe	erceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both	oral and written forr	ns. Technical
exts and their fea	tures; practice of oral and written presentation.		
I5JZ3F	Foreign Language - French 3	Z	3
Frammar and styl	istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improveme	ent of language struc	ture knowledg
nd perceptive an	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form.	Work with (profession	nal) text and if
atures. Practice	of oral and written presentation.		
15JZ4F	Foreign Language - French 4	Z.ZK	3
Grammar and styl	istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	, ,	ture knowledg
•	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form.		•
	of oral and written presentation.	v.	,
5JZ3N	Foreign Language - German 3	Z	3
rammar and styl	istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	ent of language struc	ture knowledc
•	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form.		-
	of oral and written presentation.		•
	Foreign Language - German 4	7 71/	
5JZ4N	1 Oleigh Language - German -	Z,ZN	3
	istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improveme	Z,ZK ent of language struc	_
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frammar and stylind perceptive and eatures. Practice 5JZ3R	istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement decommunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. of oral and written presentation.	ent of language structure Work with (profession	ture knowledg onal) text and i
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Grammar and stylind perceptive and patures. Practice 5JZ3R Grammar and stylind perceptive and perceptive and stylind perceptive and styli	istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement documents are skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written forms of oral and written presentation. Foreign Language - Russian 3 istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvements	ent of language structure. Work with (profession of language structure)	ture knowledg onal) text and i 3 ture knowledg
frammar and stylend perceptive and eatures. Practice 5JZ3R frammar and stylend perceptive and eatures. Practice	istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. of oral and written presentation. Foreign Language - Russian 3 istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. of oral and written presentation.	ent of language struc Work with (profession Z ent of language struc Work with (profession	ture knowledg onal) text and i 3 ture knowledg
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and perceptive an eatures. Practice ISJZ3R Grammar and stylind perceptive an eatures. Practice ISJZ4R Grammar and stylind perceptive an eatures. Practice ISJZ3S Grammar and stylind perceptive and eatures. Practice ISJZ3S Grammar and stylind perceptive and perceptive and perceptive and perceptive and perceptive and eatures.	istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvemely communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. of oral and written presentation. Foreign Language - Russian 3 istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvemely decommunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. of oral and written presentation. Foreign Language - Russian 4 istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvemely decommunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. of oral and written presentation. Foreign Language - Spanish 3 istics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form.	ent of language structure. Work with (profession of language structure.)	ture knowledgenal) text and 3 ture knowledgenal) text and 3 ture knowledgenal) text and 3 ture knowledgenal) text and

Code of the group: JZ-B-1,2 11/12

features. Practice of oral and written presentation.

Name of the group: Jazyk bak.3.4.sem.od 11/12

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

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

Credits in the group: 6 Note on the group:

and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its

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
15JZ1A	Foreign Language - English 1 Eva Rezlerová, Jan Feit, Marie Michlová, Klára Lancová, Lenka Monková, Jitka Heřmanová, Dana Boušová, Barbora Horáčková, Marek Tomeček, Jitka Heřmanová (Gar.)	Z	3	0P+4C	Z	J
15JZ2A	Foreign Language - English 2 Eva Rezlerová, Jan Feit, Marie Michlová, Lenka Monková, Jitka Heřmanová, Dana Boušová, Barbora Horáčková, Marek Tomeček, Peter Morpuss,	Z,ZK	3	0P+4C+10B	L	J
15JZ1F	Foreign Language - French 1	Z	3	0+4	Z	J
15JZ2F	Foreign Language - French 2	Z,ZK	3	0+4	L	J
15JZ1N	Foreign Language - German 1	Z	3	0+4	Z	J
15JZ2N	Foreign Language - German 2	Z,ZK	3	0+4	L	J
15JZ1R		Z	3	0+4	Z	
	Foreign Language - Russian 1					J
15JZ2R	Foreign Language - Russian 2	Z,ZK	3	0+4	L	J
15JZ1S	Foreign Language - Spanish 1	Z	3	0+4	Z	J
15JZ2S	Foreign Language - Spanish 2	Z,ZK	3	0+4	L	J
Grammatical structures an stylistics forms. Oral and v	oreign Language - English 2 d style. Selection of conversation topics relating to transportation sciences. Extending voc written presentation of original research. Academic text principles and reading comprehe					
Grammatical structures an stylistics forms. Oral and v 15JZ1F F Grammar structure and stylimprovement in perceptive texts and their features; pr 15JZ2F F Grammar structure and styling styling styling from the styling styling from the styling styling styling from the styling sty	d style. Selection of conversation topics relating to transportation sciences. Extending voor tritten presentation of original research. Academic text principles and reading comprehe oreign Language - French 1 distics. Conversational and specialised topics selected according to the language group and communicative skills; widening the vocabulary. Basic kinds of compositions. Preseatice of oral and written presentation. oreign Language - French 2 distics. Conversational and specialised topics selected according to the language group.	ension. Principles of level and with regentations of own fire of level and with regentations of own fire of level and with regentations.	of rhetoric. gard to the F ndings in bo gard to the F	e and comm	unicative skills. Z ds of study. Fowritten forms. T	3 cus on echnical
Grammatical structures an stylistics forms. Oral and v 15JZ1F F Grammar structure and stylimprovement in perceptive texts and their features; pr 15JZ2F F Grammar structure and stylimprovement in perceptive texts and their features; pr 15JZ1N F Grammar structure and stylimprovement in perceptive texts and their features.	d style. Selection of conversation topics relating to transportation sciences. Extending voc written presentation of original research. Academic text principles and reading comprehe oreign Language - French 1 distics. Conversational and specialised topics selected according to the language group and communicative skills; widening the vocabulary. Basic kinds of compositions. Preseactice of oral and written presentation. oreign Language - French 2	ension. Principles of plevel and with regentations of own find plevel and with regentations of own find plevel and with regentations of own find plevel and with regentations and with regentations of own find plevel and with regentations.	of rhetoric. gard to the F ndings in bo gard to the F ndings in bo	e and comme Faculty's fiel th oral and v Faculty's fiel Faculty's fiel	ds of study. For written forms. To written forms. To written forms. To descript the study. For written forms. To descript the study. For descript the study. For descript the study. For descript the study. For description the study of study. For description the study of study. For description the study of study.	3 cus on echnical 3 cus on echnical 3 cus on echnical 3 cus on echnical cus on
Grammatical structures an stylistics forms. Oral and v 15JZ1F F Grammar structure and stylimprovement in perceptive texts and their features; pr 15JZ2F F Grammar structure and stylimprovement in perceptive texts and their features; pr 15JZ1N F Grammar structure and stylimprovement in perceptive texts and their features; pr 15JZ2N F Grammar structure and stylimprovement in perceptive texts and their features; pr 15JZ2N F Grammar structure and stylimprovement in perceptive texts and stylimprovement in perceptive texts and stylimprovement in perceptive texts.	d style. Selection of conversation topics relating to transportation sciences. Extending voor tritten presentation of original research. Academic text principles and reading comprehence oreign Language - French 1 distics. Conversational and specialised topics selected according to the language group and communicative skills; widening the vocabulary. Basic kinds of compositions. Preseatcice of oral and written presentation. Oreign Language - French 2 distics. Conversational and specialised topics selected according to the language group and communicative skills; widening the vocabulary. Basic kinds of compositions. Preseatcice of oral and written presentation. Oreign Language - German 1 distics. Conversational and specialised topics selected according to the language group and communicative skills; widening the vocabulary. Basic kinds of compositions. Preseatcice of oral and written presentation. Oreign Language - German 2 distics. Conversational and specialised topics selected according to the language group and communicative skills; widening the vocabulary. Basic kinds of compositions. Preseatcice of oral and written presentation. Oreign Language - German 2 distics. Conversational and specialised topics selected according to the language group and communicative skills; widening the vocabulary. Basic kinds of compositions. Preseatcice of oral and written presentation.	ension. Principles of blevel and with regentations of own find the principles of the	gard to the Findings in bo	Faculty's fiel th oral and value aculty's fiel th oral and value aculty's fiel aculty's fiel aculty's fiel aculty's fiel aculty's fiel	ds of study. For written forms. To describe the study. For describe the study. For the study.	3 cus on echnical 3 cus on
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Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical

Z,ZK

texts and their features; practice of oral and written presentation.

texts and their features; practice of oral and written presentation.

15JZ2S

Foreign Language - Spanish 2

List of courses of this pass:

	Name of the course	Completion	Credits
00TVC1	Physical Education 1	Z	1
	n and training in a wide variety of sports and games: from basic recreational coaching to competitive top level training. Included are: tennis, squash, floorball, bodybuilding, swimming, canoeing, aerobic.	oasketball, volleyb	all, soccer,
00TVC2	Physical Education 2	Z	1
	n and training in a wide variety of sports and games: from basic recreational coaching to competitive top level training. Included are: tennis, squash, floorball, bodybuilding, swimming, canoeing, aerobic.	oasketball, volleyb	pall, soccer,
11DAD	Differential and Difference Equations	Z,ZK	3
Difference equation	is and its systems. Some solvable types of differential equations of the first order. Linear differential equations of the n-th order. Methods for inhomogeneous equation by means of variation of constants. Power series and their use for solution of differential equation. Boundary and function for differential equation. Fourier series of function.	r solution of the ho	mogeneous
11FY1	Physics 1 natics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed	Z,ZK	4
11FY2	Physics 2	Z.ZK	4
	tromagnetic field. Optics, quantum character of electromagnetic radiation. Introduction into quantization, hydrogen atom. Multi-electro solid body physics.	,	
11GIE	Geometry	KZ	3
	oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - param		
• .	and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving		
11LA	Linear Algebra	Z,ZK	3
	ar combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classifications.	solvability. Deteri	
11MDS	Collection and Processing of Traffic Data	KZ	2
	iples of traffic detection and data collection, specific problems of the field of traffic data. Data preprocessing and analysis for use in ac		
11MSP	Modeling of Systems and Processes	Z,ZK	4
_	nods and algorithms as a basis for system analysis. Methods for modelling and evaluating the systems in continuous and discrete time	,	
	e recursive algorithms in solution of differential and difference equations, as an instrument for system description. Practical use of tech (MATLAB).	•	
11MTA	Mathematical Analysis	Z,ZK	4
Sequences and se	ries of real numbers and its convergence. Basic properties of functions. Differential and integral calculus of the real function of one real v series and foundations of Fourier transform.	rariable. Power se	ries, Fourie
11MVP	Mathematical Analysis of Function of More Variables	Z,ZK	3
Metric spaces, seq	uences in metric spaces, limit of sequence in metric space. Differential calculus of functions of several variables, differential of function extremes of functions of several variables. Integral calculus of functions of several variables, Riemann integral, integral over curves ar of integral calculus in physics.	n, partial derivation	
11PT	Probability	7	2
Descriptive statistic	es. Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability ents, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Modistributions. Law of large numbers, central limit theorem.		ability mass
11SIS	Statistics	Z,ZK	2
	properties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and cent, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression,	correlation, linear	
		use of matrices in	-
11X31	Project 1	Z	-
	Project 1 Project 2		regression
11X31 11X32	Project 2	Z Z	regression 2
11X31 11X32 11X33	Project 2 Project 3	Z Z Z	regression 2 2 2
11X31 11X32 11X33 11Y1LP	Project 2	Z Z Z KZ	regression 2 2 2 2 2
11X31 11X32 11X33 11Y1LP Definition of the op	Project 2 Project 3 Linear Programming timization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic point with constrains. Geometrical interpretation of linear programming problems, simplex method, duality principle.	Z Z Z KZ problems and traff	2 2 2 cic problems
11X31 11X32 11X33 11Y1LP Definition of the op	Project 2 Project 3 Linear Programming timization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic programming on economic and technical problems.	Z Z Z KZ problems and traff KZ implementation.	2 2 2 2 ic problems
11X31 11X32 11X33 11Y1LP Definition of the op 11Y1MM The goal of the con	Project 2 Project 3 Linear Programming timization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic point with constrains. Geometrical interpretation of linear programming problems, simplex method, duality principle. Mathematical Models in Economy urse is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their program of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained optical projects.	Z Z Z KZ problems and traff KZ implementation.	regression 2 2 2 2 ic problems 2 The outcom
11X31 11X32 11X33 11Y1LP Definition of the op 11Y1MM The goal of the cor	Project 2 Project 3 Linear Programming Itimization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic position with constrains. Geometrical interpretation of linear programming problems, simplex method, duality principle. Mathematical Models in Economy Unrary is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their program of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained opt Computer Controlled Experiments of experiment consisting of designing, measurement method selection according to required results accuracy and available measure	Z Z Z KZ problems and traff KZ implementation. imization. KZ ment devices, sel	regression 2 2 2 2 ic problems 2 The outcom
11X31 11X32 11X33 11Y1LP Definition of the op 11Y1MM The goal of the col 11Y1PE Implementation	Project 2 Project 3 Linear Programming timization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic position with constrains. Geometrical interpretation of linear programming problems, simplex method, duality principle. Mathematical Models in Economy urse is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their program of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained opt Computer Controlled Experiments of experiment consisting of designing, measurement method selection according to required results accuracy and available measure computer-recorded parameters, data acquisition and results calculation. Evaluation of measurement method accuracy and result un	Z Z Z KZ problems and traff KZ implementation. cimization. KZ ment devices, sel certainty.	regression 2 2 2 2 ic problems 2 The outcom 2 ection of
11X31 11X32 11X33 11Y1LP Definition of the op 11Y1MM The goal of the col 11Y1PE Implementation	Project 2 Project 3 Linear Programming stimization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic position with constrains. Geometrical interpretation of linear programming problems, simplex method, duality principle. Mathematical Models in Economy urse is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their program of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained opt Computer Controlled Experiments of experiment consisting of designing, measurement method selection according to required results accuracy and available measure computer-recorded parameters, data acquisition and results calculation. Evaluation of measurement method accuracy and result un Parametrical and Multicriterial Programming	Z Z Z KZ problems and traff KZ implementation. cimization. KZ ment devices, sel certainty. KZ	regression 2 2 2 ic problems 2 The outcom 2 ection of
11X31 11X32 11X33 11Y1LP Definition of the op 11Y1MM The goal of the col 11Y1PE Implementation 11Y1PV Solution to the prot	Project 2 Project 3 Linear Programming Intimization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic position with constrains. Geometrical interpretation of linear programming problems, simplex method, duality principle. Mathematical Models in Economy Unrice is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their programm of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained option of experiment consisting of designing, measurement method selection according to required results accuracy and available measure computer-recorded parameters, data acquisition and results calculation. Evaluation of measurement method accuracy and result un Parametrical and Multicriterial Programming John of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Co	Z Z KZ problems and traff KZ implementation. imization. KZ ment devices, sel certainty. KZ mputation of effici	regression 2 2 2 ic problems 2 The outcom 2 ection of 2 ent solution
11X31 11X32 11X33 11Y1LP Definition of the op 11Y1MM The goal of the co 11Y1PE Implementation 11Y1PV Solution to the prot	Project 2 Project 3 Linear Programming stimization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic position with constrains. Geometrical interpretation of linear programming problems, simplex method, duality principle. Mathematical Models in Economy urse is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their program of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained opt Computer Controlled Experiments of experiment consisting of designing, measurement method selection according to required results accuracy and available measure computer-recorded parameters, data acquisition and results calculation. Evaluation of measurement method accuracy and result un Parametrical and Multicriterial Programming	Z Z Z KZ problems and traff KZ implementation. imization. KZ ment devices, sel certainty. KZ mputation of effici	regression 2 2 2 ic problems 2 The outcom 2 ection of 2 ent solution 2
11X31 11X32 11X33 11Y1LP Definition of the op 11Y1MM The goal of the co 11Y1PE Implementation 11Y1PV Solution to the prot 11Y1SI	Project 2 Project 3 Linear Programming Itimization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic position with constrains. Geometrical interpretation of linear programming problems, simplex method, duality principle. Mathematical Models in Economy In the course is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their program of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained option of experiment consisting of designing, measurement method selection according to required results accuracy and available measure computer-recorded parameters, data acquisition and results calculation. Evaluation of measurement method accuracy and result un Parametrical and Multicriterial Programming Idem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Co Transportation Software Engineering oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implement	Z Z Z KZ problems and traff KZ implementation. imization. KZ ment devices, sel certainty. KZ mputation of effici	regression 2 2 2 ic problems 2 The outcom 2 ection of 2 ent solution 2

			T -
11Y1ZF	Introduction to Solid State Physics s, crystal lattice, Bloch function, Brillouin zones. Bend theory of solids. Dynamics of 1D lattice. Phonons. Thermodynamic properties	KZ	2
Structure or solids	s, crystal lattice, bloch function, brillouin zones. Bend theory of solids. Bynamics of 15 fattice. Phonons. Thermodynamic properties Magnetism.	or solids. Serrico	muuciois.
12MDE	Transport Models and Transport Excesses	Z,ZK	3
	affic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of qu		•
transport and its as	sessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the conseques safety and fluency.	ences. Improving	of transport
12PKD	Rail Transport Designing	Z.ZK	3
	k. Vehicle and track relation. Traction. Track geometrical parameters. Clearance profile. Railway lines routing. Superstructure and su	,	_
	Switches. Railway stations. City rail transport.		
12PPOK	Designing Roads, Highways and Motorways	KZ	3
	vnership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard	•	
ange of vision for s	topping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safet intersections.	y device. Crossin	gs, juricuoris
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 devo	oted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go throug	n the complete de	sign of this
particular linear bui	Iding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The	course also inclu	des a basic
12Y1C2	explanation of the traffic building design in the real-life profession. Designing Roads in Civil 3D II	KZ	2
-	besigning Roads in Civil 3D in Sted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go throug	1	1
	Iding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The		-
	improved and developed. Students learn to design intersections.		
12Y1HD	Traffic Noise	KZ	2
	n, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulation		
rea, principles of urt	can acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area of inter and measurement of transport noise. Acoustic studies, measuring protocol.	est. Methodology	oi computin
12Y1KN	Combined Transportation	KZ	2
	rt strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas		_
12Y1PC	Pedestrian and Cycling Transport	KZ	2
•	ns. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route	-	-
for cyclists. Separat	tion of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing crossroads. Traffic signs and road marking for cyclists.	s with other trans	port modes,
12Y1PD	Assessment of Transport Structures	KZ	2
	port structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities o		
ransport structures of	on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of ass the environment.	essment of traffic	: buildings o
12Y1PU	Organization Disposition of Railway Stations	KZ	2
	Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zon		
	e stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic		
12Y1RZ	Railway Lines Reconstruction	KZ	2
•	aintainance technology. Track maintainance machinery, superstructure and substructure building machinery and special rail vehicles. D	-	-
	es and elimination principles. Track sections and station tracks exclusion planning. Reconstruction timetable design of railway super		
12Y1SU	Road Management and Maintenance h ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented develop	KZ	2
•	m strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and repair		
· ·	classroom as well as investment activity in highway engineering.		
12Y1VC	Waterways and Shipping	KZ	2
	sport. The position of water transport in the transport system of the Czech Republic and the EU. Advantages and disadvantages of vision of water transport in the Czech Republic and the EU.	•	•
f waterways in Euro	pe, a network of waterways in the Czech Republic. Construction of the waterway and its equipment. Management of waterways and in inland navigation, navigation rules of operation, navigation maps.	its operation. The	legal regim
12Y1ZU	Principles of Urbanism	KZ	2
	f city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial	1	1
	Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning	_	
12ZADI	Introduction to Transportation Engineering	Z,ZK	3
raffic survey. Terres	trial roads. Residential zone. Land - use planning. Railway transport. Public mass transport. Integrated traffic systems. Traffic progno	sis. Traffic safety.	Air transpor
405	Traffic and environment.	7 71/	
13E	Economics In the decision of economic relations. Method and subject of the economics. Economic decision making of consults are the decision making of consults are the decision making of consults.	Z,ZK	3 ers Market
morocconomic an	structures. Labour and capital, efficiency, ownership, public choice.	nors and product	wantet
	Economy, Transport, Telecommunications	KZ	2
13EDOT			
	mmunications, demand, supply, indicators, economic development, legislation, European union, regulation, liberalisation, transport		
	Project 1	Z	2
Transport, teleco			2 2
Transport, teleco	Project 1	Z	

	Public Sector Economy ic economic findings, public goods - definition, public sector domains, state budget, taxes, public goods and externalities, externalitie ds of assessment of public projects, transport projects and their funding, benefits of transport projects, the assessment of transport p	· ·	
	HDM-4, CSHS.	. 0,000.0 27 10 02.	
13Y1PD	The Participation of Transport in Tourist Trade Management	KZ	2
	port, typology, market, marketing mix, transport service providers, contract cooperation, reservation systems, transport valuables, sta carriers, IATA, ICAO, road, water, rail transport.		
13Y1PM		KZ	2
	Personal Management		
	leadership issue from the viewpoint of an employee as well as a manager. The accent at the experience of basic situations through	_	-
	sonal management, the assessment as a process, SWOT analysis, basic principles of personal management, theory and practice of mo styles.	livation, manageria	
13Y1SM	MESE Simulation	KZ	2
Management game	simulating corporate decision making. Groups of students produce the same product, give the volume of available production capaci research and development.	ty, plan budgets for	r marketing,
14ANM	Numerical Methods Application	Z,ZK	3
	s and their application, implementation of vectors and matrices in C/C++ using STL library, linear equation system solving, interpolati derivative and integration, differential equation solving, stability of methods.		, numerical
14CA	CAx Systems	KZ	3
	for development of CAx applications superstructures and user interfaces, systems openness, use of C/C++, VBA, and LISP language cooperation with spreadsheet programs, relation to database systems.		
14CAD1	CAD 1	KZ	2
_	s and techniques in non-parametric modeller (AutoCAD), Boolean operations, planar vs. volumetric objects. Illuminated scenes - light ty Creation and use of materials for 3D objects. Ways of texture mapping. Final models rendering.		
14CAD2	CAD 2	KZ	2
	rerent approaches at parametric and adaptive modelling. Sketch drawing with a help of geometric relations and parametric dimension		
	lanes, axes, and points frameworks. Parts and assemblies modelling, possibilities of adaptive modelling. Creation of presentations an		•
14DB	Database Systems	KZ	2
	atabase systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrate a systems.	l	
Daoio comocpto or a	relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the N		acc querios,
14DM		KZ	2
	Datamining Datamining Datamining Datamining Datamining Datamining	l .	_
	these and acquired knowledge, data stores and OLAP technology for knowledge acquiring from data, data preprocessing at knowledge		- 1
	characteristics mining, mining of asocial rules from data stores and databases, classification (decision-making tree, Bayes classification. Prediction. Cluster analysis. Mining in complex structured data, multimedial dbf, www.		
14ELN	Electronics	Z,ZK	3
Semiconductor d	odes and thyristor and their applications. Transistors, their basic connecting and applications. Operational amplifiers, their linear and	non-linear applica	ations and
	frequency characteristics. Passive and active frequency filters. AD and DA converters.		
14IFSD	Information Systems in Transportation	KZ	2
Transportation dem	ands, IS types for transport area, common IS structures. Continuous and discrete simulation. Visualization, coding and encryption, se	cured vs. open cor	mminication
channel. Optimizing	g by help of GA. Theory of games, Paret selections. IS's life cycle. Legal frame of IS at transportation. Governement IS. Developmen	t of secure and rele	evant ISs at
	transportation. Real time operating IS. IS certification and validation.		
14ISYS	Information Systems	KZ	2
State-of-the-art too	ols of objects control (control and planning) including problems related to these toole use, theory of information and knowledge, know	ledge and expert s	systems, IS
	planning methodologies, transaction systems, theory of computer networks, semantic webs and sensitivity analysis.		
14KSP	Constructing with Computer Aid	KZ	2
	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common wor		
	Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possib		
	profiles, drawings with raster foundaments).	,	
14OJM	Object Oriented Modelling	Z,ZK	3
	object oriented SW development, fundamentals of object oriented approach. Explanation of basic classes, polymorphism, inheriting,		-
	AL. Principles and processing use case diagrams, sequention diagrams, classes and states diagrams. Use of CASE tools for complex process modelling.		
14OS1	Operating Systems 1	KZ	2
	nd architecture, process and memory management, virtual memory, threads, interprocess communication, synchronizzation, file system and Linux, start of PC and OS, networking, safety in S, terminals in MS Win and Linux, batch files.		
14OS2	Operating Systems 2	KZ	2
	orkgroups in MS Windows, users and their rights, configuration of networks (NFS, Samba, Firewall, FTP, http, DHCP, DNS),Windows configuration files, programming - networking, threads.		
14RVD		Z,ZK	3
	Robotics in Transportation		
	le following topics: robot and industrial manupulator, classification, mobile robot. Robot kinematics, co-ordinate systems. Special robot like recognition, working head, industrial robots, control systems. Spatial orientation, Visual information processing. Mobile robots, Participation, Visual information processing. Mobile robots, Participation, Visual information processing. Mobile robots, Participation, Visual information processing.		
uanomiooluno. 1801	ile recognition, woring head. Industrial robots' control systems. Spatial orientation. Visual information processing. Mobile robots. Partic	aiai ilies oi mobile n	
4405	systems. Artificial intelligence in robotics. Reactive systems.	1/7	
14SE	High Voltage Electrical Engineering	KZ	2
•	em, single- and three-phase transformer, automatic transformer, electromagnet (solenoid), direct current generator and overview of ty	-	
	alternate current motors, rotary magnetic field of three-phase winding, synchronous and asynchronous (induction) motor, alternate c		
14SIAP	Networks and Protocols	KZ	2
	tion model, history and development of the Internet, principle of data transfer through computer networks (TCP/IP), performance of b	•	
RARP, TCP, UDP, T	elnet, FTP, DNS, DHCP POP3, IMAP), data acquirement from the Internet sources, communicating ability via the Internet and fundament	entals of own web p	presentation
	design by the means of web sites.		

•	Talanamavariantiana		
•	Telecommunications	Z,ZK	3
Telecommunications key e	nt stage and new trends in telecommunications systems. Legal conditions for telecommunications services provisioning and ap	plications are intro	oduced.
	lements applied in hierarchical architecture are introduces and relations between networks elements parameters and performance of	the whole telecom	munications
	systems are explained in context with their typical applications in the transportations systems.		
14TLSY	Telecommunication Systems	Z,ZK	4
	and fiber lines, network passive and active elements. Physical layer design tools. Terrestrial and wireless (fixed and mobile) s	•	
	ocols, their properties and mutual relations. Protocols application in e-communications systems for data and voice services an		
14TSJ	Communication Technologies	Z	2
	oment submission, transport, and delivery in physical and electronic way, virtual post operation. Technology of information trans	-	1
	ation and communication technologies in an offer of permanent, mobile, and NGN e-communication networks, solution to e-comm		- 1
application of new illionne	technological principles of end telecommunication devices.	namoution notwo	K II Itoriacco,
14UATT	Introduction to Automatization and Telecommunication Systems	KZ	2
-	al cybernetics, automatization in transportation, human as the weakest element, signalling in transpotation, modelling and proj		1
	an cybernetics, automatization in transportation, numan as the weakest element, signaling in transpotation, modelling and proj Ind infromation system in post, principle of telecommunication signal transmission, solving of telecommunication networks, model		- 1
integrated technological a	networks and services, NGN networks.	dulating methods,	mullimediai
14UPRO		KZ	2
1	Introduction to Programming		
Algoritim development,	methods of structured programming, high-level programming languages, basics of C programming languages (types, variable:	s, conditions, cycl	es, arrays,
44)/7	functions), programming techniques, complexity.	7.71/	
14VZ	3D Vizualization	Z,ZK	4
	s of 3D modelling. Basic 3D primitiva and basic modification and transformation functions. SW tools for 3D visualization. Creat		
and combination of 3D pi	rimitiva. Decsription of planes and work with them. Use of material editors and work with textures. Illumination of 3D scenes, se	etup of luminous a	ind material
	parameters. Application of cameras for scanning. Rendering and animations creation.		
14X31	Project 1	Z	2
14X32	Project 2	Z	2
14X33	Project 3	Z	2
14Y1AP	Automatization in Mail	KZ	2
	pment submission, transport, and delivery via physic and electronic way, virtual post operation. Technology of information trans		onic way,
	tion and communication technologies in an offer of permanent, mobile, and NGN e-communication networks, solutions to e-communication networks, solutions to e-communication networks.	=	- 1
	technological principles of end telecommunication devices.		
14Y1AV	Animation and Visualization	KZ	2
I I	primitives and their basic modifications and transformations. Creating 3D scenes. Transformations of 3D primitives, connection		1
=	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.		
14Y1BE	Barrierless Transport	KZ	2
	ccessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students v		
	roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems		
	Theoretical knowledge will be supplemented by practical examples.		
14Y1GD	GIS and Mans Digitalization	K7	2
14Y1GD	GIS and Maps Digitalization	KZ	2 I references
l l	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In		1
Work with map sources a	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps.	nterlinking externa	l references
Work with map sources at 14Y1HW	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps. Computer Hardware	nterlinking externa	l references
Work with map sources at 14Y1HW	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps. Computer Hardware I sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer	nterlinking externa	l references
Work with map sources at 14Y1HW Design combinational and	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps. Computer Hardware I sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB).	KZ components - cor	l references 2 atroller, ALU,
Work with map sources at 14Y1HW Design combinational and 14Y1NB	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps. Computer Hardware I sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB). Databases Design and Programming	KZ components - cor	l references
Work with map sources at 14Y1HW Design combinational and 14Y1NB Every students	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps. Computer Hardware I sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB). Databases Design and Programming lent will design his own application - that means design database, programme basic graphical interface and requested application.	KZ components - cor KZ tion behaviour.	2 ptroller, ALU,
Work with map sources at 14Y1HW Design combinational and 14Y1NB Every students	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps. Computer Hardware I sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB). Databases Design and Programming lent will design his own application - that means design database, programme basic graphical interface and requested application. Databases Design and Programming	KZ components - cor KZ tion behaviour.	2 ptroller, ALU,
Work with map sources at 14Y1HW Design combinational and 14Y1NB Every students	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps. Computer Hardware I sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB). Databases Design and Programming Itent will design his own application - that means design database, programme basic graphical interface and requested application. Databases Design and Programming Il deepen their knowledge and skills in database design and learn the procedural extension of SQL, PL/SQL, which makes it possible.	KZ components - cor KZ tion behaviour.	2 ptroller, ALU,
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Nork with map sources at 14Y1HW Design combinational and 14Y1NB Every students in this course with 14Y1NP Work in 3D non-parame 14Y1OL Distributions. GNU/Linux series and series	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps. Computer Hardware I sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB). Databases Design and Programming Ill design his own application - that means design database, programme basic graphical interface and requested applicat Databases Design and Programming Ill deepen their knowledge and skills in database design and learn the procedural extension of SQL, PL/SQL, which makes it poon the level of the database engine. Non-parametric 3D Modelling tricmodeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object of connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation. Linux Operating System system installation. X-window system. Rights - Users and Groups, ACL rights. Filesystems and file attributes. Programs and proconfiguration files. Managing SW system. Programs in graphic mode - tools for text, graphics, sound, video, communication. Ser of OS secure configuration. Remote administration. Operating Systems unction and architecture, process and memory management, virtual memory, threads, interprocess communication, synchronize in and Linux, start of PC and operating systems, networking, safety in OS, terminals in MS Win and Linux, batch files. Domains users and their rights, configuration of networks, Windows registry, remote desktop. Computer Graphics and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editial escope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphic. C Programming Language Preprocessor, basics of the C language (dat	KZ components - cor KZ tion behaviour. KZ basible to ensure of the control of t	l references 2 Introller, ALU, 2 Idata integrity 3 Idata integrity
Nork with map sources at 14Y1HW Design combinational and 14Y1NB Every students in this course wide	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps. Computer Hardware I sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB). Databases Design and Programming Intervention of Post of the theorem of the th	KZ components - cor KZ tion behaviour. KZ basible to ensure of KZ data creation, work KZ cesses. Boot of Orvices management KZ ation, file systems, and workgroups KZ ng programs (with s cards. KZ ng, files, structures prerators. KZ ines, and distribut KZ	l references 2 Introller, ALU, 2 Idata integrity 3 Idata integrity 4 Idata integrity 2 Idata integrity 2 Idata integrity 3 Idata integrity 4 Idata integrity 2 Idata integrity 3 Idata integrity 4 Idata integrity
Nork with map sources at 14Y1HW Design combinational and 14Y1NB Every students in this course wide	nd their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. In with drawings containing maps. Computer Hardware I sequential logical circuits and their implementation on FPGA, VHDL language. Computer architecture, structures of computer memories, I/O subsystem, typical interfaces and buses (PCI Express, I2C, SPI, USB). Databases Design and Programming Ill design his own application - that means design database, programme basic graphical interface and requested applicat Databases Design and Programming Ill deepen their knowledge and skills in database design and learn the procedural extension of SQL, PL/SQL, which makes it poon the level of the database engine. Non-parametric 3D Modelling tricmodeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object of connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation. Linux Operating System system installation. X-window system. Rights - Users and Groups, ACL rights. Filesystems and file attributes. Programs and proconfiguration files. Managing SW system. Programs in graphic mode - tools for text, graphics, sound, video, communication. Ser of OS secure configuration. Remote administration. Operating Systems unction and architecture, process and memory management, virtual memory, threads, interprocess communication, synchronize in and Linux, start of PC and operating systems, networking, safety in OS, terminals in MS Win and Linux, batch files. Domains users and their rights, configuration of networks, Windows registry, remote desktop. Computer Graphics and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editial escope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphic. C Programming Language Preprocessor, basics of the C language (dat	KZ components - cor KZ tion behaviour. KZ basible to ensure of KZ data creation, work KZ cesses. Boot of Orvices management KZ ation, file systems, and workgroups KZ ng programs (with s cards. KZ ng, files, structures prerators. KZ ines, and distribut KZ	l references 2 Introller, ALU, 2 Idata integrity 3 Idata integrity 4 Idata integrity 2 Idata integrity 2 Idata integrity 3 Idata integrity 4 Idata integrity 2 Idata integrity 3 Idata integrity 4 Idata integrity

14Y1VB	Visual Basic	KZ	2
Applications develop	ping for Visual Basic on MS-Windows .NET platform with use of .NET libraries or Visual Studio tools for graphic or console mode. Furl utilities for these applications. Work with VBA at superstructures creation for MS-Windows applications supporting VBA.		installation
14Y1VM	Development of Applications for Mobile Devices	KZ	2
	ogramming, Java programming language, development environment, operating system Android, development application - widgets, co		l)
14Y1ZM	Fundamentals of Parametric and Adaptive Programming	KZ	2
	ducts and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from 2D from and to another systems. Fundamentals of assemblies creation.		_
14ZAET	Fundamentals of Electrotechnics	KZ	2
I	terms, circuit quantities. Periodic courses characteristics. Electric circuits elements and basic circuit members. Assignating of bipoles		_
	rent circuits with a help of circuit analysis elementar methods: method of consecutive reduction, unloaded voltage divider, current divider. T and principle of superposition in direct current circuits.		
14ZINF	Fundamentals of Informatics	KZ	2
	Ity network, MS-Word and Open Office, use of styles and advanced features, computer functions and information transmission. Numb		
	ms and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and procedures. V graphs, calculations, functions.	-	
15JZ1A	Foreign Language - English 1	Z	3
Grammatical structur	res and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and comp stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of r		Elementa
15JZ1F	Foreign Language - French 1	Z	3
Grammar structure	e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's rceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral an	fields of study.	Focus on
	texts and their features; practice of oral and written presentation.		
15JZ1N	Foreign Language - German 1	Z	_ 3
	e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's reeptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and texts and their features; practice of oral and written presentation.	=	
15JZ1R	Foreign Language - Russian 1	Z	3
	e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty´s	_	_
	rceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral an texts and their features; practice of oral and written presentation.		
15JZ1S	Foreign Language - Spanish 1	Z	3
Grammar structure	e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's receptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral an		
	texts and their features; practice of oral and written presentation.		
	Foreign Language - English 2 res and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and comm		3 Elementar
	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of r		
	Foreign Language - French 2 e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's receptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and the state and the infection and the state and the state and the infection and the state and the st		
45 1701	texts and their features; practice of oral and written presentation.	7 71/	_
15JZ2N	Foreign Language - German 2	Z,ZK	3
	e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's receptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and the state and the sixth and the sixth and the state and the state and the sixth and the state		
45 1700	texts and their features; practice of oral and written presentation.	7 71/	_
15JZ2R	Foreign Language - Russian 2	Z,ZK	3
	e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's reeptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and texts and their features; practice of oral and written presentation.		
15JZ2S	Foreign Language - Spanish 2	Z,ZK	3
Grammar structure	e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's reeptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral an	fields of study.	Focus on
p.o.o.iiiciii pei	texts and their features; practice of oral and written presentation.	~ ····································	, common
15JZ3A	Foreign Language - English 3	Z	3
	FOI EIGH LANGUAGE - ENGISH 3 e and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty´s		_
	rceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral an texts and their features; practice of oral and written presentation.	=	
15JZ3F	Foreign Language - French 3	Z	3
Grammar and stylist	ics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of lan communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work wit		_
15 17211	features. Practice of oral and written presentation.	Z	2
-	Foreign Language - German 3 ics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of lan communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work wit	guage structure	_
	features. Practice of oral and written presentation.		
15JZ3R	Foreign Language - Russian 3	Z	3
=	ics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of lan		_
	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work wit		

15JZ3S	Foreign Language - Spanish 3	Z	3
=	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.		- 1
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work values features. Practice of oral and written presentation.	with (professional)	text and its
15JZ4A	Foreign Language - English 4	Z,ZK	3
	ا مان المنافعة المنا	•	_
	erceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral	-	
	texts and their features; practice of oral and written presentation.		
15JZ4F	Foreign Language - French 4	Z,ZK	3
	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.		knowledge
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and its
	features. Practice of oral and written presentation.		
15JZ4N	Foreign Language - German 4	Z,ZK	3
	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.		
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and its
45.1745	features. Practice of oral and written presentation.	7 714	
15JZ4R	Foreign Language - Russian 4	Z,ZK	3
=	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.		- 1
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work values features. Practice of oral and written presentation.	with (professional)	text and its
15JZ4S		Z,ZK	3
	Foreign Language - Spanish 4 stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	,	
-	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v		- 1
and perceptive and	features. Practice of oral and written presentation.	with (professional)	toxt and its
15X31	Project 1	Z	2
15X31	Project 2	Z	2
	·		
15X33	Project 3	Z	2
15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
Fundamental legis	elative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. He	ealth protection pr	ogrammes,
45)/4DII	health insurance of home and foreign business trips, statistics, working practice.	1/7	
15Y1DU	History of Art and Society	KZ	2
nistory or art - delir	itions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Station Design of transport vehicles.	s, briages, iriaustri	ai buildings.
15Y1DZ		KZ	2
	History of Railway /ays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Repi		_
	way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connections.		
	railway accidents, railway junctions. Excursions and projections.	5.10, rarayoo o	
15Y1EH	European Integration within Historical Context	KZ	2
	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 it	-	
	New quality of French-German relationship - a driving power of starting European integration.		
15Y1FD	French Area Studies and Transportation	KZ	2
France - geograp	by and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air trai	ffic, specialised te	rminology.
Frer	nch society and culture. Current political system. System of education, studying in France. Selected authors of French literature. French	ch gastronomy.	
15Y1HD	History of City Mass Transport	KZ	2
History of city mas	s transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current trends a	and developments	of tariff and
	ince systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Repub		
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
	of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these to		
Creation and prote	ction of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to po	ssibilities and skil	ls of a man.
45)/4111	Practical examples from the field of transportation; relevant legislature.	1/7	
15Y1HL	History of Air Transport	KZ	2
_	nings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of airports in the Czech Republic. World airports. Airl A airplanes. Famous aviators. Classic era of aviation. Golden era of civil aviation. Supersonic flying. Modern era of civil aviation. Flyin		nelicopters.
15Y1OP		KZ	2
	Turning Points of the Czech Nation of more than a thousand-year long history of Western Slavs in Central Europe. Emphasis on relations to bordering nations and Europ		' '
Cruciai momenta	he Czech Crown as a part of Habsburgh monarchy. 19th century political programmes. Foundation of Czechoslovakia. Disputes over		-
state. Lands of t			
state. Lands of t		110 001100 01 0200	
	Changes of power structure in Europe during 20th century and the position of the Czech nation.		2
16UDDM		ZK	2 Manipulating
16UDDM	Changes of power structure in Europe during 20th century and the position of the Czech nation. Introduction to Transportation and Manipulation Technics	ZK	
16UDDM	Changes of power structure in Europe during 20th century and the position of the Czech nation. Introduction to Transportation and Manipulation Technics ation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Wat	ZK	
16UDDM Means of transports	Changes of power structure in Europe during 20th century and the position of the Czech nation. Introduction to Transportation and Manipulation Technics ation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Wat technics. Principles of lifting machines and conveyors. Legislature. Project 1	ZK er transportation. M Z	Manipulating
16UDDM Means of transports 16X31 16X32	Changes of power structure in Europe during 20th century and the position of the Czech nation. Introduction to Transportation and Manipulation Technics ation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Wat technics. Principles of lifting machines and conveyors. Legislature. Project 1 Project 2	ZK er transportation. N Z Z	Manipulating 2 2
16UDDM Means of transports 16X31 16X32 16X33	Changes of power structure in Europe during 20th century and the position of the Czech nation. Introduction to Transportation and Manipulation Technics ation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Wat technics. Principles of lifting machines and conveyors. Legislature. Project 1 Project 2 Project 3	ZK er transportation. N Z Z Z	Manipulating 2 2 2
16UDDM Means of transports 16X31 16X32 16X33 16Y1KJ	Changes of power structure in Europe during 20th century and the position of the Czech nation. Introduction to Transportation and Manipulation Technics ation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Wat technics. Principles of lifting machines and conveyors. Legislature. Project 1 Project 2 Project 3 Railroad Vehicles	ZK er transportation. N Z Z Z Z KZ	Manipulating 2 2 2 2 2
16UDDM Means of transports 16X31 16X32 16X33 16Y1KJ 21st century mobili	Changes of power structure in Europe during 20th century and the position of the Czech nation. Introduction to Transportation and Manipulation Technics ation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Wat technics. Principles of lifting machines and conveyors. Legislature. Project 1 Project 2 Project 3 Railroad Vehicles y. Recent construction of railroad, city and intercity public vehicles, future and present situation, speed as a solution, maglev. From princi	ZK er transportation. N Z Z Z KZ ple to design and o	Anipulating 2 2 2 2 construction;
16UDDM Means of transports 16X31 16X32 16X33 16Y1KJ 21st century mobili	Changes of power structure in Europe during 20th century and the position of the Czech nation. Introduction to Transportation and Manipulation Technics ation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Wat technics. Principles of lifting machines and conveyors. Legislature. Project 1 Project 2 Project 3 Railroad Vehicles	ZK er transportation. N Z Z Z KZ ple to design and o	Anipulating 2 2 2 2 construction;
16UDDM Means of transports 16X31 16X32 16X33 16Y1KJ 21st century mobili	Changes of power structure in Europe during 20th century and the position of the Czech nation. Introduction to Transportation and Manipulation Technics ation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Wat technics. Principles of lifting machines and conveyors. Legislature. Project 1 Project 2 Project 3 Railroad Vehicles by. Recent construction of railroad, city and intercity public vehicles, future and present situation, speed as a solution, maglev. From princithe world. Division and ways of drive, efficient electronics, changers, railroad traction, energetic calculation. Railroad safety signalling	ZK er transportation. N Z Z Z KZ ple to design and o	Anipulating 2 2 2 2 construction;
16UDDM Means of transports 16X31 16X32 16X33 16Y1KJ 21st century mobilir some realization in	Changes of power structure in Europe during 20th century and the position of the Czech nation. Introduction to Transportation and Manipulation Technics ation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Wat technics. Principles of lifting machines and conveyors. Legislature. Project 1 Project 2 Project 3 Railroad Vehicles by. Recent construction of railroad, city and intercity public vehicles, future and present situation, speed as a solution, maglev. From princithe world. Division and ways of drive, efficient electronics, changers, railroad traction, energetic calculation. Railroad safety signalling infrastructure compliance (interference). Testing.	ZK er transportation. N Z Z Z KZ ple to design and c systems, railroad	danipulating 2 2 2 2 construction; vehicle and

16Y1RE Elementary concep	Control and Electronic Vehicle Systems ts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disadva	KZ ntages, function, C	2 onventional
-	ntrol. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control, safe systems.	-	
16Y1RV	Railroad Vehicles Driving	KZ	2
Electric circuits in ra	ailroad vehicles. Railroad vehicle parametres regulation. Servicing and operation of the railroad vehicles. Rail traction technology. Sol Searching and solving faults.	ution of emergency	/ situations.
16Y1TJ	Technological Quality Aspects	KZ	2
Certification and aci	reditation. Quality management. Standards of Quality Management and its application. Quality system creation. Tools and methods of querification. Environmental certification. Workplace certification. QMS integration. Classification, certification of products and products are considered to the product of th		Conformity
16Y1TR	Theory of Railroad Vehicle Driving	KZ	2
Legislation in railro	oad transportation. Technical condition of railroad vehicles and responsibility for their condition. Railroad traffic regulations. Railroad Radiocommunication system. Powering system. Power distribution.	raffic safety. Signa	l systems.
16Y1TZ	Transporting Devices	KZ	2
Flow of masses, ma	aterial transport technology, loose material transport - conveyors with tractive elements, conveyors without tractive elements, transport devices, crane mechanisms, steel constructions. Vertical transport, transport in mines, long-distance conv		
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2
	s, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour sche	J	
and 3D generation	on, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basic graphics software.	s. Introduction to 2I	D and 3D
16Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2
	otorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal c		motorbikes,
	slation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical mode		
17DAS	Transportation and Communication Law Transportation and communication law - railway, road transport, ropeway, water road, air transport, telecommunication, post, p.	Z	1
17ERP	Company Economy and Management	Z,ZK	3
	neighbourhood, structure of assets and liabilities, depreciation, costs, revenues and profit, break-even point, costing, inventory, financial		-
	appraisal, basics of management, organizational structures, human resources management, marketing, company strategy, busine		
17TDL	Transport Technology and Logistics	Z,ZK	3
	sport technology and logistics. Particular steps of transport planning. Quantification of carriage relations. Line planning. Timetabling. Pl ttion of traffic in each transport means. Technological factors from the point of view of operator and client. Organisation of public city tr		-
transport. Organisa	and their application using various transport means.	anaport. Logistic to	ciniologics
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4
	graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in o	ther scientific disci	
17X31	Project 1	Z	2
17X32	Project 2	Z	2
17X33	Project 3	Z	2
17Y1AF	Alternative Forms of Transportation Project Financing fed such forms of financing in transportation, where the public sector body perform the final debtor, i. e. debtor payments come from	KZ	2
	cipant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of securities as an alter		
	project.		
17Y1BB	Banks and Banking	KZ	2
_	system. Balance sheet, income statement, bank's capital and its functions. Banking risks. Banking products. Interest types, pay-off ar deposit products. Banking payment-clearing products. Financial intermediation, open-end and closed-end funds, collective investme	-	
products. Darking	its role. Bank regulation and supervision. International banking.	it scrienies. Centre	ai bank and
17Y1DZ	Transported Commodities Cognization	KZ	2
	uality. Testing. Standardization. Features relevant for the transport. Packing. Stress. Protection of goods and damage prevention dur		ptimization
17Y1EV	of the choice and effective transport means utility. Public Sector Economy	KZ	2
	ncial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of pub		
	R, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding from		
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 tran- air cargo. Information systems in air transport. Global distribution systems.	sport process pass	engers and
17Y1ND	Maritime Transportation	KZ	2
	ance of the maritime transportation, theoretical discipline in maritime transportation, seafaring vessels, maritime ports and their utilization.	-	
maritime ports, tran	nsport corridors and link by maritime, river and rail transport I and II, global maritime corridors, logistics of maritime transportation, mar containers, ITS in maritime transport.	itime transportatior	n and smart
18KIAD	Kinematics and Dynamics	Z,ZK	2
	, motion along a curve. Kinematics of rigid plane, kinematics of rigid body. Point mass kinematics, system of point masses. Point mass		
_	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.	-	
18MRI1	Materials 1	Z,ZK	3
	Basics of thermodynamics of metals and their alloys. Balanced binary diagrams. Alloys of iron with carbon. Deterioration of solid solo	, , , , , , , , , , , , , , , , , , ,	_
	steel and cast irons. Physical features. Mechanical features. Dephectostopic testing. Corosion.		ŭ
18MRI2	Materials 2	KZ	2
	tal concepts, notions. The main materials groups. Semiconductors. Polymers. Special types of steel. Properties and application of the		
18PZP Tension and compre	tal concepts, notions. The main materials groups. Semiconductors. Polymers. Special types of steel. Properties and application of the Elasticity and Strength ession. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bolte	Z,ZK	3

18ST			
1001	Statics	Z,ZK	3
General system	of forces. Calculation of reactions of mass objects and compound systems. Assessment of internal forces on statically determinate by	eam and simple fra	mework.
Principle of virtual w	vorks. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction	n, method of joints a	and method
	of sections. Geometry of cross sections. Plane fiber polygons and catenary cables.		
18TTED	Creation of Technical Documentation	KZ	2
	s, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, dimension		
Toommour old radii ad	arrangement of drawing sheets, types of schemes and their creation.	ona ana goomoaro	u. u.ou. u.o,,
10V21		Z	2
18X31	Project 1		2
18X32	Project 2	Z	2
18X33	Project 3	Z	2
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
	natomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation		
	of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured n		
and biomeenanies	joint prostheses. Protective means and traffic safety regulations.	nan ana mo ncam	ciit. i idiiidii
18Y1D1		KZ	2
	Dynamics of Routes and Vehicles 1		_
I neory and analys	sis of vibration of multimass systems. Dynamical model of vehicle and interaction with transport structure. Assessment of structure vil	oration and allowar	oie criteria.
	Vibroisolation and absorbers of dynamical effects. Methods of experimental dynamics. FEM in structure dynamics.		
18Y1EV	Experimental Methods and Numerical Modelling	KZ	2
Physical properties	measured in structural mechanics and dynamics. Principles of strain gauge measurement. Theory of photoelasticimetry, experimental n	nethods in structura	ıl dynamics.
Basic principles of a	numerical methods in structural mechanics and dynamics. Finite element method in statics and dynamics. Geometry development, die	scretization to elem	nents, types
	of structural elements. Boundary conditions. Material models. Solution of problems.		
18Y1MT	Engineering Materials	KZ	2
	w of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and		
·	ogical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's		ation to para
18Y1P1		KZ	2
	Design of Structures 1		
	am elements, virtual work. Strength method. Frame analysis by strength method. Deformation method. Frame analysis by deformation		1
Beam on elastic	Winkler's foundation. Calculation of beam on elastic foundation. Basics of the mathematical elasticity. Wall as a structural element. P	iate as a structurai	member.
	Statical function of shells. Examples of calculations.		
18Y1SN	Statically Nondeterminated Structures	KZ	2
Deformations of th	ne beam element, virtual work. Strength method. Frame analysis by strength method. Deformation method. Frame analysis by deforn	nation method. Sim	ple planar
grid. Beam on ela	astic Winkler's foundation. Calculation beam on elastic foundation. Basement of the mathematical elasticity. Calculation of walls. Calc	culation of plates. C	Cylindrical
	shells. Examples of calculations.		
18Y1UK	Introduction of Rail Vehicles	KZ	2
Basic characteristi	cs and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion tra	in and unit trains. F	Rolling and
	tal running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle - I		-
	and electric drive. Design concept rail vehicles and drive of wheel set.	, , ,	,
18Y1ZD	Basics of Two-Dimensional Design	KZ	2
	e teaching method includes primary creative principles and the introduction to the logic of free shapes in the plane. The "step-by-step"	114	
I THE COMPLEMENSIVE		procedure passing	2 from simple
rolotioch			from simple
	nips to more complex ones. The topics are closed by two-dimensional variations on basic conceptual elements and other tasks of the	creative character	from simple
18Y1ZT	hips to more complex ones. The topics are closed by two-dimensional variations on basic conceptual elements and other tasks of the Basics of Three-Dimensional Design	creative character.	from simple
18Y1ZT	Basics of Three-Dimensional Design bous first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional	creative character.	from simple
18Y1ZT The design tasks fo	Basics of Three-Dimensional Design but the state of the basics of Three-Dimensional Design but first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling.	KZ al elements and co	from simple 2 rrect shape
18Y1ZT The design tasks for 20BAS	Basics of Three-Dimensional Design cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling. Safety and Reliability of Systems	creative character KZ al elements and co	from simple
18Y1ZT The design tasks for 20BAS	Basics of Three-Dimensional Design but the state of the basics of Three-Dimensional Design but first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling.	creative character KZ al elements and co	from simple
18Y1ZT The design tasks for 20BAS Basic concepts of	Basics of Three-Dimensional Design cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling. Safety and Reliability of Systems	KZ KZ KZ	from simple 2 rrect shape 2 ensitivity of
18Y1ZT The design tasks for 20BAS Basic concepts of	Basics of Three-Dimensional Design cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling. Safety and Reliability of Systems safety and reliability in transport and its application. Basic scheme and the types of diagnostic systems. Acceptability and reliability or	KZ KZ KZ	from simple 2 rrect shape 2 ensitivity of
18Y1ZT The design tasks for 20BAS Basic concepts of transport and sens	Basics of Three-Dimensional Design cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling. Safety and Reliability of Systems safety and reliability in transport and its application. Basic scheme and the types of diagnostic systems. Acceptability and reliability of the situations.	creative character KZ al elements and co KZ f prediction. The sesimulator operator	2 rrect shape 2 ensitivity of and testing
18Y1ZT The design tasks for 20BAS Basic concepts of transport and sens 20SSA	Basics of Three-Dimensional Design cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling. Safety and Reliability of Systems safety and reliability in transport and its application. Basic scheme and the types of diagnostic systems. Acceptability and reliability of itreal situations. Systems Analysis	creative character KZ al elements and co KZ f prediction. The sesimulator operator	from simple 2 rrect shape 2 ensitivity of and testing 3
18Y1ZT The design tasks for 20BAS Basic concepts of transport and sens 20SSA Systems identifica	Basics of Three-Dimensional Design cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling. Safety and Reliability of Systems safety and reliability in transport and its application. Basic scheme and the types of diagnostic systems. Acceptability and reliability of itreal situations. Systems Analysis tion. Typical tasks of systems analysis: on the interface, routes in system, decomposition and integration, on systems feedback. Cap	creative character KZ al elements and co KZ f prediction. The sesimulator operator Z,ZK acity tasks, proces	from simple 2 rrect shape 2 ensitivity of and testing 3 s analysis.
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18Y1ZT The design tasks for 20BAS Basic concepts of transport and sens 20SSA Systems identifica Task about 20TRS Introduction to the	Basics of Three-Dimensional Design Decus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling. Safety and Reliability of Systems safety and reliability in transport and its application. Basic scheme and the types of diagnostic systems. Acceptability and reliability of itivity analysis. Neural networks and optimization algorithms. Human factors in transport. Human - system interaction. Testing of the sin real situations. Systems Analysis tion. Typical tasks of systems analysis: on the interface, routes in system, decomposition and integration, on systems feedback. Cap behaviour, aim behaviour, the genetic code, architecture and identity of systems. Fundamentals of technical cybernetics, stability and Control Theory leory systems, linear, non-linear and causal systems. Signal theory, regulation circuits and regulators. Stability and criteria of stability, feedback management. Adaptive and expert management.	creative character KZ al elements and co KZ f prediction. The sesimulator operator a Z,ZK acity tasks, procest d reliability of syste KZ Management, prin	from simple 2 rrect shape 2 ensitivity of and testing 3 s analysis. ms. 2 nciples of
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18Y1ZT The design tasks for 20BAS Basic concepts of transport and sens 20SSA Systems identifica Task about 20TRS Introduction to the	Basics of Three-Dimensional Design Design D	creative character KZ al elements and co KZ f prediction. The sesimulator operator of the composition of t	from simple 2 rrect shape 2 ensitivity of and testing 3 s analysis. ms. 2 nciples of 2
18Y1ZT The design tasks for 20BAS Basic concepts of transport and sens 20SSA Systems identifica Task about 20TRS Introduction to the 20TZ Legislation in the rain 20UIS	Basics of Three-Dimensional Design cous first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling. Safety and Reliability of Systems safety and reliability in transport and its application. Basic scheme and the types of diagnostic systems. Acceptability and reliability of itrivity analysis. Neural networks and optimization algorithms. Human factors in transport. Human - system interaction. Testing of the sin real situations. Systems Analysis tion. Typical tasks of systems analysis: on the interface, routes in system, decomposition and integration, on systems feedback. Cap behaviour, aim behaviour, the genetic code, architecture and identity of systems. Fundamentals of technical cybernetics, stability and Control Theory teory systems, linear, non-linear and causal systems. Signal theory, regulation circuits and regulators. Stability and criteria of stability, feedback management. Adaptive and expert management. Technology of Control of the Railway Traffic Systems ilway transport. Technological process of rail transport control. Service and technology of control. Regional Railways. Rail communication systems. Fundamentals of rail control. Application of train driving automation.	creative character KZ al elements and co KZ f prediction. The sesimulator operator active tasks, process d reliability of syste KZ Management, print ZK on equipment. Rail	from simple 2 rrect shape 2 ensitivity of and testing 3 s analysis. ms. 2 nciples of 2 information 3
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18Y1ZT The design tasks for 20BAS Basic concepts of transport and sens 20SSA Systems identifica Task about 20TRS Introduction to the 20TZ Legislation in the ra 20UIS Intelligent Transport and navigation systems	Basics of Three-Dimensional Design cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling. Safety and Reliability of Systems safety and reliability in transport and its application. Basic scheme and the types of diagnostic systems. Acceptability and reliability of itreal situations. Systems Analysis Systems Analysis iton. Typical tasks of systems analysis: on the interface, routes in system, decomposition and integration, on systems feedback. Cap behaviour, aim behaviour, the genetic code, architecture and identity of systems. Fundamentals of technical cybernetics, stability and criteria of stability feedback management. Adaptive and expert management. Technology of Control of the Railway Traffic Systems ilway transport. Technological process of rail transport control. Service and technology of control. Regional Railways. Rail communication systems. Fundamentals of train driving automation. Introduction to ITS rt Systems (ITS), their objectives and vision. ITS in the world, in Europe and in the Czech Republic. Architecture of ITS and the role of stems. ITS in road, rail and combine transport. Design of ITS, organization, preparation and implementation of the project. Current presents are supplied to the project. Current presents and implementation of the project. Current presents are supplied to the project. C	creative character. KZ al elements and co KZ f prediction. The sessimulator operator active tasks, processed reliability of syste KZ Amanagement, print ZK On equipment. Rail Z,ZK of standardization. ojects in the Czech	from simple 2 rrect shape 2 ensitivity of and testing 3 s analysis. ms. 2 nciples of 2 information 3 Information Republic.
18Y1ZT The design tasks for 20BAS Basic concepts of transport and sens 20SSA Systems identifica Task about 20TRS Introduction to the 20TZ Legislation in the rain telegrater and navigation systems and navigation systems are 20X31	Basics of Three-Dimensional Design cus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional modelling. Safety and Reliability of Systems safety and reliability in transport and its application. Basic scheme and the types of diagnostic systems. Acceptability and reliability of in real situations. Systems Analysis tion. Typical tasks of systems analysis: on the interface, routes in system, decomposition and integration, on systems feedback. Cap behaviour, aim behaviour, the genetic code, architecture and identity of systems. Fundamentals of technical cybernetics, stability and criteria of stability. Control Theory leory systems, linear, non-linear and causal systems. Signal theory, regulation circuits and regulators. Stability and criteria of stability. Technology of Control of the Railway Traffic Systems ilway transport. Technological process of rail transport control. Service and technology of control. Regional Railways. Rail communication systems. Fundamentals of rail control. Application of train driving automation. Introduction to ITS It Systems (ITS), their objectives and vision. ITS in the world, in Europe and in the Czech Republic. Architecture of ITS and the role of stems. ITS in road, rail and combine transport. Design of ITS, organization, preparation and implementation of the project. Current propert.	creative character. KZ al elements and co KZ f prediction. The sessimulator operator of the sessimulator operator ope	from simple 2 rrect shape 2 ensitivity of and testing 3 s analysis. ms. 2 information 3 Information a Republic. 2
18Y1ZT The design tasks for 20BAS Basic concepts of transport and sens 20SSA Systems identifica Task about 20TRS Introduction to the 20TZ Legislation in the ra 20UIS Intelligent Transpor and navigation systems identificated in the properties of the properties o	Basics of Three-Dimensional Design Design D	creative character. KZ al elements and co KZ f prediction. The sessimulator operator active tasks, processed reliability of system on equipment. Rail Z,ZK on equipment. Rail Z,ZK of standardization. lojects in the Czech Z Z	from simple 2 rrect shape 2 ensitivity of and testing 3 s analysis. ms. 2 nciples of 2 information n Republic. 2 2
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18Y1ZT The design tasks for 20BAS Basic concepts of transport and sens 20SSA Systems identifica Task about 20TRS Introduction to the 20TZ Legislation in the ra 20UIS Intelligent Transpor and navigation systems identificated in the properties of the properties o	Basics of Three-Dimensional Design Design D	creative character. KZ al elements and co KZ f prediction. The sessimulator operator active tasks, processed reliability of system on equipment. Rail Z,ZK on equipment. Rail Z,ZK of standardization. lojects in the Czech Z Z	from simple 2 rrect shape 2 ensitivity of and testing 3 s analysis. ms. 2 nciples of 2 information 3 Republic. 2 2
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20Y1NS	Neural Networks	KZ	2			
The basic structure	e and function of human brain and its main functional blocks and building elements - neurons. Models of neurons, modelling their netw of artificial neural networks.	orks and the basic	paradigms			
20Y1OI	Fare Collection and Information Systems	KZ	2			
· · · · · · · · · · · · · · · · · · ·	ystems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components	· ·	es, maps,			
20Y1PO	nels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance syst	KZ	2			
	Weather, Air Quality and Transportation before, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabilistic	I				
-	n pollutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp					
20Y1SC	Sensors and Actuators	KZ	2			
Principles of sensor	rs and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of		o-magnetic,			
	state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase ele					
20Y1TD	Telematics Databases Issue of telematics databases, work with OpenStreetMap layer, use of Linux OS and PostgreSQL with PostGIS extension, real tra	KZ fic data.	2			
20Y1TE	Technology of Electronic Systems	KZ	2			
	the technological process, the relation of the design, construction and technology. General scheme of technological process. Principle s. Basic technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, diagaspects of electronic systems.		I			
20ZC	Base of Digital Technique	Z,ZK	3			
=	cal systems. Design of combinational and sequential logic circuits. Computer architecture - von Neumann concept, RISC architecture. Pr					
	es, instruction set, base cycle of computer. Digital circuits, A/D and D/A converters. One-chip microcontrollers. Programmable logical circ					
20ZTH Characteristics of	Railway Interlocking Plants of components and parts of interlocking plants for control and command of railways transport. Rail transport; standards and principles	of rail security 1	3 Land III			
	components and future technologies. Components for interlocking plants. Compatibility and interoperability. Data security. Situation the world. Intelocking plants in public transport in cities.	-	I			
21X31	Project 1	Z	2			
21X32	Project 2	Z	2			
21X33	Project 3	Z	2			
21Y1L	Airports - Design and Operation	KZ	2			
Introductory conditi	ions for development of planning of runway systems and terminal facilities. Road construction, approximate analysis of RWY distance. activities. Certification of international airports - standard checking. Unexpected events and their handling.	nvestment plannin	g - operator			
21Y1LC	Human Factor	KZ	2			
Human performace	e & amp; limitations, ability & amp; competence, accident statistics, flight safety, basics of flight physiology, individuals & amp; environmen	t, breathing &	circulation,			
sensory system, h	nealth & pygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, me	mory & learni	ng, theory			
04)/41.84	& model of human error, biorhythms & sleep, stress, fatigue, working methods.	1/7				
21Y1LM Structure of atmosr	Aviation Meteorology phere. Vertical stratification. Pressures QNH, QFE, QFF, QME. Instability. Atmospherical fronts. Atmospherical precipitation, origin &am	NC categorisation	2 Turbulence			
	vind. Cyclone and anticyclone. Gradient wind. Geostrofical and geocyclostrophical wind. Visibilities in air transport. Dangerous meteorol		II.			
	maps. Climatology. Circulation.Intertropical front. Meteorological information.					
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. Wa	ave ranges			
	in aviation, radiation and reception of electromagnetic field. Antennas in aviation, receivers and transmitters.					
21Y1PU	Aircraft Maintenance Technology Basics of aircraft maintenance technology, legislation, aircraft release into operation, safety, equipment.	KZ	2			
21Y1RL	Air Traffic Control	KZ	2			
	and their distribution. Organization of air traffic, flow and capacity management. Airspace management. System support for aircraft fly					
	paration of aircraft. Reports of air traffic services, form, content. Harmonization and integration of ATC. CFMU and its subsystems. Flo RVSM, RNP. New trends in the area of ATC.					
21Y1ZT	ATM Systems	KZ	2			
The course introdu	ces classical and modern facilities, systems and technologies designed for ATS. Student obtains knowledge of technical principles ar navigation and surveillance systems used in aviation.	d solutions of com	munication,			
21ZLD	Introduction to Air Transport	KZ	2			
Air transport as a	component of complex transport system. International status of civil aviation. International organizations in Europe and worldwide. C	naracteristics of air	transport.			
001111	Commercial air transport. Technical operations of aeroplanes.	-				
22UN	Traffic Accidents Introduction	Z	2			
manic accident as	a physical process, systematic submission, vehicle x human x infrastructure interaction, accidents statistics, aircraft accidents, accidents waterways, road traffic accidents, other aspects, accidental prevention.	ans on railways, a	Coluents on			
22X31	Project 1	Z	2			
22X32	Project 2	Z	2			
22X33	Project 3	Z	2			
23SBIS	Information Systems Security Standards	KZ	2			
		Security, reliability, accessibility and servicebility of information systems. Physical versus information security, open versus closed system. Basic principles of security and threats for				
23X31						
		Z	2			
23X32	Project 1 Project 2	Z Z	2 2			

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