### Study plan

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

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Technology in Transportation and Telecommunications

Type of study: Bachelor full-time

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

Note on the plan:

Name of the block: Compulsory courses Minimal number of credits of the block: 158

The role of the block: Z

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

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

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

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

Credits in the group: 30 Note on the group.

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

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

11CAL1	Calculus 1	Z,ZK	7
Sequence of real numb	ers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n	dimensional Eukl	idean space and
Cartesian coordinate sy	rstem. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several rea	ıl variables.	

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

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

12ZYDI	Introduction to Transportation Engineering	Z,ZK	2
Role of transportation in	land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads	s, public mass tra	nsport. Negative
impacts of transportation	n to environment and safety.		
18MTY	Materials Science and Engineering	Z,ZK	3
Basic course of material	s science and engineering explains mechanical properties of structural materials based on their bonding forces and microstru	cture. However th	e main attention
is paid to metals as the	most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and o	composites. Atten	tion is also paid
to degradation processe	s in materials, to defectoscopy and to main mechanical tests.		
11GIE	Geometry	KZ	3
Differential geometry of	curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory	of the motion, th	e velocity, and
acceleration of a particle	e moving on a curved path.		
14ASD	Algorithm and Data Structures	KZ	3
Students will be familiari	zed with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will ana	ze problems, pro	pose theoretical
solutions to the set task	and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart a	and use the basic	s of Boolean
algebra with forming the	conditions for the algorithms.		
14KSP	Constructing with Computer Aid	KZ	2
"CAD systems" term det	ermination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common v	ork rules in grap	hic applications
and CA systems. Co-ord	linated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possi	bilites, AutoCAD	environment
profiles, drawings with ra	aster foundaments).		
18TED	Technical Documentation	KZ	2
Technical standards, inte	ernational standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimension	al and geometrica	al accuracy,
arrangement of drawing	sheets.		
15DPLG	Transportation Psychology	Z	2
Subject of psychology ar	nd its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle co	nstruction. Psych	ological aspects
of travel route and traffic	conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport of	peration.	
16UDOP	Introduction into Vehicles	Z	2
Vehicles and transportat	ion systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and wa	ter transport. Alte	ernative means
of transport. Lifting equip	oment and conveyors. Legislation.		
TV-1	Physical Education	Z	1
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Code of the group: 2.S.BP 20/21

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

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

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

Credits in the group: 30 Note on the group:

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

# Characteristics of the courses of this group of Study Plan: Code=2.S.BP 20/21 Name=2.sem.bak.prez. (od) 20/21 (pro B3710) 11CAL2 Calculus 2 Z,ZK

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

11STAT Statistics Z,ZK 4

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

12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Rai	allway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstru	cture. Spatial layout of r	ailway lines.
Railway control sy	ystems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport.		
18SAT	Structural Analysis	Z,ZK	4
General system of	of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically dete	erminate beams and sin	nple girders.
rinciple of virtual	I work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss cons	structions. Cross-sections	al characteristic
of planar shapes.	Fiber polygons and chains.		
20SYSA	Systems Analysis	Z,ZK	5
ntroduction to sys	stem sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interf	ace tasks, processes, s	ystem behaviou
and its analysis, s	strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, deci	ision tables, algorithms	for structural
asks. Soft and ha	ard systems, methods for soft system analysis.		
	ard systems, methods for soft system analysis.  Programming	KZ	2
14PRG			_
14PRG The Course Progr	Programming	programming language	e is expanded
14PRG The Course Progr nere so that the pa	Programming puilds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python	programming language	e is expanded
14PRG The Course Progr nere so that the pa working with date	Programming programming suilds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a	programming language	e is expanded
14PRG The Course Progr here so that the pa working with date 17TEDL	Programming programming puilds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting are and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).	programming language and searching, tuples, s	e is expanded ets, dictionaries
I 4PRG The Course Progr here so that the payorking with date I 7TEDL Basic terms in trans	Programming programming programming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting as and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).  Transport Technology and Logistics	programming language and searching, tuples, s	e is expanded ets, dictionaries  3 ation of traffic in
APRG The Course Progr here so that the payorking with date TTEDL Basic terms in transach transport mo	Programming programming programming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting as and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).  Transport Technology and Logistics ansport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and from	programming language and searching, tuples, s	e is expanded ets, dictionaries  3 ation of traffic in
14PRG The Course Progr here so that the payorking with date 17TEDL Basic terms in transach transport mo	Programming programming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a pand time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).  Transport Technology and Logistics pansport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and fro odus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplica	programming language and searching, tuples, s  KZ reight transport, organisation using various trans  KZ	e is expanded ets, dictionaries  3 ation of traffic ir sport modus.
14PRG The Course Programere so that the payorking with date 17TEDL Basic terms in transport model 21ZALD History, definitions	Programming programming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a pand time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).  Transport Technology and Logistics ansport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and fro odus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication.  Basics of Air Transport	programming language and searching, tuples, s  KZ reight transport, organisation using various trans  KZ avigation. Weight, balance	e is expanded ets, dictionaries  3 ation of traffic ir sport modus.  2 ce, performance
14PRG The Course Progrese so that the payorking with date 17TEDL Basic terms in transach transport mo 21ZALD History, definitions Flight planning, op	Programming programming programming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting a participant gains skills and can ap	programming language and searching, tuples, s  KZ reight transport, organisation using various trans  KZ avigation. Weight, balance	e is expanded ets, dictionaries  3 ation of traffic in sport modus.  2 ce, performance

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

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

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

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

Credits in the group: 30 Note on the group:

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

Characteristics of the courses of this group of Study Plan: Code=3.S.BP 20/21 Name=3.sem.bak.prez. (od) 20/21 (pro B3710)

Characteristics of	f the courses of this group of Study Plan: Code=3.S.BP 20/21 Name=3.sem.bak.prez. (od) 2	0/21 (pro B3 <i>7</i>	10)					
11FYZ	Physics	Z,ZK	5					
Kinematics, particle dy	namics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.							
12MDE	Transport Models and Transport Excesses	Z,ZK	3					
Parameters of the traff	ic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of	f queues, shock w	aves. Quality of					
transport and its asses	sment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consec	quences. Improvin	g of transport					
safety and fluency.								
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4					
Basic terms of graph t	neory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in ot	her scientific disci	plines.					
18PZP	Elasticity and Strength	Z,ZK	3					
Tension and compress	ion. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolte	ed and welded joir	nts of structures.					
Analysis of deflection	curve of beams. Torsion of circular cross sections. Combined loading. Stability.							
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7					
Terminology and legisl	ative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of in	nformation and tel	ecommunication					
systems for ITS. Princi	systems for ITS. Principles and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples of possible applications of the							
principles of ITS.								

12PPOK Designing Roads, Highways and Motorways Definition, types, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. Route in rural areas. Range of vision for stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device. Crossings, junctions,

intersections 14DATS **Database Systems** 

Basic concepts of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrity of data, database queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW.

15JZ1A Foreign Language - English 1 Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.

3

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

Name of the group: 4.sem.ITS bak.prez.(od)17/18 (pro B3710)

Requirement credits in the group: In this group you have to gain 22 credits

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

Credits in the group: 22 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11MAMY	Mathematical Methods Michal Matowicki, Jan Pikryl Jan Pikryl Jan Pikryl (Gar.)	Z,ZK	7	3P+3C	L	Z
14AM	Automation and Measurement Tomáš Brandejský, Vít Fábera Vít Fábera Tomáš Brandejský (Gar.)	Z,ZK	6	3P+3C	L	Z
16DOTE	Transport Technology Josef Mík, Michal Cenkner, P emysl Toman, Josef Svoboda Josef Mík	Z,ZK	6	3P+3C	L	Z
15JZ2A	Foreign Language - English 2  Eva Rezlerová, Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora  Horá ková, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss,	Z,ZK	3	0P+4C+10B		Z

#### Characteristics of the courses of this group of Study Plan: Code=4.S.BITS 17/18 Name=4.sem.ITS bak.prez.(od)17/18 (pro B3710)

Mathematical Methods

Mathematical modeling. The system and its mathematical description, Types of signals, Basic system responses, Convolution, State models, Principle of general / stationary / linear state description. Data measurement. Uncertainty in measured data. Data normalization. Preparation of data for further processing. Linear state model over noisy data. Kalman filter condition estimation. Statistical learning methods. Regression, classification.

**14AM** Automation and Measurement Z,ZK Introduction into terms agent, rational agent, their unification to elements of transportation systems, analogies in nature, regulation in openen loop and control in closed loop, reactive

systems, control using finite state machines. Dynamic system identification. Measurement of basic electric and other physical quantities, principles of measurement instruments, DC and AC measurement, actuators, measurement automation, measurement laboratories.

Z.ZK 16DOTE Transport Technology Types of vehicles, main features and principles. Construction and design elements, important legislation, testing. Drives and transmission, energy accumulation and changes. Road vehicle dynamics (lateral, transversal, vertical, driveability, suspension, wheel-road contact), mathematic solution of dynamic systems. Design features of passive, active and integrated

safety 15JZ2A Z.ZK Foreign Language - English 2

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

Code of the group: 4.S.BITS VYB R 17/18

Name of the group: 4.sem bak. ITS výb r p edm tu (od)17/18 (pro B3710)

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

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

Credits in the group: 4 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11EMO	Electromagnetic Field and Optics Old ich Hykš, Zuzana Malá, Tomáš Vít Zuzana Malá Zuzana Malá (Gar.)	Z,ZK	4	2P+1C	L	Z
20ZEKT	Fundamentals of Electrical Engineering  Jind ich Sadil, Daniel Berånek Jind ich Sadil (Gar.)	Z,ZK	4	2P+1C	L	Z

#### Characteristics of the courses of this group of Study Plan: Code=4.S.BITS VÝB R 17/18 Name=4.sem bak. ITS výb r p edm tu (od)17/18 (pro B3710)

11EMO	Electromagnetic Field and Optics	Z,ZK	4	
Electric field. Electric cu	rrent. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.			

20ZEKT Fundamentals of Electrical Engineering

Z,ZK

4

Maxwell equations, electrotechnical quantities (electrical current, voltage, resistance, conductivity, resistivity, conductivity, power, energy), Ohm's law, Kirchhoff laws, electrical circuits (elements, methods, DC and AC circuits, accumulators, photovoltaics), electric machines, transmission lines, reflections on transmission lines, basic electrical measurements.

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

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

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

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

Credits in the group: 21 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
14ISYD	Information Systems in Transportation Jana Kaliková, Jan Kr ál, Marek Kalika Marek Kalika Marek Kalika (Gar.)	Z,ZK	7	2P+4C	Z	Z
14TAMS	Telecommunications and Local Area Networks Zden k Lokaj, Martin Šrotý, Tomáš Zelinka Tomáš Zelinka (Gar.)	Z,ZK	7	3P+3C	Z	Z
20RIZE	Railway Traffic Management  Jind ich Sadil, Martin Leso, Dušan Kamenický, Petr Koutecký	Z,ZK	7	3P+3C	Z	Z

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

14ISYD Information Systems in Transportation Z,ZK 7
Architecture and cloud services concept, eGovernment-structure. Electronic communication and signature. IS life cycle and IT projects. Types of information systems and specific implementation in transport. Roles, processes, management, optimization in IS. Oracle data types. SQL Developer, SQL queries. Comprehensive example and web application

programming.

14TAMS Telecommunicatio

Telecommunications and Local Area Networks

Z,ZK

7

Summary of the current state and introduction of the new trends in the development of telecommunication systems. The legal environment for the provision and use of telecommunication services is explained, basic telecommunication solutions in the hierarchical architecture of telecommunication networks are presented, and the links between the parameters of the parts and the performance of telecommunication systems.

20RIZE Railway Traffic Management

Z,ZK

| 7

Historical development of security technology, external elements (switches, signals, detection means), station, track and crossing security equipment, existing train security equipment and ETCS, traffic control structure, traffic control technology, automation and traffic control optimization, power supply systems, energy calculations and train running dynamics.

Code of the group: 6.S.BITS 16/17

Name of the group: 6.sem. ITS bak.prez. (od) 16/17 (pro B3710)

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

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

Credits in the group: 21 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
16SVIR	Vehicle Systems and Interaction with Driver Petr Bouchner, Stanislav Novotný Stanislav Novotný (Gar.)	Z,ZK	7	3P+3C	L	Z
20APLT	Applied Telematics	Z,ZK	7	4P+3C	L	Z
20RISI	Road Traffic Control  Ji í R ži ka. Martin Langr. Vladimír Faltus. Tomáš Tichý Tomáš Tichý (Gar.)	Z,ZK	7	3P+3C	L	Z

Characteristics of the courses of this group of Study Plan: Code=6.S.BITS 16/17 Name=6.sem. ITS bak.prez. (od) 16/17 (pro B3710)

16SVIR	Vehicle Systems and Interaction with Driver	Z,ZK	7
20APLT	Applied Telematics	Z,ZK	7
Strategic documents in	the field of ITS and related legislative and technical documents. ITS architecture, including the proposal in LIMI. Data mode	als the location tabl	ECD and their

Strategic documents in the field of ITS and related legislative and technical documents. ITS architecture, including the proposal in UML. Data models, the location table, FCD and thei practical use in real systems. Specific telematics systems in practice and aspects of their operations. Binding ITS to other network industries and the concept of cooperative systems, smart cities and energy aspects of transport.

20RISI Road Traffic Control

Z,ZK

7

Traffic node management - basic concepts, SSZ design criteria, SSZ production project, dynamic SSZ management, public transport preferences, traffic area management, microscopic traffic models, traffic models, traffic management on motorways, tunnel systems.

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

The role of the block: ZP

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

Name of the group: Projekty bak. 4.5.6.sem. (od)13/14 - pro B3710
Requirement credits in the group: In this group you have to gain 6 credits
Requirement courses in the group: In this group you have to complete 3 courses
Credits in the group: 6

Note on the group:

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

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

11X31 Project 1 Z 2

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

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 10

The role of the block: PV

Code of the group: Y1-BITS 21/22

Project 1

Name of the group: PVP bak.prez. ITS 21/22

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

mote 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
21Y1AM	Aeronautical Information Management (AIM)	KZ	2	2P+0C	Z	PV
20Y1AF	Alternative Forms of Transportation Project Financing  Mária Jánešová	KZ	2	2P+0C	Z	PV
18Y1AM	Anatomy, Mobility and Safety of Man Jitka Jírová	KZ	2	2P+0C	Z	PV
14Y1AV	Animation and Visualization	KZ	2	2P+0C	L	PV
12Y1AE	Applied Ecology Kristýna Neubergová	KZ	2	2P+0C	Z	PV
20Y1AE	Applied Electronics	KZ	2	2P+0C	Z	PV
14Y1BE	Barrierless Transport Jan Kr ál	KZ	2	2P+0C	L	PV
21Y1BC	Aviation safety and security  Andrej Lališ, Natalia Guskova, Kate ina Grötschelová Andrej Lališ	KZ	2	2P+0C	L	PV
15Y1BO	Work Safety and Health Protection in Transportation Eva Rezlerová, Petr Musil	KZ	2	2P+0C	L	PV
11Y1BK	Error Detection Codes for Interlocking Systems Lucie Kárná	KZ	2	2P+0C	Z	PV

21Y1BS	Unmanned aircraft systems 1 Tomáš Tlu ho , Michal erný	KZ	2	2P+0C	L	PV
14Y1BM	Biometric Methods	KZ	2	2P+0C	Z	PV
15Y1DZ	History of Railway	KZ	2	2P+0C	L	PV
12Y1DS	Eva Rezlerová, Martin Jacura Project Documentation in Practice	KZ	2	2P+0C	Z	PV
17Y1EV	Public Sector Economy	KZ	2	2P+0C	Z	PV
23Y1EH	Veronika Faifrová	KZ	2	2P+0C	L	PV
20Y1EK	Electronics and hardware in security of transportation	KZ KZ	2	2P+0C	L	PV
16Y1EN	Qualification in Electrical Engineering  Energy Requirements of Vehicles	KZ	2	2P+0C	L	PV
20Y1EA	Environmental Aspects of Transport	KZ	2	2P+0C	Z	PV
15Y1EH	European Integration within Historical Context	KZ	2	2P+0C	Z	PV
18Y1EM	Experimental Methods in Mechanics  Daniel Kytý	KZ	2	2P+0C	Z	PV
15Y1FD	French Area Studies and Transportation	KZ	2	2P+0C	L	PV
14Y1HW	Computer Hardware	KZ	2	2P+0C	L	PV
15Y1HL	History of Civil Aviation	KZ	2	2P+0C	L,Z	PV
	Eva Rezlerová, Vladimír Plos History of City Mass Transport				,	51/
15Y1HD	Eva Rezlerová, Milan Dont	KZ	2	2P+0C	Z	PV
12Y1HD	Traffic Noise Dagmar Ko árková, Libor Ládyš	KZ	2	2P+0C	L	PV
15Y1HE	Work Hygiene and Ergonomics in Traffic  Eva Rezlerová, Petr Musil	KZ	2	2P+0C	Z	PV
16Y1IS	Interactive simulators and simulations	KZ	2	2P+0C	L	PV
12Y1KN	Combined Transportation Petr Nejedlý	KZ	2	2P+0C	Z	PV
12Y1KP	Communication and Promotion of Transport Projects Dagmar Ko árková, Ond ej Kubala	KZ	2	2P+0C	L	PV
20Y1KP	Communication and presentation skills  Ji ( R ži ka, Patrik Horaž ovský, Kristýna Navrátilová, Eva Haj iarová	KZ	2	2P+0C	Z	PV
23Y1KM	Crisis Management	KZ	2	2P+0C	Z	PV
23Y1KO	Quantum Physics and Optoelectronics	KZ	2	2P+0C	L	PV
23Y1KB	Cyber security in transportation	KZ	2	2P+0C	L	PV
21Y1LJ	Aeronautical Radio and Flight Instruments	KZ	2	2P+0C	L	PV
21Y1LS	Air Traffic Services  Ji í Šála	KZ	2	2P+0C	L	PV
17Y1LL	Logistics of Passenger and Freight Air Transport Petra Skolilová Petra Skolilová (Gar.)	KZ	2	2P+0C	L	PV
20Y1LN	Location and Navigation	KZ	2	2P+0C	L	PV
23Y1MK	Crisis Situation Management in Critical Infrastructure	KZ	2	2P+0C	L	PV
23Y1MU	Emergency Events Management Solution in Transport Infrastructure	KZ	2	2P+0C	Z	PV
17Y1MD	Marketing in Transportation	KZ	2	2P+0C	Z	PV
18Y1MT	Engineering Materials Jaroslav Valach	KZ	2	2P+0C	L	PV
21Y1MP	Matlab for project-oriented study Vladimir Socha	KZ	2	2P+0C	Z	PV
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2	2P+0C	Z	PV
15Y1MK	Modern History in Context: Every Day Life and Transport  Eva Rezlerová, Marie Michlová	KZ	2	2P+0C	L	PV
15Y1NE	German in the Economy and Society	KZ	2	2P+0C	Z	PV
21Y1OH	Airline Business and Operations Peter Olexa, Eva Endrizalová Peter Olexa	KZ	2	2P+0C	Z	PV
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2	2P+0C	L	PV
20Y1OI	Fare Collection and Information Systems Patrik Horaž ovský, Milan Sliacky Milan Sliacky (Gar.)	KZ	2	2P+0C	L	PV
14Y1OJ	Object - oriented programming in JAVA	KZ	2	2P+0C	L	PV
14Y1OP	Operating System	KZ	2	2P+0C	Z	PV
17Y1OF	Personal Finance	KZ	2	2P+0C	Z	PV
20Y1OK	Road Lighting František Kekula	KZ	2	2P+0C	L	PV
11Y1PV	Parametrical and Multicriterial Programming Olga Vraštilová	KZ	2	2P+0C	Z	PV

17Y1PM	Personnel Management	KZ	2	2P+0C	L	PV
12Y1PC	Pedestrian and Cycling Transport	KZ	2	2P+0C	L	PV
14Y1PG	Denis Liutov  Computer Graphics	KZ	2	2P+0C	L	PV
14Y1P2	Computer Aid of Transportation Projecting 2	KZ	2	2P+0C	Z	PV
18Y1PS	Computer Simulations in Mechanics	KZ	2	2P+0C	L	PV
14Y1PI	Petr Zlámal	KZ	2	2P+0C	Z	PV
14Y1PZ	Corporate Information System	KZ	2	2P+0C 2P+0C	Z	PV
21Y1PC	Advanced Data Processing in Spreadsheets  ATC Procedures and Activities			1		
	Terézia Pilmannová	KZ	2	2P+0C	Z	PV
12Y1PD	Assessment of Transport Structures	KZ	2	2P+0C	Z	PV
20Y1PK	Product Quality Management Processes  Martin Leso	KZ	2	2P+0C	Z	PV
14Y1PJ	C Programming Language	KZ	2	2P+0C	Z	PV
12Y1C1	Designing Roads in Civil 3D I Tomáš Honc	KZ	2	2P+0C	L	PV
12Y1C2	Designing Roads in Civil 3D II Tomáš Honc	KZ	2	2P+0C	Z	PV
14Y1PA	3D Modeling in AutoCAD	KZ	2	2P+0C	Z	PV
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2	2P+0C	L	PV
21Y1PL	Operational Aspects of Aerodromes	KZ	2	2P+0C	L	PV
21Y1PA	Air Traffic Control Operating Procedures	KZ	2	2P+0C	Z	PV
12Y1PU	Terézia Pilmannová Organization Disposition of Railway Stations	KZ	2	2P+0C	L	PV
12Y1RU	Railway Lines Reconstruction	KZ	2	2P+0C	Z	PV
16Y1RE	Control and Electronic Vehicle Systems	KZ	2	2P+0C	Z	PV
21Y1RZ	Josef Mik, P emysl Toman  Human Resources Management	KZ	2	2P+0C	L	PV
17Y1ST	Titan Simulation	KZ	2	2P+0C	L	PV
21Y1SI	ATC Simulator	KZ	2	2P+0C	L	PV
20Y1SC	Terézia Pilmannová	KZ	2	2P+0C	L	PV
17Y1SL	Sensors and Actuators	KZ	2	2P+0C	Z	PV
	Sociology of Human Resources Transportation Software Engineering			1		
11Y1SI	Martin P ni ka	KZ	2	2P+0C	Z	PV
16Y1KS	Quality and Reliability of Vehicles  Jaroslav Machan, David Lehet	KZ	2	2P+0C	Z	PV
12Y1SU	Road Management and Maintenance Dagmar Ko árková, Otakar Vacín	KZ	2	2P+0C	L	PV
16Y1SO	Strategy and innovation in mobility	KZ	2	2P+0C	Z	PV
17Y1SK	Urban and Regional Rail Transport Systems Ji í Pospíšil Ji í Pospíšil (Gar.)	KZ	2	2P+0C	L	PV
21Y1TH	Aircraft Technical Handling Peter Olexa	KZ	2	2P+0C	Z	PV
11Y1TG	Graph Theory	KZ	2	2P+0C	L	PV
23Y1TP	Lucie Kárná Lucie Kárná (Gar.)  Criminal Law in IT and Transportation	KZ	2	2P+0C	Z	PV
14Y1TI	Creating Interactive Internet Applications	KZ	2	2P+0C	L	PV
21Y1UL	Aircraft Maintenance	KZ	2	2P+0C	L	PV
14Y1UP	Editing of Theses in MS Word	KZ	2	2P+0C	L	PV
18Y1UK	Introduction of Rail Vehicles  Jitka ezní ková, Josef Kolá	KZ	2	2P+0C	L	PV
12Y1VR	Public Transport in Cities and Regions	KZ	2	2P+0C	Z	PV
23Y1VS	Vladimír Pušman  Negotiation and Cooperation	KZ	2	2P+0C	Z	PV
14Y1VM	Milena Macková  Development of Applications for Mobile Devices	KZ	2	2P+0C	Z	PV
16Y1VT	Development in Railroad Vehicles	KZ	2	2P+0C	L	PV
14Y1WG	Webdesign	KZ	2	2P+0C	Z	PV
14Y1W1	Webdesign 1	KZ	2	2P+0C	Z	PV
14Y1W2	Webdesign 2	KZ	2	2P+0C	L	PV
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2	2P+0C	L	PV
14Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2	2P+0C	L	PV

11Y1ZM	Foundation of MATLAB Programming Šárka Vorá ová <b>Šárka Vorá ová</b> Šárka Vorá ová (Gar.)	KZ	2	2P+0C	L	PV
14Y1ZJ	Fundamentals of programming in JAVA	KZ	2	2P+0C	Z	PV
12Y1ZU	Principles of Urbanism Karel Hájek	KZ	2	2P+0C	Z	PV
15Y1ZV	East-West dichotomy: Prelude to the Cold War	KZ	2	2P+0C	Z	PV
16Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2	2P+0C	Z	PV
•	Zuzana Radová, Josef Mík	51/51				
	<ul> <li>courses of this group of Study Plan: Code=Y1-BITS 21/22 Nan ronautical Information Management (AIM)</li> </ul>	ne=PVP bak.	prez. 118		ΚZ	2
	v of AIS and AIM. Transition from AIS to AIM. Regulatory base. Provision of AIS/AIM in	the Czech Rep.	AIP (Aerona			_
	em. NOTAM messages.PIB (Pre-flight Informtion Bulletin). AIC (Aeoronautical Inf. Circu	ılars). Aeronautic	al Charts. E	AD (Europer	na AIS Data	abase). QMS
	(Aeronautical Data Quality). AIXM (Aeronautical Inf. Exchnage Format).  ernative Forms of Transportation Project Financing				ΚZ	2
	s of financing in transportation and telecomunications, where the public sector body pe	erform the final de	ebtor, i. e. de			<del>-</del>
the final debtor is not a direct	participant of the transaction and it is not the counterparty of the financial institute whi	ch provides the fo	unding. Issu	e of securitie	s as an alt	ernative source
of transportation and telecon	• •					
	atomy, Mobility and Safety of Man I structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical s	tructure of muscal	no Plond sir	<b>I</b>	<b>ΚΖ</b>	2
•	i structure and growth of bones. Articular joint, Kemodelling of bone tissue. Anatomical s ar-skeletal system. Injury of human organs and musculo-skeletal system during traffic					
	neans and traffic safety regulations.		.,	, a. o aa		
14Y1AV An	imation and Visualization			I	ΚZ	2
	modeling of NURBS, Patch objects, selection of objects (according to filter and properti					
	filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and ani	mation, bone for	mation, anir			
	plied Ecology concepts and principles, ecosystem, ecological factors, energy flow through the ecosy	etem Application	of knowled	1 -	KZ   A documer	2 station Special
	- origin and historical development. Landscape definition and classification. Success.			-		
protection. Applied ecology.	3			, ,		
20Y1AE Ap	plied Electronics			I	۲Z	2
	tor components, their principles, characteristics and typical connection diagrams. Sem	-			-	•
	Functions of basic electronic circuits and methods for their designs (rectifiers, voltage	regulator with Ze	ner diode, t	ransistor as a	an amplifie	r, operational
amplifier as an inverting and 14Y1BE Ba	rrierless Transport				ΚZ	2
	ssible public transportation in terms of architectural barriers and also for transportation-	technological poi	nt of view S	1	- 1	' <del></del>
	ads, railway stations, public transport stops, terminal buildings, vehicles, public transport			-	•	•
Theoretical knowledge will b	e supplemented by practical examples.					-
	ation safety and security			ı	≺Z	2
	development in aviation. Modern tools for safety and security management. Research	and developme	nt of safe ar			
	ork Safety and Health Protection in Transportation	-41i41- f		1 -	<b>ΚΖ</b>	2
	nition of terms, risks and possible health damage, working conditions and health prote d foreign business trips, statistics, working practice.	ection with focus o	on transport	ation. Health	protection	programmes,
	or Detection Codes for Interlocking Systems				ΚZ	2
I	thods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Sc	lomon codes. Tra	nsmission (			
errors, probability of undetec	ted error. Design and assessment of detection codes; requirements of the European s	tandard EN 5015	9.			
	manned aircraft systems 1				ΚZ	2
•	ment. Aircraft design. Legislation in force in the Czech Republic. Planning and execution	on of the flight. Air	rspace divis	ion. Operation	nal risks a	nd operational
procedures. Practical flights.	vanatoria Mastha ala				/7	
The state of the s	emetric Methods ntication methods, principles and performance measurement of biometric systems, ov	erview of hiometr	ric technolo		KZ	2 s recognition
	D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recogn				-	-
in transport applications, saf	ety and risks of biometric technologies.	•				
15Y1DZ His					ΚZ	2
	story of Railway			,		ction World
•	n railways, railway network development in the 2nd half of 19th century, regional railway			st Republic",		
War II railways, railway devel	n railways, railway network development in the 2nd half of 19th century, regional railway opment in the 2nd half of 20th century, high-speed railway origins, railway lines closing, i			st Republic",		
War II railways, railway devel railway accidents, railway jur	n railways, railway network development in the 2nd half of 19th century, regional railway opment in the 2nd half of 20th century, high-speed railway origins, railway lines closing, inctions. Excursions and projections.			st Republic", connections,	railway line	es construction,
War II railways, railway devel railway accidents, railway jur 12Y1DS Pro	n railways, railway network development in the 2nd half of 19th century, regional railway opment in the 2nd half of 20th century, high-speed railway origins, railway lines closing, i	mportant long-dis	stance train	st Republic", connections,	railway line	es construction,
War II railways, railway devel railway accidents, railway jur 12Y1DS Pro	n railways, railway network development in the 2nd half of 19th century, regional railway oppment in the 2nd half of 20th century, high-speed railway origins, railway lines closing, inctions. Excursions and projections.  Dject Documentation in Practice  Ing. Project documentation types. Support materials for project documentation creating	mportant long-dis	stance train	st Republic", connections,	railway line	es construction,
War II railways, railway develorailway accidents, railway jur 12Y1DS Project documentation creat creation of some project documentation TY1EV Pu	n railways, railway network development in the 2nd half of 19th century, regional railway oppment in the 2nd half of 20th century, high-speed railway origins, railway lines closing, inctions. Excursions and projections.  Dject Documentation in Practice ing. Project documentation types. Support materials for project documentation creating umentation parts.  blic Sector Economy	mportant long-dis	obtaining p	st Republic", connections, l rocess. Budg	railway line  KZ   et and price	2 cing. Practical
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War II railways, railway develorailway accidents, railway jur  12Y1DS   Pro Project documentation creat creation of some project documentation of some project documentation creation of some project documentation of s	n railways, railway network development in the 2nd half of 19th century, regional railway opment in the 2nd half of 20th century, high-speed railway origins, railway lines closing, inctions. Excursions and projections.  Diject Documentation in Practice ing. Project documentation types. Support materials for project documentation creating umentation parts.  blic Sector Economy  ry of public sector, public choice theory, externalites, decisions about public finance alloudget, management of public projects a their economic efficiency assessment, way of e	mportant long-dis	obtaining p	st Republic", connections,  rocess. Budg  Int of public pr unding from E	railway line  KZ et and pric  KZ rojects (CB	2 ing. Practical  2 A, MCA, CEA), rogram HDM-4.
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16Y1EN	Energy Requirements of Vehicles	KZ	2
-	ng inertial of the vehicles. Types of energy - kinetic, static, heat, chemical and others. Ways of energy change into kinetic ener engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW analysis.	rgy. Combustion e	engine, electric
20Y1EA	Environmental Aspects of Transport	KZ	2
	e, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabili		
Air quality, main pollutar	nts and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp	ortation in climate	e change.
15Y1EH	European Integration within Historical Context	KZ	2
=	ation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism or's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and		
<del>-</del>	German relationship - a driving power of starting European integration.	a its consequence	s for Europe.
18Y1EM	Experimental Methods in Mechanics	KZ	2
	f experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructi	-	-
•	s and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. F	atigue and lifetim	e prediction.
15Y1FD	testing. Introduction to electron microscopy. Errors in measurement.  French Area Studies and Transportation	KZ	2
	regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tra	l	
	ure. Current political system. System of education, studying in France. Selected authors of French literature. French gastronol	•	
14Y1HW	Computer Hardware	KZ	2
	basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate	e parts designing	- controllers,
arithmetic and logical u	-	147	
15Y1HL	History of Civil Aviation	KZ	2
	velopment of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era	-	
•	civil aviation. Airline companies. Supersonic flying.	o. avianom condo	
15Y1HD	History of City Mass Transport	KZ	2
History of city mass tran	sport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current tren	ds and developm	ents of tariff and
	ory of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Republic and S		
12Y1HD	Traffic Noise	KZ	2
	asic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulat n acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area		
	ement of transport noise. Acoustic studies, measuring protocol.	or mioroot. Would	odology of
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
Basic knowledge of occ	upational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these	e factors on healtl	n of workers.
	of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to	o possibilities and	skills of a man.
Practical examples from	the field of transportation; relevant legislature.		
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16Y1IS	Interactive simulators and simulations	KZ	2 mothods
Simulation theory and a	pplication of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical m	nodels. Computing	
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23Y1MU Emergency Events Management Solution in Transport Infrastructure	KZ	2
Basic solutions of emergency events with emphasis of the transport infrastructure events and their solution management. Knowledge in the emergency	y planning and sp	ecial procedures
in liquidation work within the transport infrastructure.  17Y1MD Marketing in Transportation	KZ	2
17Y1MD   Marketing in Transportation   General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport		
the application of marketing.		9
18Y1MT Engineering Materials	KZ	2
Systematic overview of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers a	-	attention is paid
to biological materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's selection  21Y1MP  Matlab for project-oriented study	KZ	2
The subject's syllabus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises		
particular examples, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvem		
14Y1MP Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2
Assemblies programming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipe	lines, and distribu	ution lines.
Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.  15Y1MK Modern History in Context: Every Day Life and Transport	KZ	2
Historical overview of modern history of every day life, science, technology and transport in a wider context.	IXZ	_
15Y1NE German in the Economy and Society	KZ	2
Recent economic and social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic	analysis of texts.	Discussion on
selected topics.	1/7	
21Y1OH Airline Business and Operations The course provides a comprehensive view of the commercial, operational and transportation activities of air transport companies. It focuses on the organical companies.	KZ	2
various aspects of their strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of tra		
a basic view of the economic aspects of air transport.	., ,	,
23Y1OK Protection of Critical Objects and Infrastructures	KZ	2
Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, s	afety of critical ob	jects and critical
infrastructures.  20Y1OI Fare Collection and Information Systems	KZ	2
Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their component		
panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parking	-	, <sub> </sub> ,
14Y1OJ Object - oriented programming in JAVA	KZ	2
Objective thinking. Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters)	· ·	
data types. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda examples. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda examples. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda examples. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda examples. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda examples. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda examples. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda examples. Inheritance, and inheritance. Inheritance, and inheritance. Inheritance, and inheritance. Inheritance, and inheritance, and inheritance, and inheritance. Inheritance, and inheritanc	rpressions, anony	mous functions.
14Y1OP		
runlevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, graphic shell - t	· ·	
communication. Services management. Safe and secure configuration of OS. Remote administration.		
17Y10F   Personal Finance	KZ	2
Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of ho consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability a		
(retirement savings and insurance).	na aaoquaoy), oo	ourning the ruture
20Y10K Road Lighting	KZ	2
Basic lighting quantities and terms, street lighting components (luminaires, control cabinets for street lighting, street lighting cables), characteristics of luminaires, control cabinets for street lighting.	•	-
light distribution), standards, measurement of illuminance and luminance in road lighting, tunnels, conceptual approach to street lighting design, light Relux, street lighting control systems.	ing calculations i	n DIALux and
11Y1PV Parametrical and Multicriterial Programming	KZ	2
Solution to the problem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints		
17Y1PM Personnel Management	KZ	2
Human sources, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, intercul	tural communicat	
12Y1PC Pedestrian and Cycling Transport	KZ	2
Routes for pedestrians. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle ro for cyclists. Separation 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.	igs with other trai	isport modes,
14Y1PG Computer Graphics	KZ	2
Basic formats of graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with ed	iting programs (w	ithin the user
level scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.		
14Y1P2   Computer Aid of Transportation Projecting 2   Overview of CAx application for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting,	KZ	2 Advanced blocks
modification (attributes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic trans		
section). Basics of 3D modelling.		
18Y1PS Computer Simulations in Mechanics	KZ	2
Principles and overview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model develop		
from other CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions tasks of structural and modal analysis. Introduction to complex nonlinear problems.	and application o	n tile ioau. Basic
14Y1PI Corporate Information System	KZ	2
Data-information-knowledge, components of information system, syntatic and semantic sense of data, structure of corporate information system, par	rticular informatio	n system
(personalistic, production, storage, etc.), corporate information politic and information control, risks of information system operation, legal environmen	t of information s	ystem operation,
state information system, information system security, data protection, safety politics.	1/7	2
14Y1PZ	KZ ulas and function	2 s, including
addressing, error detection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formattin		- 1
data analysis. Examples and questions from various companies and training.	_	·

21Y1PC ATC Procedures and Activities	KZ	2
Air traffic control procedures, basics of communication and phraseology, aircraft identification, spacing and traffic coordination. In addition, the		iffic control at
the airports and low visibility operational procedures. Students will during the course learn basic safety management applications applied acr		
12Y1PD   Assessment of Transport Structures Assessment of transport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, pos	KZ KZ	2 and assessment
transport structures on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical exam	•	
the environment.		
20Y1PK Product Quality Management Processes	KZ	2
General principles of organization management. Management systems and international standards; quality management systems. Quality pro	oducts, processes, syster	ns. A framework
of standards for systems management, management principles. Principles of process management, monitoring and measurement systems management and measurement systems management.	agement. Uniform framew	ork of standards
for systems management. Process management principles. Metrology and testing. Product certification.		
14Y1PJ   C Programming Language	KZ	2
C programming language. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allo Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.	cation, string, files, structi	ares and unions.
12Y1C1 Designing Roads in Civil 3D I	KZ	2
The course is devoted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students g		<del>-</del>
particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calcular		-
explanation of the traffic building design in the real-life profession.		
12Y1C2 Designing Roads in Civil 3D II	KZ	2
The course is devoted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students g	• .	•
particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calcular improved and developed. Students leave to design intersections	ition. The previously acqu	ired skills are
improved and developed. Students learn to design intersections.	KZ	2
14Y1PA 3D Modeling in AutoCAD Work in 3D non-parametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation	1	<del>-</del>
connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.	in, object data creation, v	ork with data
16Y1PV Operation, Construction and Maintenance of Vehicles	KZ	2
Methods of vehicle production. Vehicle maintenance. Vehicle diagnostics. Maintenance and repair plans. Engine maintenance and emission n	1 1	<del>-</del>
General principles of engine diagnostics.		
21Y1PL Operational Aspects of Aerodromes	KZ	2
Operational aspects of aerodromes. Location of aerodrome and orientation of runways. Requirements for apron. Capacity of airports runways	and terminals. Operation	n under winter
conditions. Firefighting units. Protection against unlawful interference. Local transport connection. Environmental protection.		
21Y1PA   Air Traffic Control Operating Procedures	KZ	2
Practical exercises on the ATC simulator with the following focus - getting familiar with the simulation environment, acquiring basic habits, airc	•	-
level changes, ATC clearance, use of RNAV points. Practical exercises focused on the basis of vectoring, timely application of vertical spacing Exercises in the APPROACH airspace, arrivals, departures and conflict solutions.	y, EST and REV messag	e transmission.
12Y1PU Organization Disposition of Railway Stations	KZ	2
Connecting station. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company at	l l	
Reserve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic ra		,
12Y1RU Railway Lines Reconstruction	KZ	2
Keeping railway line operational, maintaining lines and stations, geometrical alignment of railway line, vehicles for railway superstructure and	substructure maintenand	e, scheduling
and organising possesions, preparation of railway lines reconstruction and maintenance, process of ralway line reconstruction.		
16Y1RE Control and Electronic Vehicle Systems	KZ	2
Elementary concepts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantage	_	
and hybrid drive control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic comfort systems.	control, salety, communic	ation and
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21Y1R/ Human Resources Management	K7	2
21Y1RZ   Human Resources Management The position of human resources in the organization and related disciplines file. Substance, importance and challenges of human resources in the organization and related disciplines file.	KZ management. Internal an	2 d external
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12Y1SU Road Management and Maintenance	KZ	2
Getting familiar with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented development and long-term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and re	•	
classroom as well as investment activity in highway engineering.	pair mounodo dro	aloodood iii tilo
16Y1SO Strategy and innovation in mobility	KZ	2
Introduction to innovation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful in		-
co-financing, evaluation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outloof use). Creating an innovation strategy. Customer and value map, design and testing.	ok (business plan	and possibilities
17Y1SK Urban and Regional Rail Transport Systems	KZ	2
Factors affecting transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management,		
evaluation of the timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transp	oort preferences. T	he role of
marketing.	1/7	0
21Y1TH Aircraft Technical Handling Aircraft towing and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and unlo	KZ	2 ment for
passangers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and technical progress		ment ioi
11Y1TG Graph Theory	KZ	2
Basic concepts and terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees,		-
path problem, Eulerian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existent for their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.	ce and optimizatio	n and algorithms
23Y1TP Criminal Law in IT and Transportation	KZ	2
Introduction of criminal law into legal order, conception of culpability and criminal delict, consequency of other legal standards. international treaty at	I	
crime, specific indicia of criminal court cases, practical examples.		_
14Y1TI Creating Interactive Internet Applications	KZ	2
Possibilities of scripting language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions.	Your own applicat	ion programmed
in PHP language.  21Y1UL Aircraft Maintenance	KZ	2
Aircraft operations and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and	1	
Basic documentation for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft ma	-	•
EASA for aircraft maintenance. Seminars will be focused on practical application.		
14Y1UP Editing of Theses in MS Word	KZ	2
Students will be introduced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, cre figures, tables, graphs, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamles:		
so that they are able to concentrate mainly on writing a thesis.	o culting dioscribit	ions and theses,
18Y1UK Introduction of Rail Vehicles	KZ	2
Basic characteristics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion		_
track resistance. Total running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehic and electric drive. Design concept rail vehicles and drive of wheel set.	le - hydromechani	c, hydrodynamic
12Y1VR Public Transport in Cities and Regions	KZ	2
Professional and political pillars of public transport. Accessibility of public transport. Transport demand management and directional coordination of l	1	
Basic operating parameters and transport variations. Types of lines according to their routing and basic operating parameters. Time coordination of I	ines. Operational	traffic control.
Organization of tram operation in Prague. Tram safety.	1/7	0
23Y1VS   Negotiation and Cooperation Code of conduct for negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Info	KZ	2 role in the team
Principles of negotiation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", spe		
trust.		
14Y1VM Development of Applications for Mobile Devices	KZ	2
Object oriented programming, Java programming language, development environment, operating system Android, development application - widget	s, containers, thre	ads, menu,
permissions, services, GUI.  16Y1VT Development in Railroad Vehicles	KZ	2
Railroad vehicles traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal tra	1	
assesment. New materials in design. International standardization.		
14Y1WG Webdesign	KZ	2
Students will learn the basics of HTTP communication, URL and addressing, HTML5 markup language, advanced CSS3 techniques, accessible and	d usable web rule:	s, responsive
webdesign, content management systems, web server installation + configuration directives. The subject matter will be trained on examples.  14Y1W1 Webdesign 1	KZ	2
Students will learn the basics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web accessi	1	
and selectors, the issue of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practiced		
14Y1W2 Webdesign 2	KZ	2
Students will learn advanced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web	server installation	n + configuration
directives. Topics will be practiced on practical examples.	1/7	2
16Y1ZG Introduction into Applied Computer Graphics Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour se	KZ	orinciples of 2D
Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour so and 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basis	chemes, models, p	-
Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour so and 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basing graphics software.	chemes, models, p	2D and 3D
Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour so and 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basing graphics software.  14Y1ZM Fundamentals of parametric and adaptive modeling	chemes, models, pcs. Introduction to	2D and 3D
Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour so and 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basis graphics software.  14Y1ZM Fundamentals of parametric and adaptive modeling  Basics of work at products and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from	chemes, models, pcs. Introduction to	2D and 3D
Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour stand 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basis graphics software.  14Y1ZM Fundamentals of parametric and adaptive modeling  Basics of work at products and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from and to another systems. Fundamentals of assemblies creation.	chemes, models, pcs. Introduction to	2D and 3D
Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour stand 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basis graphics software.  14Y1ZM Fundamentals of parametric and adaptive modeling  Basics of work at products and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from and to another systems. Fundamentals of assemblies creation.	KZ	2D and 3D  2 nport and export

14Y1ZJ Fundamentals of programming in JAVA
Introduction to the Java SE Platform. IDE Installation and First Project. Comments. Variables and Type System. Operators. User Input and Parsing. Chain and Chain Conversion. Text Chain and Mathematical Methods. Terms. Relational Operators and Switches. Cycles for, while, foreach. Field - declaration, initialization, methods for field work. ASCII. Functions, parameters, return value, recursion. Program creation.

12Y1ZU Principles of Urbanism KZ 2

Survey on history of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial arrangement of settlements. Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.

15Y1ZV East-West dichotomy: Prelude to the Cold War KZ 2

Historical prologue, evolution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and continuity of the international relations in the end of 19th century and the beginning of the 20th century. Revolutions, the causes and consequences. Economic and financial history. Social changes. Discussions on texts, sources.

Vehicle, bus and motorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal cars, trucks, buses, motorbikes,

K7

Name of the block: Jazyky

Minimal number of credits of the block: 6

The role of the block: J

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

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

Foreign Language - French 3

Vehicle Testing, Legislation and Construction

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

legislation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical modelling in testing.

Credits in the group: 6 Note on the group:

Note on the	<u> </u>			T	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)  Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
15JZ3F	Foreign Language - French 3 Eva Rezlerová, Irena Veselková	Z	3	0P+4C+10E	3 Z	J
15JZ3I	Foreign Language - Italian 3 Eva Rezlerová, Irena Veselková	Z	3	0P+4C+10E	B Z	J
15JZ3N	Foreign Language - German 3 Eva Rezlerová, Jana Štikarová, Martina Navrátilová	Z	3	0P+4C+10E	B Z	J
15JZ3R	Foreign Language - Russian 3 Eva Rezlerová, Marie Michlová	Z	3	0P+4C+10E	B Z	J
15JZ3S	Foreign Language - Spanish 3 Eva Rezlerová, Nina Hricsina Puškinová	Z	3	0P+4C+10E	B Z	J
15JZ4F	Foreign Language - French 4 Eva Rezlerová, Irena Veselková	Z,ZK	3	0P+4C+10E	B L	J
15JZ4I	Foreign Language - Italian 4 Eva Rezlerová	Z,ZK	3	0P+4C+10E	B L	J
15JZ4N	Foreign Language - German 4 Eva Rezlerová, Jana Štikarová, Martina Navrátilová	Z,ZK	3	0P+4C+10E	B L	J
15JZ4R	Foreign Language - Russian 4 Eva Rezlerová, Marie Michlová	Z,ZK	3	0P+4C+10E	L L	J
15JZ4S	Foreign Language - Spanish 4 Eva Rezlerová, Nina Hricsina Puškinová	Z,ZK	3	0P+4C+10E	B L	J

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

Giailillai allu stylistics.	ranimal and stylistics. Selection of conversation and professional topics based on the language level and study locus at the ractity. Improvement of language structure knowledge				
and perceptive and com	municative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	rk with (profession	nal) text and its		
features. Practice of ora	and written presentation.				
15JZ3I	Foreign Language - Italian 3	Z	3		
Grammar and stylistics.	Selection of conversation and professional topics based on the language level and study focus at the Faculty, Improvement	of language struct	ure knowledae		

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

15JZ3N Foreign Language - German 3 Z 3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge

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

15JZ3R Foreign Language - Russian 3 Z 3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its

features. Practice of oral and written presentation.

15JZ3S Foreign Language - Spanish 3 Z 3

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

15JZ4F	Foreign Language - French 4	Z,ZK	3
Grammar and st	ylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	of language structu	re knowledge
and perceptive a	and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	ork with (profession	al) text and its
features. Practic	e of oral and written presentation.		
15JZ4I	Foreign Language - Italian 4	Z,ZK	3
Grammar and st	ylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	of language structu	re knowledge
and perceptive a	and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	ork with (professiona	al) text and its
features. Practic	e of oral and written presentation.		
15JZ4N	Foreign Language - German 4	Z,ZK	3
Crammar and at			
Giailillai aliu si	ylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	or language structu	re knowleage
	ylistics. 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. We		•
and perceptive a			•
and perceptive a	and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We		•
and perceptive a features. Practice 15JZ4R	and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We e of oral and written presentation.	ork with (professional	al) text and its
and perceptive a features. Practice 15JZ4R Grammar and st	and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We e of oral and written presentation.  Foreign Language - Russian 4	Z,ZK of language structu	al) text and its  3 are knowledge
and perceptive a features. Practice 15JZ4R Grammar and st and perceptive a	and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We e of oral and written presentation.  Foreign Language - Russian 4 ylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	Z,ZK of language structu	al) text and its  3 are knowledge
and perceptive a features. Practice 15JZ4R Grammar and st and perceptive a	and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We e of oral and written presentation.  Foreign Language - Russian 4 ylistics. 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. We	Z,ZK of language structu	al) text and its  3 are knowledge
and perceptive a features. Practice 15JZ4R Grammar and st and perceptive a features. Practice 15JZ4S	and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We e of oral and written presentation.  Foreign Language - Russian 4 ylistics. 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. We e of oral and written presentation.	Z,ZK of language structu ork with (professions	3 al) text and its 3 are knowledge al) text and its
and perceptive a features. Practice 15JZ4R Grammar and st and perceptive a features. Practice 15JZ4S Grammar and st	and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We e of oral and written presentation.    Foreign Language - Russian 4	Z,ZK of language structu ork with (professional z,ZK of language structu ork with (professional z,ZK of language structu	3 al) text and its 3 are knowledge al) text and its 3 are knowledge

## List of courses of this pass:

	Name of the course	Completion	Credits
11CAL1	Calculus 1	Z,ZK	7
Sequence of real n	umbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-d	imensional Euklidea	n space and
Cartesia	an coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of s	several real variables	•
11CAL2	Calculus 2	Z,ZK	5
Indefinite integral,	Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in Rn. F	Parametric descriptio	n of regular
k-dimensional sur	rfaces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary of	differential equations	of the first
	order, linear differential equations with constant coefficients and its systems		
11EMO	Electromagnetic Field and Optics	Z,ZK	4
	Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.		
11FYZ	Physics	Z,ZK	5
	Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.		
11GIE	Geometry	KZ	3
Differential geome	try of curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory	of the motion, the v	elocity, and
	acceleration of a particle moving on a curved path.		
11LA	Linear Algebra	Z,ZK	3
Vector spaces (line	ar combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and the	neir solvability. Deteri	minants and
	their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classific	ation.	
11MAMY	Mathematical Methods	Z,ZK	7
Mathematical mod	deling. The system and its mathematical description. Types of signals. Basic system responses. Convolution. State models. Principl	e of general / station	ary / linear
atata dagariation I			
state description. I	Data measurement. Uncertainty in measured data. Data normalization. Preparation of data for further processing. Linear state mod	el over noisy data. K	alman filter
state description. I	Data measurement. Uncertainty in measured data. Data normalization. Preparation of data for further processing. Linear state mod condition estimation. Statistical learning methods. Regression, classification.	el over noisy data. K	alman filter
11STAT		el over noisy data. K	alman filter 4
11STAT	condition estimation. Statistical learning methods. Regression, classification.	Z,ZK	4
11STAT	condition estimation. Statistical learning methods. Regression, classification.  Statistics	Z,ZK	4
11STAT	condition estimation. Statistical learning methods. Regression, classification.  Statistics  lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param	Z,ZK	4
11STAT Basics of probabil	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1	Z,ZK netric tests Nonparan	4 netric tests
11STAT Basics of probabil 11X31 11X32	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2	Z,ZK netric tests Nonparan	4 netric tests  2 2
11STAT Basics of probabil 11X31 11X32 11X33	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3	Z,ZK netric tests Nonparan  Z  Z  Z	4 netric tests  2 2 2 2
11STAT Basics of probabil 11X31 11X32 11X33 11Y1BK	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems	Z,ZK netric tests Nonparan  Z Z Z KZ	4 netric tests  2 2 2 2
11STAT Basics of probabil 11X31 11X32 11X33 11Y1BK	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra	4 netric tests  2 2 2 2
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat	condition estimation. Statistical learning methods. Regression, classification.  Statistics  lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems  tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra	4 netric tests  2 2 2 2 nsmission
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN  Parametrical and Multicriterial Programming	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra	4 netric tests  2 2 2 2 2 nsmission
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat 11Y1PV Solution to the prob	condition estimation. Statistical learning methods. Regression, classification.  Statistics  lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems  tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN  Parametrical and Multicriterial Programming  lem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints.	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra N 50159.  KZ Computation of effici	4 netric tests  2 2 2 2 2nsmission 2 ent solution.
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat  11Y1PV Solution to the prob	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN  Parametrical and Multicriterial Programming olem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Transportation Software Engineering	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra N 50159.  KZ Computation of efficients	4 netric tests  2 2 2 2 2 nsmission 2 ent solution. 2
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat  11Y1PV Solution to the prob	condition estimation. Statistical learning methods. Regression, classification.  Statistics  lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems  tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN  Parametrical and Multicriterial Programming  olem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Transportation Software Engineering  oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implement	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra N 50159.  KZ Computation of efficients	4 netric tests  2 2 2 2 2 nsmission 2 ent solution. 2
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat  11Y1PV Solution to the prob 11Y1SI Basic concepts of s	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN  Parametrical and Multicriterial Programming olem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Transportation Software Engineering oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implem and practical usuage.	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra N 50159.  KZ Computation of efficient KZ nentation using forma	4 netric tests  2 2 2 2 nsmission 2 ent solution. 2 I techniques
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat  11Y1PV Solution to the prob 11Y1SI Basic concepts of s  11Y1TG	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN  Parametrical and Multicriterial Programming olem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Transportation Software Engineering oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implem and practical usuage.  Graph Theory	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra N 50159.  KZ Computation of efficient KZ nentation using forma	4 netric tests  2 2 2 2 nsmission 2 ent solution. 2 I techniques 2
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat  11Y1PV Solution to the prob 11Y1SI Basic concepts of s  11Y1TG Basic concepts and	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN  Parametrical and Multicriterial Programming olem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. In transportation Software Engineering oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implem and practical usuage.  Graph Theory d terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, respective forms and properties in the properties of the service of the properties of the	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra N 50159.  KZ Computation of efficient KZ nentation using forma  KZ ninimum spanning tra	4 netric tests  2 2 2 2 nsmission 2 ent solution. 2 I techniques 2 ee, shortest
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat  11Y1PV Solution to the prob 11Y1SI Basic concepts of s  11Y1TG Basic concepts and	condition estimation. Statistical learning methods. Regression, classification.  Statistics  lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems  tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN  Parametrical and Multicriterial Programming  olem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. In Transportation Software Engineering  oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implement and practical usuage.  Graph Theory  d terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, retian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra N 50159.  KZ Computation of efficient KZ nentation using forma  KZ ninimum spanning tra	4 netric tests  2 2 2 2 nsmission 2 ent solution. 2 I techniques 2 ee, shortest
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat  11Y1PV Solution to the prob 11Y1SI Basic concepts of s  11Y1TG Basic concepts and path problem, Euler	condition estimation. Statistical learning methods. Regression, classification.  Statistics lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN  Parametrical and Multicriterial Programming blem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. In Transportation Software Engineering software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implem and practical usuage.  Graph Theory d terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, reprince the properties of their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.	Z,ZK netric tests Nonparan  Z Z Z KZ nels, detection of tra N 50159.  KZ Computation of efficients KZ nentation using forma  KZ ninimum spanning tra neand optimization and	4 netric tests  2 2 2 2 nsmission  2 ent solution. 2 I techniques  2 ee, shortest d algorithms
11STAT Basics of probabil  11X31 11X32 11X33 11Y1BK Safe communicat  11Y1PV Solution to the prob 11Y1SI Basic concepts of s  11Y1TG Basic concepts and path problem, Euler  11Y1ZM	condition estimation. Statistical learning methods. Regression, classification.  Statistics  lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param Regression and correlation analysis  Project 1  Project 2  Project 3  Error Detection Codes for Interlocking Systems  tion and methods for its assuring. Safety codes – linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission chan errors, probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN  Parametrical and Multicriterial Programming  olem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. In Transportation Software Engineering  oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implement and practical usuage.  Graph Theory  d terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, retian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence	Z,ZK netric tests Nonparan  Z Z Z Z NSZ NSSI KZ NSSI KZ Computation of efficient KZ nentation using forma  KZ ninimum spanning trace and optimization and KZ	4 netric tests  2 2 2 2 nsmission  2 ent solution. 2 I techniques  2 ee, shortest d algorithms  2

12MDE	Transport Models and Transport Excesses	Z,ZK	3
	raffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of qu		
transport and its a	ssessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequence of the	ences. Improving of	f transport
4000016	safety and fluency.	1/7	-
12PPOK	Designing Roads, Highways and Motorways	KZ	3
	ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safet	•	
realige of vision for	intersections.	y device. Crossings	s, juriculoris,
12X31	Project 1	Z	2
12X32	Project 2	Z	2
12X33	Project 3	Z	2
12Y1AE	Applied Ecology	KZ	2
	applied Ecology ecological concepts and principles, ecosystem, ecological factors, energy flow through the ecosystem. Application of knowledge withi		
	ape ecology - origin and historical development. Landscape definition and classification. Success. Traffic constructions in the countrys		
<u>.</u>	protection. Applied ecology.	•	
12Y1C1	Designing Roads in Civil 3D I	KZ	2
The course is dev	oted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through	the complete des	ign of this
particular linear bu	uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The	course also include	es a basic
	explanation of the traffic building design in the real-life profession.		
12Y1C2	Designing Roads in Civil 3D II	KZ	2
	oted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through		
particular linear bu	uilding, 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.	previously acquired	a skills are
12Y1DS	Project Documentation in Practice	KZ	2
	ation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining process.		
r rojoot doodmonte	creation of some project documentation parts.	Daaget and prioring	j. i raolioai
12Y1HD	Traffic Noise	KZ	2
	on, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulation:		
area, principles	of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area	of interest. Method	ology of
	computing and measurement of transport noise. Acoustic studies, measuring protocol.		
12Y1KN	Combined Transportation	KZ	2
	ort strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas.	Multimodal logistic	c centres.
12Y1KP	Communication and Promotion of Transport Projects	KZ	2
	Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the	· ·	
networks and beyo	ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation f	or crisis communic	ation. The
12Y1PC	influence of political marketing and political PR on transport projects. Lobbing.	KZ	2
- 1	Pedestrian and Cycling Transport  ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route		
	ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings		
,,	crossroads. Traffic signs and road marking for cyclists.		,
12Y1PD	Assessment of Transport Structures	KZ	2
Assessment of trans	sport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of	its protection and a	assessment
transport structures	on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of ass	essment of traffic b	ouildings on
	the environment.		
12Y1PU	Organization Disposition of Railway Stations	KZ	2
	n. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zon		on yards.
	ve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic		-
12Y1RU	Railway Lines Reconstruction	KZ	2
keeping railway iir	ne operational, maintaining lines and stations, geometrical alignment of railway line, vehicles for railway superstructure and substruct and organising possesions, preparation of railway lines reconstruction and maintenance, process of ralway line reconstructio		scneduling
12Y1SU	Road Management and Maintenance	KZ	2
	ith ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented develop		
-	erm 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.		
12Y1VR	Public Transport in Cities and Regions	KZ	2
Professional and	political pillars of public transport. Accessibility of public transport. Transport demand management and directional coordination of lin	es. Principles of lin	e tracing.
Basic operating pa	arameters and transport variations. Types of lines according to their routing and basic operating parameters. Time coordination of line	s. Operational traff	ic control.
	Organization of tram operation in Prague. Tram safety.	· · · · · · ·	
12Y1ZU	Principles of Urbanism	KZ	2
Survey on history	of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial	arrangement of se	ttlements.
12ZTS	Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.	Z,ZK	4
	Railway Lines and Stations ilway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. S		
ran nansport. Na	Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail to	-	ray iii ico.
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2
	on in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, p		
	impacts of transportation to environment and safety.		Ĭ
14AM	Automation and Measurement	Z,ZK	6
	rms agent, rational agent, their unification to elements of transportation systems, analogies in nature, regulation in openen loop and o		op, reactive
systems, control us	sing finite state machines. Dynamic system identification. Measurement of basic electric and other physical quantities, principles of m	easurement instru	ments, DC
	and AC measurement, actuators, measurement automation, measurement laboratories.		

14ASD			
	Algorithm and Data Structures	KZ	3
Students will be fan	iliarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze	problems, propose	theoretical
solutions to the se	t task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart ar	nd use the basics of	f Boolean
	algebra with forming the conditions for the algorithms.		
14DATS	Database Systems	KZ	2
Basic concepts of	f database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security an	• •	database
	queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via		
14ISYD	Information Systems in Transportation	Z,ZK	7
	cloud services concept, eGovernment-structure. Electronic communication and signature. IS life cycle and IT projects. Types of inform	•	
implementation	in transport. Roles, processes, management, optimization in IS. Oracle data types. SQL Developer, SQL queries. Comprehensive ex programming.	ample and web app	plication
14KSP	Constructing with Computer Aid	KZ	2
	n 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		
and on toyotomo.	profiles, drawings with raster foundaments).	11100, 710100712 011	VIIOIIIIIOIII
14PRG	Programming	KZ	2
	amming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python progran	l I	
_	ticipant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and searc		
•	working with date and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).		·
14TAMS	Telecommunications and Local Area Networks	Z,ZK	7
Summary of the cur	rent state and introduction of the new trends in the development of telecommunication systems. The legal environment for the provision	and use of telecom	nmunication
services is explain	ed, basic telecommunication solutions in the hierarchical architecture of telecommunication networks are presented, and the links be	etween the parame	ters of the
	parts and the performance of telecommunication systems.		
14X31	Project 1	Z	2
14X32	Project 2	Z	2
14X33	Project 3	Z	2
14Y1AV	Animation and Visualization	KZ	2
Advanced modifica	ions and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Spa		tmospheric
and other effects	s, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation	າ using Inverse Kin	ematics.
14Y1BE	Barrierless Transport	KZ	2
The issue of barrier	ess accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students	will gain theoretical	knowledge
of barrierless enviro	nment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems	and transportation	technology.
	Theoretical knowledge will be supplemented by practical examples.		
14Y1BM	Biometric Methods	KZ	2
	ms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies, ha	-	- 1
retina recognition n	ethod, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavioral r	nethods, the use of	f biometrics
4.43/41.134/	in transport applications, safety and risks of biometric technologies.	1/7	
14Y1HW	Computer Hardware	KZ	2
Computer archite	cture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate parithmetic and logical units, I/O subsystem.	parts designing - co	ontrollers,
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2
	ramming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipe	l l	
7 tocombileo proj	Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.	moo, and diomban	011 111100.
14Y1OJ	Object - oriented programming in JAVA	KZ	2
	Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters). Ba		
-	• • • • • • • • • • • • • • • • • • • •	isic object methods	
	nce. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda expre	-	
14Y1OP		-	
	nce. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda expre Operating System  callation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Programs	essions, anonymou	s functions.
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14Y1ZJ   Fundamentals of programming in JAVA   KZ   2 troduction to the Java SE Platform. IDE Installation and First Project. Comments, Variables and Type Systems, Operators, User Input and Paraing, Chain and Chain Conversion. The American Comments of the Chain and Mathematical Methods. Terms, Relational Operators and Switches, Cycles for, while, fureach, Field -declaration, initialization, methods for field work. ASCII. Function and Mathematical Methods. Terms, Relational Operators and Switches, Cycles for, while, fureach, Field -declaration, initialization, methods for field work. ASCII. Function and William of the Chain of the Chai	14Y1ZJ   Fundamentals of programming in JAVA   KZ   2   2   Throther to the Java SE Platform (DE Installation and File Pilopic Comments Variables and Vipe System Operators. User Input and Pansing Chain and Chain Conversion. To Chain and Mathematical Methods. Turns. Relational Operators and Switches. Cycles for while, foreach. Falid - declaration, initialization, methods for field work. ASCII. Function parameters, turns value, recursion. Program creation.  14Y1ZM   Fundamentals of parametric and adaptive modelling   KZ   2   2   2   2   2   2   2   2   2	Students will learn			responsive
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14Y1ZM	Parameters, return value, recursion. Program creation.  14Y12M   Fundamentals of parametric and adaptive modeling   KZ   2 saics of work at products and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from 20 sketches. Import and sey from and to another systems. Fundamentals of assembles creation.  15DPLG   Transportation Psychology and its basic concepts. Information inake, decision-making and behaviour. Performance. Engineering psychology and vehicle construction. Psychological sape of tweel route and traffic conditions, societies and traffic incidents. Selection and training of the staff work and leisture. Age as a factor in transport operation.  15J21A   Transportation of the staff work and leisture. Age as a factor in transport operation.  15J22A   Treign Language - English 1   Z   3 arammatical structures and Style. Selection of conversation topics relating to transportation scenoses. Extending vocabulary, developing perceptive and communicative stills. Element stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.  15J22A   Foreign Language - English 2   Z,ZK   3 arammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Element stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.  15J23F   Foreign Language - French 3   Z   3 arammation styles to selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowled floatings and reading communicative skills, vocabulary development. Basic skyliste forms. Presentation of warm knowledge in oral and written form. Work with professional typic based on the language level and study focus at the Faculty. Improvement of lang	ntroduction to the	Java SE Platform. IDE Installation and First Project. Comments. Variables and Type System. Operators. User Input and Parsing. Chain	and Chain Conv	ersion. Te
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Institute   Inst	Transportation Psychology and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle construction. Psychological appropriate of travel route and traffic conditions, accidents and traffic incidents. Selection and training of the statt. Work and leasure. Age as a factor in transport operation.  15.JZ1A Foreign Language - English 1 Foreign Language - English 2 Foreign Language - Fine the stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of reteorior.  15.JZ2B Foreign Language - English 2 Foreign Language - Fine Stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of reteorior.  15.JZ3F Foreign Language - French 3 Foreign Language - Italian 3 Foreign Language -	ı asics of work at pr		sketches. Impor	t and expo
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	features. Practice of oral and written presentation.		_
15X31	Project 1	Z	2
15X32	Project 2	Z	2
15X33	Project 3	Z	2
15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
Fundamental legis	lative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. H	ealth protection pro	ogrammes,
	health insurance of home and foreign business trips, statistics, working practice.		
15Y1DZ	History of Railway	KZ	2
	vays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep		
War II railways, rail\ 	way development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti	ons, railway lines c	onstruction,
457/4511	railway accidents, railway junctions. Excursions and projections.	V7	2
15Y1EH	European Integration within Historical Context  formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism. Li	KZ	2
	er Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and i		•
godio. Edi opo dia	New quality of French-German relationship - a driving power of starting European integration.	to concoquences i	or Europo.
15Y1FD	French Area Studies and Transportation	KZ	2
	phy and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tra		1
	nch society and culture. Current political system. System of education, studying in France. Selected authors of French literature. Fren	=	0,
15Y1HD	History of City Mass Transport	KZ	2
	s transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current trends		l
	nce systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Repul	•	
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
Basic knowledge	of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these	factors on health o	f workers.
Creation and prote	ction of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to pro-	ossibilities and skill	ls of a man.
	Practical examples from the field of transportation; relevant legislature.		
15Y1HL	History of Civil Aviation	KZ	2
	g, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of a	-	
World airports. Fa	amous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era o	f aviation. Golden	era of civil
. =>	aviation. Modern era of civil aviation. Airline companies. Supersonic flying.		_
15Y1MK	Modern History in Context: Every Day Life and Transport	KZ	2
	Historical overview of modern history of every day life, science, technology and transport in a wider context.		
45)(4)		147	
15Y1NE	German in the Economy and Society	KZ	. 2
_	German in the Economy and Society and social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic ar		
Recent economic	German in the Economy and Society and social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic ar selected topics.	nalysis of texts. Dis	cussion on
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16Y1SO	Strategy and innovation in mobility	KZ	2
	novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful inno	l l	ls, budget;
co-financing, evalua	ation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (to	ousiness plan and	possibilities
	of use). Creating an innovation strategy. Customer and value map, design and testing.		
16Y1VT	Development in Railroad Vehicles	KZ	2
Railroad vehicles	s traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trans	sportation. Critical	situation
	assesment. New materials in design. International standardization.		
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		
and 3D generation	on, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basics	s. Introduction to 21	D and 3D
40)/471	graphics software.	147	
16Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2
	otorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal constructions and in the world tracks made a resistance, build and parameters of traction, constructional arrangement of personal constructions in the CLL and in the world tracks made a resistance, build and parameters of traction, constructional arrangement of personal constructions.		motorbikes,
	slation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical mode		
17TEDL	Transport Technology and Logistics	KZ	3
	sport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight tran odus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication usi		
17TGA		Z,ZK	
	Graph Theory and its Applications in Transport graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in c	, ,	4
17X31	Project 1	Z	2
17X32	Project 2	Z	2
17X33	Project 3	Z	2
17Y1EV	Public Sector Economy	KZ	2
	ncial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of publ		
-	R, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding fro		
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
Logistics airline pas	ssenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial trans	sport process pass	engers and
	air cargo. Information systems in air transport. Global distribution systems.		
17Y1MD	Marketing in Transportation	KZ	2
General principles	of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport a	nd the resulting dif	ferences in
	the application of marketing.		_
17Y10F	Personal Finance	KZ	2
	budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of hous		- 1
consumer loans, re	financing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and	adequacy), securin	ng the future
47\/4DM	(retirement savings and insurance).	1/7	
17Y1PM	Personnel Management	KZ	2
	ces, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, inter		
17Y1SK	Urban and Regional Rail Transport Systems	KZ	2
_	transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, line timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transport.	_	-
evaluation of the	marketing.	ort preferences. Th	ie iole oi
17Y1SL	Sociology of Human Resources	KZ	2
	and their importance, work group as a special kind of social group, communication, personal management, modern management, hum		
Tiuman resources a	of the organization.	arriesources piarii	iiig, cuiture
17Y1ST	Titan Simulation	KZ	2
	gement game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same product.	· ·	
-	ntity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequences	-	
aotorrinio aro quar	of financial corporate reports and they use this information for other business decisions.	0	2, 110 101111
18MTY	Materials Science and Engineering	Z,ZK	3
	terials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructu	<i>'</i>	
	s the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and com		
to para to motato ac	to degradation processes in materials, to defectoscopy and to main mechanical tests.	.poonoor/monuor.	io aloo pala
18PZP	Elasticity and Strength	Z,ZK	3
	ession. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted a		
	Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
18SAT	Structural Analysis	Z,ZK	4
	of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate		
	vork. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions.	· · · · · · · · · · · · · · · · · · ·	-
·	of planar shapes. Fiber polygons and chains.		
18TED	Technical Documentation	KZ	2
	rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensiona		
	arrangement of drawing sheets.		
18X31	Project 1	Z	2
18X32	Project 2	Z	2
18X33	Project 3	Z	2
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
	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	=	
	joint prostheses. Protective means and traffic safety regulations.		

18Y1EM	Experimental Methods in Mechanics	KZ	2
	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to	•	٠ ا
experimental prod	cedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.	ligue and illetime p	prediction.
18Y1MT	Engineering Materials	KZ	2
	ew 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	•	.
18Y1PS	Computer Simulations in Mechanics	KZ	2
Principles and over	view of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model development	nt and adaptation	of geometry
from other CAE sys	stems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions and	application of the	load. Basic
40)/41.11/	tasks of structural and modal analysis. Introduction to complex nonlinear problems.	1/7	
18Y1UK	Introduction of Rail Vehicles  ics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion tra	KZ	2 Polling and
	tal running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle - h		-
acir regionaliser re	and electric drive. Design concept rail vehicles and drive of wheel set.	., a. o o a o, ,	a.caya
20APLT	Applied Telematics	Z,ZK	7
Strategic document	ts in the field of ITS and related legislative and technical documents. ITS architecture, including the proposal in UML. Data models, the	e location table, FO	D and their
practical use in rea	I systems. Specific telematics systems in practice and aspects of their operations. Binding ITS to other network industries and the co	ncept of cooperati	ve systems,
	smart cities and energy aspects of transport.		
20RISI	Road Traffic Control	Z,ZK	7
Traffic node manage	ement - basic concepts, SSZ design criteria, SSZ production project, dynamic SSZ management, public transport preferences, traffic a traffic models, macroscopic traffic models, traffic management on motorways, tunnel systems.	rea management,	microscopic
20RIZE	Railway Traffic Management	Z,ZK	7
-	nent of security technology, external elements (switches, signals, detection means), station, track and crossing security equipment, ex	•	
· · · · · · · · · · · · · · · · · · ·	c control structure, traffic control technology, automation and traffic control optimization, power supply systems, energy calculations a	-	
20SYSA	Systems Analysis	Z,ZK	5
Introduction to syste	em sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks,	processes, system	n behaviour
and its analysis, s	strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tab	les, algorithms for	structural
	tasks. Soft and hard systems, methods for soft system analysis.		
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
	gislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of infori inciples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples		
systems for 110.1 in	principles of ITS.	or possible applica	
20X31	Project 1	7	2
	FIUICGLI		
	·	Z 	
20X32	Project 2	Z	2
20X32 20X33	Project 2 Project 3	Z Z	2
20X32 20X33 20Y1AE	Project 2	Z Z KZ	2 2 2
20X32 20X33 20Y1AE Basic electronic s	Project 2 Project 3 Applied Electronics	Z Z KZ sistors, thyristor, o	2 2 2 perational
20X32 20X33 20Y1AE Basic electronic s amplifiers, basic lo	Project 2 Project 3 Applied Electronics semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, tranogic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transistor amplifier as an inverting and noninverting amplifier).	Z Z KZ sistors, thyristor, o or as an amplifier, o	2 2 2 perational
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20Y1SC	Sensors and Actuators	KZ	2
	presented actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of		l l
1 Tillopies of serise	state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase ele		o magnetic,
20ZEKT	Fundamentals of Electrical Engineering	Z,ZK	4
	s, electrotechnical quantities (electrical current, voltage, resistance, conductivity, resistivity, conductivity, power, energy), Ohm's law, Ki		
I	thods, DC and AC circuits, accumulators, photovoltaics), electric machines, transmission lines, reflections on transmission lines, basic		
21X31	Project 1	Z	2
21X32	Project 2	Z	2
21X33	Project 3	Z	2
21Y1AM	Aeronautical Information Management (AIM)	KZ	2
	ic overview of AIS and AIM. Transition from AIS to AIM. Regulatory base. Provision of AIS/AIM in the Czech Rep. AIP (Aeronautical In		
	AIRAC System. NOTAM messages.PIB (Pre-flight Informtion Bulletin). AIC (Aeoronautical Inf. Circulars). Aeronautical Charts. EAD (Eu		
1110 OZOO11 110p.7	(Quality Mng. System). ADQ (Aeronautical Data Quality). AIXM (Aeronautical Inf. Exchnage Format).	ropona / no Batas	aco, amo
21Y1BC	Aviation safety and security	KZ	2
_	of safety and security development in aviation. Modern tools for safety and security management. Research and development of safe a		'
21Y1BS	Unmanned aircraft systems 1	KZ	2
_	on Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division. Ope		
Ommanica / Wate	procedures. Practical flights.	rational risks and	орстанопаг
21Y1LJ	Aeronautical Radio and Flight Instruments	KZ	2
	istory of aircraft instrumentation, aerometric instrumentation, Earth magnetism, aircraft electric equipment, gyroscopic instrumentation		
	aft equipment, engine instrumentation, warning and recording systems, instrumentation operational requirements, radiocommunication		
21Y1LS	Air Traffic Services	KZ	2
	in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, APP		
All space structure	at USA and Czechoslovakia. ATS - Model of financing. Training System of Air Traffic Controllers. Future development of ATS		story or ATO
21Y1MP	Matlab for project-oriented study	KZ	2
	abus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises		
	ples, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improveme		
21Y1OH	Airline Business and Operations	KZ	2
	es a comprehensive view of the commercial, operational and transportation activities of air transport companies. It focuses on the organiz		
	their strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of transport		
	a basic view of the economic aspects of air transport.		
21Y1PA	Air Traffic Control Operating Procedures	KZ	2
	s on the ATC simulator with the following focus - getting familiar with the simulation environment, acquiring basic habits, aircraft identif		
	C clearance, use of RNAV points. Practical exercises focused on the basis of vectoring, timely application of vertical spacing, EST and		- 1
	Exercises in the APPROACH airspace, arrivals, departures and conflict solutions.	· ·	
21Y1PC	ATC Procedures and Activities	KZ	2
Air traffic control	procedures, basics of communication and phraseology, aircraft identification, spacing and traffic coordination. In addition, the course	discusses air traffic	control at
the airpo	rts and low visibility operational procedures. Students will during the course learn basic safety management applications applied acro	ss the infrastructui	re.
21Y1PL	Operational Aspects of Aerodromes	KZ	2
Operational aspe	cts of aerodromes. Location of aerodrome and orientation of runways. Requirements for apron. Capacity of airports runways and term	inals. Operation un	nder winter
	conditions. Firefighting units. Protection against unlawful interference. Local transport connection. Environmental protection		
21Y1RZ	Human Resources Management	KZ	2
The position of	human resources in the organization and related disciplines file. Substance, importance and challenges of human resources manage	ment. Internal and	external
environment of hu	man resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and ren	nuneration of staff.	Positioning,
	dismissal and redundancies of employees. Education of employees. Planning career management.		
21Y1SI	ATC Simulator	KZ	2
Familiarization	with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearance, us	e of RNAV points.	Practical
exercises focusi	ng on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPROACH	l area, practicing a	rrival and
	departure management procedures, conflict resolution.		
21Y1TH	Aircraft Technical Handling	KZ	2
_	and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and unic		ment for
· .	assangers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and techn	ical progress.	
21Y1UL	Aircraft Maintenance	KZ	2
1	and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and qua		
Basic documenta	tion for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft maintenance.	enance. Regulation	of director
	EASA for aircraft maintenance. Seminars will be focused on practical application.		_
21ZALD	Basics of Air Transport	KZ	2
1	, terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation.	-	
Flight planning, op	timization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, grou	na nandling, secur	ity. Air crew.
00/01	Airlines and economics. Space technologies.	7	
22X31	Project 1	Z	2
22X32	Project 2	Z	2
22X33	Project 3	Z	2
23X31	Project 1	Z	2
23X32	Project 2	Z	2
23X33	Project 3	Z	2
23Y1EH			
	Electronics and nardware in Security of nansbornation	KZ I	2
Types and param	Electronics and hardware in security of transportation neters of signals. Passive circuits, properties, basic measurements. Passive filters, semiconductors. Operational amplifiers, basic circuits, properties, basic measurements.	KZ its, parameters. Ac	
1	ı · · · · · · · · · · · · · · · · · · ·	its, parameters. Ad	tive filters.

23Y1KB   Cyber security in transportation  Basic concepts of security and cyber security, legal status in the field of cyber security, virtual cyberspace and communities, taxonomy of crimes in cybers engineering, cyber attack technology, information security, cyber attacks on telematics systems, security of systems with artificial intelligence, not 23Y1KM   Crisis Management  Theory and legal frame of crisis management with direction to Rescue system (IZS). After introduction to safety domain, there are terms and knowledge on.	rms and standa	irds.
engineering, cyber attack technology, information security, cyber attacks on telematics systems, security of systems with artificial intelligence, not 23Y1KM Crisis Management	rms and standa	irds.
Theory and legal frame of crisis management with direction to Rescue system (IZS). After introduction to safety domain, there are terms and knowledge on	theory and pos	1
		sition of crisis
management and its targets; IZS-crisis management-crisis planning; and basic legislation. Practical part is concentrated to responsibility mat	rix compilation.	
23Y1KO Quantum Physics and Optoelectronics	KZ	2
Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics componer	nts.	'
23Y1MK Crisis Situation Management in Critical Infrastructure	KZ	2
Determination of critical infrastructute elements on all levels, their protection systems, responsibilities of particular agencies of the state administration an	d the self-gove	rnment, and
their responsibilities to anounce particular safety provisions. Physical and cyber protection of critical infrastructure with special attention to the	e soft targets.	
23Y1MU Emergency Events Management Solution in Transport Infrastructure	KZ	2
Basic solutions of emergency events with emphasis of the transport infrastructure events and their solution management. Knowledge in the emergency plan	ning and specia	al procedures
in liquidation work within the transport infrastructure.		
23Y10K Protection of Critical Objects and Infrastructures	KZ	2
Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, safety	of critical object	s and critical
infrastructures.		
23Y1TP Criminal Law in IT and Transportation	KZ	2
Introduction of criminal law into legal order, conception of culpability and criminal delict, consequency of other legal standards. international treaty and ci	iminal law, inve	stigation of
crime, specific indicia of criminal court cases, practical examples.		
23Y1VS Negotiation and Cooperation	KZ	2
Code of conduct for negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Informal	and formal role	in the team.
Principles of negotiation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", specification	ions and biddin	g, the role of
trust.		
TV-1 Physical Education	Z	1
TV-2 Physical Education	Z	1

For updated information see <a href="http://bilakniha.cvut.cz/en/FF.html">http://bilakniha.cvut.cz/en/FF.html</a> Generated: day 2024-05-17, time 05:40.