# Study plan

# Name of study plan: LOG bak.prez.16/17

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: 90

The role of the block: Z

Code of the group: 1.S.BP 15/16

Name of the group: 1.sem.bak.prez. od 15/16

to degradation processes in materials, to defectoscopy and to main mechanical tests.

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

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

Credits in the group: 28 Note on the group:

11010 011 1110 8	<b>4</b> • •					
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11CAL1	Calculus 1 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	s 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	B 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	Z
20SYSA	Systems Analysis Zuzana B linová, Ji í R ži ka, Petr Bureš Zuzana B linová (Gar.)	Z,ZK	5	2P+2C+14E	B L	Z
11GIE	Geometry Pavel Provinský, Old ich Hykš, Šárka Vorá ová Old ich Hykš Old ich Hykš (Gar.)	KZ	3	2P+2C+12E	B Z	Z
18TED	Technical Documentation  Jitka ezní ková, Vít Malinovský Jitka ezní ková (Gar.)	KZ	2	1P+1C+8E	B Z	Z
16UDOP	Introduction into Vehicles Zuzana Radová, Petr Bouchner	Z	2	2P+0C+8E	B Z	Z
TV-1	Physical Education	Z	1		Z	Z

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

11CAL1	Calculus 1	Z,ZK	7					
Sequence of real numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dimensional Euklidean space and								
Cartesian coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several real variables.								
11LA	Linear Algebra	Z,ZK	3					
Vector spaces (linear o	Vector spaces (linear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvability. Determinants and							
their applications. Scal	ar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.							
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2					
Role of transportation	n land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of road	s, public mass tra	insport. Negative					
impacts of transportati	on to environment and safety.							
18MTY	Materials Science and Engineering	Z,ZK	3					
Basic course of materials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructure. However the main attention								
is paid to metals as the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and composites. Attention is also paid								

20SYSA	Systems Analysis	Z,ZK	5					
Introduction to system sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks, processes, system behaviour								
and its analysis, strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tables, algorithms for structural								
tasks. Soft and hard sys	tasks. Soft and hard systems, methods for soft system analysis.							
11GIE	Geometry	KZ	3					
Differential geometry of	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, the velocity, and							
acceleration of a particle	e moving on a curved path.							
18TED	Technical Documentation	KZ	2					
Technical standards, int	ernational standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimension	nal and geometric	al accuracy,					
arrangement of drawing	sheets.							
16UDOP	Introduction into Vehicles	Z	2					
Vehicles and transportation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and water transport. Alternative means								
of transport. Lifting equi	pment and conveyors. Legislation.							
TV-1	Physical Education	Z	1					

Code of the group: 1.S.BP VÝB R 15/16

Name of the group: 1.sem.bak. prez výb r p edm tu od 15/16

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

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

Credits in the group: 2 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
14AS	Algorithm and Data Structures	KZ	2	0+2	Z	Z
14AZ	Data Analysis and Processing	KZ	2	0+2	Z	Z
14DB	Database Systems	KZ	2	0+2	Z	Z

## Characteristics of the courses of this group of Study Plan: Code=1.S.BP VÝB R 15/16 Name=1.sem.bak. prez výb r p edm tu od 15/16

14AS Algorithm and Data Structures

Students will be familiarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze problems, propose theoretical solutions to the set task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart and use the basics of Boolean algebra with forming the conditions for the algorithms.

14AZ Data Analysis and Processing KZ 2
Main aim of this course is learn students how to prepare raw data for following processing and analysis. Knowledge of algorithms for determining the parameters of different data

sources; source can be used images, text, time series, etc. The next step is the theoretical skills and knowledge to apply in solving the problem, e. g. extraction parameters from the image data or from the Internet.

14DB Database Systems KZ 2
Basic concepts of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrity of data, database

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

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

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

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

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

Credits in the group: 28

Note on the group:

Note on the grot	ıp.					
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
11FY1	Physics 1	Z,ZK	4	2P+2C	L	Z
11STAS	Statistics Ivan Nagy	Z,ZK	5	2P+2C	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
17TEDL	Transport Technology and Logistics Michal Drábek, Zden k Michl, Milan K íž, Ji í Pospíšil, Rudolf Vávra	KZ	3	2P+1C	L	Z

3 L	Z
L	Z
_	L

11CAL2	Calculus 2	Z,ZK	5
Indefinite integral, Nev	vtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in Rn.	Parametric desci	ription of regular
k-dimensional surface	s in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary d	lifferential equatio	ns of the first
order, linear differentia	l equations with constant coefficients and its systems		
11FY1	Physics 1	Z,ZK	4
Kinematics, particle dy	namics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed electric	current.	'
11STAS	Statistics	Z,ZK	5
Definition of probability	, random variable and its description, known distributions, random vector, function of random variable. Methods of point estimatic	on. Testing of statis	stical hypothesis
Regression and correl	ation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linea	ar regression, ana	lysis of variance
multiple regression, th	e use of matrices in regression.		
12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Railway	track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure.	Spatial layout of	railway lines.
Railway control syster	ns 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 fore	es in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determine	ate beams and sir	nple girders.
Principle of virtual worl	c. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructio	ons. Cross-section	al characteristic
of planar shapes. Fibe	r polygons and chains.		
17TEDL	Transport Technology and Logistics	KZ	3
Basic terms in transpo	rt technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight t	ransport, organis	ation of traffic in
each transport modus	, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication u	sing various trans	sport modus.
21ZALD	Basics of Air Transport	KZ	2
History, definitions, ter	minology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigat	ion. Weight, balan	ce, performance
Flight planning, optimi	zation of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, g	round handling, s	security. Air crev
Airlines and economic	s. Space technologies.		

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

Name of the group: 2.sem.bak. prez výb r p edm tu od 15/16

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

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

Credits in the group: 2 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
14KSP	Constructing with Computer Aid Martin Brumovský, Martin Fiala, Radek Kratochvíl, Lukáš Svoboda, Jan Vogl, Drahomír Schmidt Lukáš Svoboda Drahomír Schmidt (Gar.)	KZ	2	0P+2C+8B	Z	Z
14PRG	Programming Martin Fiala, Lukáš Svoboda, Jana Kaliková, Jan Kr ál, Alena Plašilová, Jan Procházka <b>Jan Kr ál</b> Jana Kaliková (Gar.)	KZ	2	0P+2C+8B	L	Z

# Characteristics of the courses of this group of Study Plan: Code=2.S.BP VÝB R 15/16 Name=2.sem.bak. prez výb r p edm tu od 15/16

14KSP Constructing with Computer Aid ΚZ "CAD systems" term determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common work rules in graphic applications and CA systems. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possibilites, AutoCAD environment profiles, drawings with raster foundaments). 14PRG Programming ΚZ

The Course Programming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python programming language is expanded

here so that the participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and searching, tuples, sets, dictionaries, working with date and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).

Code of the group: 3.S.BP 16/17

Name of the group: 3.sem.bak.prez.od 16/17

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:

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
11FY2	Physics 2	Z,ZK	4	2+2	Z	Z
12MDE	Transport Models and Transport Excesses Milan Dont, Josef Kocourek	Z,ZK	3	2P+1C+8E	B Z	Z
17TGA	Graph Theory and its Applications in Transport  Alena Rybi ková, Denisa Mocková, Dušan Teichmann	Z,ZK	4	2P+2C+12E	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 Satra, Josef Kocourek, Tomáš Pad lek, Petr Kumpošt	KZ	3	1P+2C+10E	Z	Z
23BDIS	Safety Technologies of Transportation and Information Systems	KZ	3	2+0	Z	Z
15JZ1A	Foreign Language - English 1 Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora Horá ková, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková,	Z	3	0P+4C+10E	3 Z	Z

Characteristics of the courses of this group of Study Plan: Code=3.S.BP 16/17 Name=3.sem.bak.prez.od 16/17

11FY2	Physics 2	Z,ZK	4
Magnetic field, ele	ctromagnetic field. Optics, quantum character of electromagnetic radiation. Introduction into quantization, hydrogen aton	n. Multi-electron atoms, the nu	ıclei. Basics c
solid body physics	6		
12MDE	Transport Models and Transport Excesses	Z,ZK	3
Parameters of the	traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems	s. Theory of queues, shock way	ves. Quality o
transport and its a	ssessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize to	the consequences. Improving	of transport
safety and fluency			
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4
Basic terms of gra	ph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of gr	raphs in other scientific discipli	ines.
18PZP	Elasticity and Strength	Z,ZK	3
Tension and comp	ression. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riv	veted, bolted and welded joints	s of structures
Analysis of deflect	ion curve of beams. Torsion of circular cross sections. Combined loading. Stability.		
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
Terminology and le	egislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundam	nentals of information and telec	communicatio
systems for ITS. P	rinciples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. R	Real examples of possible appl	lications of th
principles of ITS.			
12PPOK	Designing Roads, Highways and Motorways	KZ	3
Definition, types, o	ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity a	and standard speed. Route in	rural areas.
Range of vision fo	r stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of	of roads. Safety device. Crossi	ngs, junctions
intersections.			
23BDIS	Safety Technologies of Transportation and Information Systems	KZ	3
200010			
	tation means - principles, testing, evaluation. Safety of infrastructures, critical structures, crisis scenarios. Safety of inforr	mation systems and their robu	stness.
	tation means - principles, testing, evaluation. Safety of infrastructures, critical structures, crisis scenarios. Safety of inform  Foreign Language - English 1	mation systems and their robu	stness.
Safety of transport		Z	3

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

The role of the block: ZP

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

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

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

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

Credits in the group: 6 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11X31	Project 1	Z	2	0P+1C	L	ZP
12X31	Project 1	Z	2	0P+1C	L	ZP
14X31	Project 1	Z	2	0P+1C	L	ZP
15X31	Project 1	Z	2	0P+1C	L	ZP

16X31	Project 1	Z	2	0P+1C	L	ZP
17X31	Project 1 Michal Drábek, Zden k Michl, Milan K íž, Ji í Pospíšil, Rudolf Vávra, Alena Rybi ková, Denisa Mocková, Dušan Teichmann, Roman Št rba, Václav Baroch (Gar.)	Z	2	0P+1C	L	ZP
18X31	Project 1	Z	2	0P+1C	L	ZP
20X31	Project 1 Ji i R ži ka	Z	2	0P+1C	L	ZP
21X31	Project 1 Jakub Hospodka, Jakub Kraus, Andrej Lališ, Slobodan Stoji , Lenka Hanáková, Terézia Pilmannová, Peter Vittek, Natalia Guskova, Kate ina Grötschelová,	Z	2	0P+1C	L	ZP
22X31	Project 1	Z	2	0P+1C	L	ZP
23X31	Project 1 Milena Macková	Z	2	0P+1C	L	ZP
11X32	Project 2	Z	2	0P+2C	Z	ZP
12X32	Project 2	Z	2	0P+2C	Z	ZP
14X32	Project 2	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  Michal Drábek, Zden k Michl, Milan K íž, Ji í Pospíšil, Rudolf Vávra, Alena Rybi ková, Denisa Mocková, Dušan Teichmann, Andrea Hrní ková,	Z	2	0P+2C	Z	ZP
18X32	Project 2	Z	2	0P+2C	Z	ZP
20X32	Project 2	Z	2	0P+2C	Z	ZP
21X32	Project 2 Jakub Hospodka, Jakub Kraus, Andrej Lališ, Slobodan Stoji , Lenka Hanáková, Terézia Pilmannová, Peter Vittek, Natalia Guskova, Lukáš Popek,	Z	2	0P+2C	Z	ZP
22X32	Project 2	Z	2	0P+2C	Z	ZP
23X32	Project 2	Z	2	0P+2C	Z	ZP
11X33	Project 3	Z	2	0P+1C	L	ZP
12X33	Project 3 Dagmar Ko árková, Josef Kocourek, Tomáš Pad lek	Z	2	0P+1C	L	ZP
14X33	Project 3	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 Michal Drábek, Zden k Michl, Milan K íž, Ji í Pospíšil, 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
12X31	Project 1	Z	2
14X31	Project 1	Z	2
15X31	Project 1	Z	2
16X31	Project 1	Z	2
17X31	Project 1	Z	2
18X31	Project 1	Z	2
20X31	Project 1	Z	2
21X31	Project 1	Z	2
22X31	Project 1	Z	2
23X31	Project 1	Z	2
11X32	Project 2	Z	2
12X32	Project 2	Z	2
14X32	Project 2	Z	2
15X32	Project 2	Z	2
16X32	Project 2	Z	2
17X32	Project 2	Z	2

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

Name of the block: Compulsory courses in the program

Minimal number of credits of the block: 72

The role of the block: P

Code of the group: 4.S.BLOG 16/17

Name of the group: 4.sem.LOG bak.prez.16/17

Requirement credits in the group: In this group you have to gain 26 credits

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

Credits in the group: 26 Note on the group:

Note on the gro	•					
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11MSP	Modeling of Systems and Processes Bohumil Ková, Lucie Kárná, Jana Kuklová Jana Kuklová Bohumil Ková (Gar.)	Z,ZK	4	2P+2C+12B	L	Р
17LGT	Logistics Daniel Pilát, Tomáš Horák, Eliška Glaserová Tomáš Horák (Gar.)	Z,ZK	6	3P+2C+18B	L	Р
17SFID	Public Administration and Financing in Transport	Z,ZK	4	2P+1C+12B	L	Р
11LP	Linear Programming Šárka Vorá ová, Karel Je men, Ivan Nagy Ivan Nagy Ivan Nagy (Gar.)	KZ	3	2P+1C+12B	L	Р
16DPO	Vehicle Technology Josef Mík, Josef Svoboda, P emysl Toman Josef Mík (Gar.)	KZ	2	2P+0C+10B	L	Р
17EMY	Management Science	Z	2	2P+0C+8B	L	Р
17PAZ	Carriage and Forwarding	Z	2	2P+0C+8B	L	Р
15JZ2A	Foreign Language - English 2 Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora Horá ková, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková,	Z,ZK	3	0P+4C+10B		Р

#### Characteristics of the courses of this group of Study Plan: Code=4.S.BLOG 16/17 Name=4.sem.LOG bak.prez.16/17 11MSP Modeling of Systems and Processes Z,ZK System and subsystem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differential and differential equations. Linear and nonlinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function. Stability of LTI systems. Discretization of continuous systems. System interconnection. 17LGT Logistics Z,ZK Logistics definition, basic concepts, store, warehouse, transport and handling equipment, logistics technology, logistics centers, information and intelligent logistics systems, logistics 17SFID Z,ZK 4 Public Administration and Financing in Transport Basic issues of transport and transport policy in the social context, environmental issues in transport, economical aspects of transport, public administration and financing of transport. 11LP Linear Programming ΚZ 3 Formulation of the problem of linear programming, transcription of some practical problems to the linear programming problems. Simplex and convex polyedra. Simplex method, basic solutions, duality principle in linear programming, stability of solution of linear programming problem. Traffic problem. Vehicle Technology Vehicle. Functions, principles. Drive, vehicle construction. Road transport, safety, heavy duty vehicle desing, dynamics. Rail transport, safety, carriage design. Drive. Electric traction. Transshipment. Technological components of various modes of transport. Management and control of various means of transport. Safety. 17EMY Ζ 2 The introduction to economical-mathematical models before its application in concrete technical and economical cases. The basic mathematical methods to modelise economical situations. Several classes of problems are formulated and different methods used in qualitatively distinct real situations are introduced. The tasks of interpretation and application.

17PAZ Carriage and Forwarding Contracts of carriage and forwarding, waybills and documents; transport modes, multimodal transport, tariffs and prices in transport, rights and obligations of carriers, hauliers and forwarders, duty and tariff agreements, INCOTERMS, insurance in transport. 15JZ2A Foreign Language - English 2 Z,ZK

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: 5.S.BLOG 17/18

Name of the group: 5.sem.LOG bak.prez.17/18

Requirement credits in the group: In this group you have to gain 23 credits

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

Credits in the group: 23 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
17EDPO	<b>Economics of Transport Company</b>	Z,ZK	5	2P+2C	Z	Р
17FEU	Public Administration and Financing in Transport	Z,ZK	4	2P+1C	Z	Р
17MAS	Small and Medium Enterprise	Z,ZK	3	2P+1C	Z	Р
17TVD	Technology of Public Transport Zden k Michl, Ji í Pospíšil, David Ju ík, Vít Janoš Vít Janoš (Gar.)	Z,ZK	5	2P+2C+18B	Z	Р
14DMG	Datamining Radek Holý Radek Holý (Gar.)	KZ	2	0P+2C+10B	Z	Р
17MEKA	Methods of Economics Analysis	KZ	2	2P+0C	Z	Р
23ZAP	Basics of Law Milena Macková Milena Macková (Gar.)	Z	2	2P+0C+10B	Z	Р

Characteristics	of the courses of this group of Study Plan: Code=5.S.BLOG 17/18 Name=5.sem.LOG bak.p	rez.17/18	
17EDPO	Economics of Transport Company	Z,ZK	5
Economy, marginal	utility, marginal costs, function of supply and demand, market equilibrium, perfect competition and types of market arrangeme	nt. Transportation ma	arket, transport
company, it's enviro	nment, balance sheet, costs, revenue, profit and maximalization of profit. Financial management in transport, business plan, t	axation in transport.	
17FEU	Public Administration and Financing in Transport	Z,ZK	4
To get a basic over programmes.	riew of the EU regional policy and its practical execution on the level of the member state, specific ability to find and analyze in	formation about the	EU support
17MAS	Small and Medium Enterprise	Z,ZK	3
Small and medium	enterprise - plans, market, analysis, finance, management, decision making, survival, growth.	' '	
17TVD	Technology of Public Transport	Z,ZK	5
	s a detailed description of new knowledge and basic principles of hierarchical planning of public transport system accenting the	e general transport p	olanning and
· · · · · · · · · · · · · · · · · · ·	demand. The course would be oriented on multiple and multi-level optimisation of passenger public transport system.		
14DMG	Datamining	KZ	2
	es and knowledge, data warehouses and OLAP technology for data mining, data preprocessing in the process of knowledge a		_
-	cs of concepts (classes), mining association rules from relational db. and data warehousing, classification (decisions tree, Bay analysis. Mining in complex structured data, multimedia dbf., www.	esian cob., using ne	ural networks).
7MEKA	Methods of Economics Analysis	KZ	2
he techniques of e	conomical analysis in the domain of analysis of dependencies, analysis and construction of time series and comparsion of sta	tistical values using	differencies an
ndices.			
23ZAP	Basics of Law	Z	2
Basic orientation in	the Czech legal system. The course is primarily intended to provide students with orientation in fundamentals of the Czech Re	epublic, legal system	and in various
orms of law, includi	ng adoption of the basic principles of European Community law. The course consists of selected chapters from the public and p	rivate law and Europ	ean Communi
aw.			

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

Name of the group: 6.sem.LOG bak.prez.17/18

Requirement credits in the group: In this group you have to gain 23 credits

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

Credits in the group: 23 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
17IVD	Integration of Public Transport	ZK	4	3P+0C+12B	L	Р
17RAC	Rationalization and Quality of Transport	Z,ZK	7	4P+2C+22B	L	Р

17RPT	Project Management	Z,ZK	5	2P+2C+14B	L	Р
14MPG	Modern Programming Approaches Vít Fábera, Michal Je ábek Vít Fábera (Gar.)	KZ	2	0P+2C+8B	L	Р
17GEDS	Geography of Transport Systems Miroslav Marada Miroslav Marada (Gar.)	KZ	2	2P+0C+8B	L	Р
17MRZ	Managerial Decision Making	Z	2	2P+0C+8B	L	Р
23DPSP	Traffic Law and Related Regulations	Z	1	2P+0C+8B	L	Р

17IVD	Integration of Public Transport	ZK	4
Transport policy, p	planning, contracts, funding, clearing of traffic receipts, tariff systems, traffic and carriage controls, legal conditions within public	c transport.	
17RAC	Rationalization and Quality of Transport	Z,ZK	7
Transport system,	transportation funding, cost calculation, efficiency, transport rationalization, quality management, standards and quality standards	dization, quality manag	gement systems
quality manageme	ent in transport and logistics, marketing and transport quality, quality costs, quality measurement and monitoring, statistics in q	iuality management, ir	mproving, focus
on the customer.			
17RPT	Project Management	Z,ZK	5
Basic terms of the	project management, project management standards, organizational structures in the project management, projects in transp	ort and transport infra	astructure and
their specifics, fea	sibility study and CBA, project evaluation, PPP projects.		
14MPG	Modern Programming Approaches	KZ	2
Principles of object	ct oriented programming, polymorphism, references, memory allocation, inheritage, generic programming, operator overloadin	g, STL library, object	implementation
of abstract data ty	pes, graph and graph algorithm implementation focused on logistic problems.		
17GEDS	Geography of Transport Systems	KZ	2
Regional differenti	iation of the transport system. Sociogeographic regionalization and its relation to transport. Transport and local and regional de	evelopment. Spatial in	teraction -
theoretical and me	ethodological framework. Mobility research - travel behavior, mode choice and the influence onto "modal-split." Modal competition.	Practical use of transp	ort-geographica
analysis in transpo	ortation planning.		
17MRZ	Managerial Decision Making	Z	2
The course is divid	ded into two main sections. The first section deals with individual-level processes that influence managers' decisions. The secc	and section considers	collective (that
is, group or organi	izational) forces that affect managers' decisions.		
	Tattical and Deleted Dendetions	7	1
23DPSP	Traffic Law and Related Regulations		!

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 6

The role of the block: PV

Code of the group: Y1-BLOG 16/17

Name of the group: PVP bak.prez.LOG 16/17

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

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

Credits in the group: 6 Note on the group:

Note on the	<u> </u>					
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members)  Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
17Y1AF	Alternative Forms of Transportation Project Financing	KZ	2	2+0	Z	PV
18Y1AM	Anatomy, Mobility and Safety of Man Jitka Jírová	KZ	2	2P+0C	Z	PV
14Y1AV	Animation and Visualization	KZ	2	2P+0C	L	PV
20Y1AE	Applied Electronics	KZ	2	2P+0C	Z	PV
14Y1BE	Barrierless Transport Jan Kr ál	KZ	2	2P+0C	L	PV
15Y1BO	Work Safety and Health Protection in Transportation Eva Rezlerová, Petr Musil	KZ	2	2P+0C	L	PV
14Y1BM	Biometric Methods	KZ	2	2P+0C	Z	PV
23Y1DZ	Data and Their Processing for Engineering Fields Needs	KZ	2	2P+0C	Z	PV
15Y1DU	History of Art and Society	KZ	2	2+0	Z	PV
15Y1DZ	History of Railway Martin Jacura, Eva Rezlerová	KZ	2	2P+0C	L	PV
12Y1DS	Project Documentation in Practice	KZ	2	2P+0C	Z	PV
17Y1EV	Public Sector Economy Veronika Faifrová	KZ	2	2P+0C	Z	PV
20Y1EK	Qualification in Electrical Engineering	KZ	2	2P+0C	L	PV
16Y1EN	Energy Requirements of Vehicles	KZ	2	2P+0C	L	PV

20Y1EA	Environmental Aspects of Transport	KZ	2	2P+0C	Z	PV
15Y1EH	European Integration within Historical Context	KZ	2	2P+0C	Z	PV
18Y1EM	Experimental Methods in Mechanics	KZ	2	2P+0C	Z	PV
21Y1FN	Paniel Kytý Factors Affecting the Rate of Accidents in Aviation	KZ	2	2+0	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
15Y1HD	Eva Režlerová, Vladimír Plos History of City Mass Transport	KZ	2	2P+0C	Z	PV
12Y1HD	Milan Dont, Eva Rezlerová  Traffic Noise	KZ	2	2P+0C	L	PV
15Y1HE	Dagmar Ko árková, Libor Ládyš  Work Hygiene and Ergonomics in Traffic	KZ	2	2P+0C	Z	PV
16Y1IS	Eva Rezlerová, Petr Musil Interactive simulators and simulations	KZ	2	2P+0C	L	PV
	Combined Transportation				_	
12Y1KN	Petr Nejedlý	KZ	2	2P+0C	Z	PV
23Y1KO	Quantum Physics and Optoelectronics	KZ	2	2P+0C	L	PV
21Y1LA	Aerobatics	KZ	2	2+0	L	PV
21Y1LR	Radio Technology in Aviation	KZ	2	2+0	L	PV
17Y1LL	Logistics of Passenger and Freight Air Transport Petra Skolilová Petra Skolilová (Gar.)	KZ	2	2P+0C	L	PV
20Y1LN	Location and Navigation	KZ	2	2P+0C	L	PV
21Y1MZ	Managerial Ethics	KZ	2	2+0	Z	PV
17Y1MD	Marketing in Transportation	KZ	2	2P+0C	Z	PV
11Y1MM	Mathematical Models in Economy	KZ	2	2P+0C	Z	PV
18Y1MT	Engineering Materials  Jaroslav Valach	KZ	2	2P+0C	L	PV
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2	2P+0C	Z	PV
17Y1ND	Maritime Transportation	KZ	2	2+0	Z	PV
15Y1NE	German in the Economy and Society	KZ	2	2P+0C	Z	PV
21Y1OL	Security of Air Transport	KZ	2	2+0	L	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
14Y1OP	Operating System	KZ	2	2P+0C	Z	PV
17Y1OF	Personal Finance	KZ	2	2P+0C	Z	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 Denis Liutov	KZ	2	2P+0C	L	PV
14Y1PG	Computer Graphics	KZ	2	2P+0C	L	PV
14Y1P2	Computer Aid of Transportation Projecting 2	KZ	2	2P+0C	Z	PV
18Y1PS	Computer Simulations in Mechanics Petr Zlámal	KZ	2	2P+0C	L	PV
14Y1PI	Corporate Information System	KZ	2	2P+0C	Z	PV
14Y1PZ	Advanced Data Processing in Spreadsheets	KZ	2	2P+0C	Z	PV
12Y1PD	Assessment of Transport Structures	KZ	2	2P+0C	Z	PV
20Y1PK	Product Quality Management Processes  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
		1.77		100.00		51.
12Y1PU	Organization Disposition of Railway Stations	KZ	2	2P+0C	L	PV

21Y1RZ	Human Resources Management	KZ	2	2P+0C	L	PV
17Y1ST	Titan Simulation	KZ	2	2P+0C	L	PV
20Y1SC	Sensors and Actuators	KZ	2	2P+0C	L	PV
11Y1SI	Transportation Software Engineering  Martin P ni ka	KZ	2	2P+0C	Z	PV
22Y1SZ	Forensic Expertise	KZ	2	2P+0C	L	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
21Y1TH	Aircraft Technical Handling Peter Olexa	KZ	2	2P+0C	Z	PV
11Y1TG	Graph Theory Lucie Kárná Lucie Kárná (Gar.)	KZ	2	2P+0C	L	PV
14Y1TI	Creating Interactive Internet Applications	KZ	2	2P+0C	L	PV
21Y1UT	Airports Maintenance	KZ	2	2+0	L	PV
14Y1UP	Editing of Theses in MS Word	KZ	2	2P+0C	L	PV
18Y1UK	Introduction of Rail Vehicles Jitka ezní ková, Josef Kolá	KZ	2	2P+0C	L	PV
12Y1VC	Waterways and Shipping	KZ	2	2P+0C	Z	PV
23Y1VS	Negotiation and Cooperation  Milena Macková	KZ	2	2P+0C	Z	PV
14Y1VM	<b>Development of Applications for Mobile Devices</b>	KZ	2	2P+0C	Z	PV
16Y1VT	Development in Railroad Vehicles	KZ	2	2P+0C	L	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
21Y1ZA	Basics of Aerobatics	KZ	2	2+0	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> Sárka Vorá ová (Gar.)	KZ	2	2P+0C	L	PV
12Y1ZU	Principles of Urbanism Karel Hájek	KZ	2	2P+0C	Z	PV
16Y1ZL	Vehicle Testing, Legislation and Construction Zuzana Radová, Josef Mík	KZ	2	2P+0C	Z	PV

17Y1AF	Alternative Forms of Transportation Project Financing	KZ	2
There will be specifed	such forms of financing in transportation, where the public sector body perform the final debtor, i. e. debtor payments come from	om its budget, but	the final debtor
is not a direct participa	nt of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of securities as an a	alternative source	of transportation
project.			
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues. Anaf	omical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circula	tion and nervous s	ystem. Structure
and biomechanics of r	nuscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injure	ed man and his tre	atment. Human
joint prostheses. Prote	ctive means and traffic safety regulations.		
14Y1AV	Animation and Visualization	KZ	2
Advanced modification	s and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and	Space Warp object	cts. Atmospheric
and other effects, rend	lering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animatio	n using Inverse Ki	nematics.
20Y1AE	Applied Electronics	KZ	2
Basic electronic semic	onductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, tr	ansistors, thyristor	, operational
amplifiers basic logic			
amplificia, basic logic	gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transi	istor as an amplifie	er, operational
	gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transl ig and noninverting amplifier).	istor as an amplific	er, operational
		stor as an amplifie	er, operational
amplifier as an inverting 14Y1BE	g and noninverting amplifier).	KZ	2
amplifier as an inverting 14Y1BE The issue of barrierles	g and noninverting amplifier).  Barrierless Transport	KZ ents will gain theore	2 etical knowledge
amplifier as an inverting 14Y1BE The issue of barrierless of barrierless environments.	g and noninverting amplifier).  Barrierless Transport s accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude	KZ ents will gain theore	2 etical knowledge
amplifier as an inverting 14Y1BE The issue of barrierless of barrierless environments.	g and noninverting amplifier).  Barrierless Transport s accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude lent roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems.	KZ ents will gain theore	2 etical knowledge
amplifier as an invertine 14Y1BE The issue of barrierles of barrierless environment Theoretical knowledge 15Y1BO	g and noninverting amplifier).  Barrierless Transport s accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Studement roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems will be supplemented by practical examples.	KZ ents will gain theore	2 etical knowledge ation technology.
amplifier as an invertine 14Y1BE The issue of barrierles of barrierless environmental theoretical knowledge 15Y1BO Fundamental legislative	g and noninverting amplifier).  Barrierless Transport s accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude then transport stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems will be supplemented by practical examples.  Work Safety and Health Protection in Transportation	KZ ents will gain theore	2 etical knowledge ation technology.
amplifier as an invertine 14Y1BE The issue of barrierles of barrierless environmental theoretical knowledge 15Y1BO Fundamental legislative	g and noninverting amplifier).  Barrierless Transport s accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude tent roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation system will be supplemented by practical examples.  Work Safety and Health Protection in Transportation e, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation	KZ ents will gain theore	2 etical knowledge ation technology.
amplifier as an invertine 14Y1BE The issue of barrierles of barrierless environment Theoretical knowledge 15Y1BO Fundamental legislative health insurance of home 14Y1BM	g and noninverting amplifier).  Barrierless Transport s accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude tent roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation system will be supplemented by practical examples.  Work Safety and Health Protection in Transportation e, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation me and foreign business trips, statistics, working practice.	KZ ents will gain theore ems and transporta  KZ  Health protection	2 etical knowledge ation technology.  2 n programmes,
amplifier as an invertine 14Y1BE The issue of barrierles of barrierless environment Theoretical knowledge 15Y1BO Fundamental legislative health insurance of homogeneous 14Y1BM Basic biometric terms,	g and noninverting amplifier).  Barrierless Transport s accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude tent roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation system will be supplemented by practical examples.  Work Safety and Health Protection in Transportation e, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation me and foreign business trips, statistics, working practice.  Biometric Methods	KZ ents will gain theore ems and transporta  KZ  Health protection  KZ  hand geometry, ir	2 etical knowledge ation technology.  2 n programmes,  2 is recognition,
amplifier as an invertine 14Y1BE The issue of barrierles of barrierless environment Theoretical knowledge 15Y1BO Fundamental legislative health insurance of homogeneous biometric terms, retina recognition method.	g and noninverting amplifier).  Barrierless Transport s accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude tent roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation system will be supplemented by practical examples.  Work Safety and Health Protection in Transportation e, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation me and foreign business trips, statistics, working practice.  Biometric Methods authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies,	KZ ents will gain theore ems and transporta  KZ  Health protection  KZ  hand geometry, ir	2 etical knowledge ation technology.  2 n programmes,  2 is recognition,
amplifier as an invertine 14Y1BE The issue of barrierles of barrierless environment Theoretical knowledge 15Y1BO Fundamental legislative health insurance of homogeneous biometric terms, retina recognition method.	g and noninverting amplifier).  Barrierless Transport s accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude tent roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation system will be supplemented by practical examples.  Work Safety and Health Protection in Transportation e, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation me and foreign business trips, statistics, working practice.  Biometric Methods authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies, and, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behaviors, safety and risks of biometric technologies.	KZ ents will gain theore ems and transporta  KZ  Health protection  KZ  hand geometry, ir	2 etical knowledge ation technology.  2 n programmes,  2 is recognition,
amplifier as an inverting 14Y1BE The issue of barrierless of barrierless environment Theoretical knowledge 15Y1BO Fundamental legislative health insurance of how 14Y1BM Basic biometric terms, retina recognition mething in transport application 23Y1DZ	Barrierless Transport s accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude tent roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation system will be supplemented by practical examples.  Work Safety and Health Protection in Transportation e, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation me and foreign business trips, statistics, working practice.  Biometric Methods authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies, and, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavior	KZ Ints will gain theore Ints will gain theore Interest and transportation Interest KZ	2 etical knowledge ation technology.  2 n programmes,  2 is recognition, se of biometrics

15Y1DU	History of Art and Society	KZ	2
History of art - definition buildings. Design of tran	is, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic.	Stations, bridges,	, industrial
15Y1DZ	History of Railway	KZ	2
Horse-drawn railways, s	team railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Re		action, World
	levelopment in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connu	ections, railway lin	es construction,
12Y1DS	y junctions. Excursions and projections.  Project Documentation in Practice	KZ	2
	reating. Project documentation types. Support materials for project documentation creating. Building permit obtaining proces		
creation of some project	t documentation parts.		-
17Y1EV	Public Sector Economy	KZ	2
	theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of pate budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding		
20Y1EK	Qualification in Electrical Engineering	KZ	2
	h measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock hazar	rd, symbols and la	abeling, nominal
-	red currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legisla	ation, standards a	ind regulations
16Y1EN	safety and electrical engineering.  Energy Requirements of Vehicles	KZ	2
	ig 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.		-
20Y1EA	Environmental Aspects of Transport	KZ	2
	e, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabiliants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp		
15Y1EH	European Integration within Historical Context	KZ	2
Versailles system, forma	ation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism.	. Little Entente, its	
•	or's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and	its consequences	s for Europe.
18Y1EM	Serman relationship - a driving power of starting European integration.  Experimental Methods in Mechanics	KZ	2
-	f experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive		
•	s and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. F	atigue and lifetime	e prediction.
	testing. Introduction to electron microscopy. Errors in measurement.	1/7	
21Y1FN Introduction The scope	Factors Affecting the Rate of Accidents in Aviation of international and national organizations in civil aviation. The scope of the investigation organizations within the state and in	KZ   nternational comm	2 nittees Analysis
•	AO Annexes 13 and 19. Analysis and interpretation of the Regulation (EC), Regulation (EU). Human factor. Utilization of information of the Regulation (EC) and the second of the Regulation (EU) and the second of the Regulation (EU).		,
reports.			
15Y1FD	French Area Studies and Transportation regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tra	KZ	2 orminology
	rregions, transport imastructure. Fans and its signis, city public transport. Road traffic, motorways, railway traffic, 13 v, air tra rre. Current political system. System of education, studying in France. Selected authors of French literature. French gastronor	-	erminology.
14Y1HW	Computer Hardware	KZ	2
•	basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate	parts designing -	controllers,
arithmetic and logical ur	·		2
15Y1HL Beginnings of flying, dev	History of Civil Aviation velopment of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of	KZ   of airports in the C	
	aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era	•	
	civil aviation. Airline companies. Supersonic flying.		
15Y1HD	History of City Mass Transport   asport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current tren	KZ	2
	ory of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Republic and SI	•	ents of tariii and
12Y1HD	Traffic Noise	KZ	2
	asic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulating the standard of the standar		
	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.	of interest. Metho	dology of
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
	upational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these		of workers.
•	of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to	possibilities and	skills of a man.
16Y1IS	the field of transportation; relevant legislature.  Interactive simulators and simulations	KZ	2
	pplication of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical m	ı	
Simulation of vehicle dy	namics, on-land carriage in particular. Virtual reality systems. Practical exercise with simulation software and interactive simu	lators.	
12Y1KN	Combined Transportation	KZ	2
23Y1KO	ategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping area  Quantum Physics and Optoelectronics	s. Multimodal logi:	stic centres.
	sics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics components.	rν	۷
21Y1LA	Aerobatics	KZ	2
Methodology of flying as	erobatic figures. Aerodynamics and flight mechanics of aerobatic figures. Aerobatic training syllabi and aerobatic competitions	. Creating an aero	batic sequence.
	cidents related to aerobatics. Physiological aspects of flying aerobatics. Aircraft structure loads and construction fatigue stren ') for commercial pilots and related accidents.	gth of aerobatic a	ircraft. Upset
21Y1LR	Radio Technology in Aviation	KZ	2
	wave spectrum. Analog and digital modulations. Noises. Filters. Resonance circuits. Electromagnetic field. Electromagnetic w		
in aviation, radiation and	recention of electromagnetic field. Antennas in aviation, receivers and transmitters		

17Y1LL Logistics of Passenger and Freight Air Transport	KZ	2
Logistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial air cargo. Information systems in air transport. Global distribution systems.	transport process	passengers and
20Y1LN Location and Navigation	KZ	2
Description and examples of road networks, localization on the network. Routing algorithms, their properties and implementation. Description and examples are considered as a second co	1	ets for finding
transport connections, routing algorithms, their properties and implementation.	147	
21Y1MZ   Managerial Ethics   The basic terminology of managerial ethics. Basics of etiquette and rules of social contact. Social events. Etiquette of working contacts. The art of pres	KZ	2
image. Diplomatic protocol. Managerial ethics. Business ethics.	sentation and nego	diation. Fersonal
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	rt and the resultin	g differences in
the application of marketing.	1/7	
11Y1MM Mathematical Models in Economy The goal of the course is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their programming.	KZ	on The outcom
of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained optimization.	jiam impiementati	on. The outcom
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	=	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		
14Y1MP   Modeling Complex Assemblies and Models in Parametric Modeller     Assemblies programming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipe	KZ	tion lines
Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.	ciirics, and distrib	ation inico.
17Y1ND Maritime Transportation	KZ	2
History and importance of the maritime transportation, theoretical discipline in maritime transportation, seafaring vessels, maritime ports and their u		
maritime ports, transport corridors and link by maritime, river and rail transport I and II, global maritime corridors, logistics of maritime transportation, containers, ITS in maritime transport.	maritime transpor	tation and smart
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	1	
selected topics.		
21Y1OL Security of Air Transport	KZ	2
The development of civil aviation. Definitions and regulations. History of acts of unlawful interference. Terrorism in aviation. National security program at airports - operational procedures. Modern means of protection and control.	n. Crisis managen	nent. Protection
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,	1	
infrastructures.		
20Y10I Fare Collection and Information Systems	KZ	2
Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their componer	nts for users (timet	ables mans l
I nanels 1) and operators (cycles, location or current delay of vehicles 1). The issue of tariff systems, Other examples of clearance systems (parking	•	abioo, mapo,
panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parking 14Y1OP Operating System	g).	
panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parking 14Y1OP Operating System  Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Program	g). KZ	2
14Y1OP Operating System Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Prograr runlevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, gra	g).  KZ ms and processes	2 s. OS boot,
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14Y10P Operating System Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Prograr runlevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, gra communication. Services management. Safe and secure configuration of OS. Remote administration.  17Y10F Personal Finance Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of h consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability a (retirement savings and insurance).  11Y1PV Parametrical and Multicriterial Programming Solution to the problem of linear programming with a parameter in objective function, on right sides and in the matrix of coefficients of linear constraints  17Y1PM Personnel Management Human sources, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, intercu  12Y1PC Pedestrian and Cycling Transport  Routes for pedestrians. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle roressroads. Traffic signs and road marking for cyclists.  14Y1PG Computer Graphics  Basic formats of graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with edievel scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.  14Y1P2 Computer Aid of Transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, modification (attributes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic transection). Basics of 3D modelli	ms and processes phic editors, soun  KZ ousing (rent, mort and adequacy), see KZ s. Computation of KZ oute layout and dengs with other trans KZ diting programs (w. KZ , data exchange).	2 s. OS boot, d, video and  2 gage, savings, curing the future  2 efficient solution. 2 ion. 2 sign parameters rsport modes,  2 rithin the user  2 Advanced blocks -and longitudinal
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12Y1PD Assessment of Transport Structures	KZ	2
Assessment of transport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities	· ·	
transport structures on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of	assessment of tra	affic buildings on
the environment.  20Y1PK Product Quality Management Processes	KZ	2
General principles of organization management. Management systems and international standards; quality management systems. Quality products,	1	1
of standards for systems management, management principles. Principles of process management, monitoring and measurement systems management		
for systems management. Process management principles. Metrology and testing. Product certification.		
14Y1PJ C Programming Language	KZ	2
C programming language. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation,	string, files, struct	ures and unions.
Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.	1/7	
12Y1C1 Designing Roads in Civil 3D I 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 go through	KZ	2
particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. T	-	_
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 go through	-	-
particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. T	ne previously acqu	uired skills are
improved and developed. Students learn to design intersections.	1/7	
14Y1PA   3D Modeling in AutoCAD Work in 3D non-parametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, objects	KZ	2
connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.	ct data creation, v	vork with data
16Y1PV Operation, Construction and Maintenance of Vehicles	KZ	2
Methods of vehicle production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measur	1	_
General principles of engine diagnostics.		
12Y1PU Organization Disposition of Railway Stations	KZ	2
Connecting station. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Z		nation yards.
Reserve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic railway		
16Y1RE   Control and Electronic Vehicle Systems Elementary concepts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disa	KZ	2 on Conventional
and hybrid drive control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control	_	
comfort systems.	,,	
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 manag	ement. Internal an	id external
environment of human resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and	remuneration of	staff. Positioning,
dismissal and redundancies of employees. Education of employees. Planning career management.	147	
17Y1ST   Titan Simulation Titan is a management game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same prod	KZ	2
determine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the conseque		
of financial corporate reports and they use this information for other business decisions.		2,
20Y1SC Sensors and Actuators	KZ	2
Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor	rs of mechanical, e	electro-magnetic,
state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.		-
11Y1SI Transportation Software Engineering	KZ	2
Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and imple	mentation using to	ormal techniques
and practical usuage.  22Y1SZ Forensic Expertise	KZ	2
Historical evolution of forensic engineering, forensic activity, current legislature in the Czech Republic, different disciplines, notion of forensic, forens	1	I
expert role in the obtaining proofs, forensic methodology. Notion of the evidence, general principles of evidence obtaining, metrology, protocol, evidence obtaining, metrology, evidence obtaining, metrology, evidence obtaining, evidence obt	•	
forensic report, elements. Finding, expert testimony / report.		
16Y1KS Quality and Reliability of Vehicles	KZ	2
Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability.		
Mode and Effects Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other method Knowledge-based systems of quality and reliability, data collection.	s used in industria	al applications.
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	1	I
medium 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.		
21Y1TH Aircraft Technical Handling	KZ	2
Aircraft towing and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and units		ment for
passangers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and technical progress		
11Y1TG Graph Theory  Rasic concents and terminology of graph theory graph representation. Problems of graph theory problem instance. Graph search algorithms, trees	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 existen	-	-
for their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.	05	3.90.101110
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.	1	I
in PHP language.		
21Y1UT Airports Maintenance	KZ	2
Summer airport maintenance. Summer maintenance equipment. Winter airport maintenance. Winter maintenance equipment. De-icing / anti-icing of	aircraft. De-icing /	anti-icing liquid.
Operating procedures, limitations, practices.		

		,	
	of Theses in MS Word	KZ	2
•	rinciples of creating and editing large documents and basic typographic rules. They will properly apply styles, crea		
	es, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless	editing dissertation	ons and theses
so that they are able to concentrate			
	tion of Rail Vehicles	KZ	2
•	rs rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion t		•
•	ance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle	- hydromechanic	c, hydrodynami
and electric drive. Design concept r			
	ays and Shipping	KZ	2
	ion of water transport in the transport system of the Czech Republic and the EU. Advantages and disadvantages of	•	•
	of waterways in the Czech Republic. Construction of the waterway and its equipment. Management of waterways are	nd its operation. T	he legal regime
n inland navigation, navigation rule			
	ion and Cooperation	KZ	2
_	e influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Infor		
	ce of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", spec	ifications and bid	ding, the role o
rust.	1		
	ment of Applications for Mobile Devices	KZ	2
	programming language, development environment, operating system Android, development application - widgets	containers, threa	ads, menu,
permissions, services, GUI.			
	ment in Railroad Vehicles	KZ	2
	vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal tran	nsportation. Critic	al situation
assesment. New materials in design			
14Y1W1   Webdes		KZ	2
	nmunication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web accessib		
	wsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practiced of		<u> </u>
14Y1W2   Webdes		KZ	2
	ques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web s	server installation	+ configuration
directives. Topics will be practiced of	n practical examples.		
	tion into Applied Computer Graphics	KZ	2
	plications with emphasis on transport, including development and research. Colours, colour perception, colour sch		•
	prithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basics	s. Introduction to 2	2D and 3D
graphics software.			
l I	f Aerobatics	KZ	2
•	atics in present, aerodynamics and mechanics of flight during marginal flight modes, piloting technique of individual	elements, compet	ition aerobatics
	or practicing aerobatics and safety training, competitive psychology and concentration on performance.		
	entals of parametric and adaptive modeling	KZ	2
Basics of work at products and part	s creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models fron	n 2D sketches. Im	port and expor
rom and to another systems. Funda	amentals of assemblies creation.		
11Y1ZM Foundat	ion of MATLAB Programming	KZ	2
o explain the principle of algorithm	ization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, m	atrices and eleme	ents operations
	phics, optimization and program code debugging.		
12Y1ZU Principle	es of Urbanism	KZ	2
Survey on history of city and settler	nent building. Functional components and their mutual relations (working, living, recreation, transportation). Spacia	al arrangement of	settlements.
Types of towns or cities with a certa	in prevailing function, forms of their development. Brief overview of land-use planning.		
16Y1ZL Vehicle	Testing, Legislation and Construction	KZ	2
	on, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of persona	al cars, trucks, bus	ses, motorbikes

Name of the block: Jazyky

Minimal number of credits of the block: 6

The role of the block: J

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

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

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

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

Credits in the group: 6 Note on the group:

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

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

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

15JZ3F | Foreign Language - French 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.

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 structure knowledge

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

15JZ4I Foreign Language - Italian 4 Z,ZK 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.

15JZ4N Foreign Language - German 4 Z,ZK 3

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

15JZ4R Foreign Language - Russian 4 Z,ZK

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

15JZ4S | Foreign Language - Spanish 4 | Z,ZK | 3 | Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge

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

## List of courses of this pass:

Code	Name of the course	Completion	Credits	
11CAL1	Calculus 1	Z,ZK	7	i
Sequence of real n	umbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dim	ensional Euklidear	n space and	
Cartesia	an coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of sev	eral 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. Pa	rametric descriptio	n of regular	
k-dimensional sur	faces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary diff	erential equations	of the first	

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order, linear differential equations with constant coefficients and its systems

11EV1	Dhysics 1	7 7V	1
11FY1 Kinen	Physics 1  ratics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directer	Z,ZK d electric current.	4
11FY2	Physics 2	Z,ZK	4
	tromagnetic field. Optics, quantum character of electromagnetic radiation. Introduction into quantization, hydrogen atom. Multi-electrosolid body physics.	,	ei. Basics of
11GIE	Geometry	KZ	3
	etry of curves - parameterization, the arc of the curve, torsion and curvature, Frenet`s trihedron. Kinematics - a curve as a trajectory of	f the motion, the ve	elocity, and
	acceleration of a particle moving on a curved path.		
11LA	Linear Algebra	Z,ZK	3
Vector spaces (line	ear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and the	•	minants and
=	their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classificati		
11LP	Linear Programming	KZ	3
	problem of linear programming, transcription of some practical problems to the linear programming problems. Simplex and convex posolutions, duality principle in linear programming, stability of solution of linear programming problem. Traffic problem.		
11MSP	Modeling of Systems and Processes	Z,ZK	4
	stem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of different stems.		
Linear and non	Ilinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function	n. Stability of LITS	ystems.
440740	Discretization of continuous systems. System interconnection.	7 71/	_
11STAS	Statistics  Sility, random variable and its description, known distributions, random vector, function of random variable. Methods of point estimation. T	Z,ZK	5 hypothosis
	rrelation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linear re	ū	
Tregression and co	multiple regression, the use of matrices in regression.	gression, analysis	or variance,
11X31	Project 1	Z	2
11X32	Project 2	Z	2
11X32	Project 3	Z	2
	•	KZ	2
11Y1MM	Mathematical Models in Economy urse is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their program		_
The goal of the co	of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained op		ne outcom
11Y1PV	Parametrical and Multicriterial Programming	KZ	2
	plem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Co		
11Y1SI	Transportation Software Engineering	KZ	2
	oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implemen		
·	and practical usuage.	· ·	·
11Y1TG	Graph Theory	KZ	2
Basic concepts an	d terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, min	nimum spanning tre	ee, shortest
path problem, Eule	rian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence a	nd optimization and	d algorithms
	for their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.		
11Y1ZM	Foundation of MATLAB Programming	KZ	2
lo explain the princ	ciple of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, matrix of algorithmization, and program and additional description and additional description and are setting and program and additional description additional description and additional description additional description and additional description additional description and	rices and elements	operations,
40MDE	control flow, inputs and outputs, graphics, optimization and program code debugging.	7 71/	2
12MDE	Transport Models and Transport Excesses traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of qu	Z,ZK	3 S Quality of
	assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequ		
l anoport and no t	safety and fluency.	g c	aoport
12PPOK	Designing Roads, Highways and Motorways	KZ	3
	ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard		
Range of vision for	stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safet	y device. Crossing	s, junctions,
	intersections.		
12X31	Project 1	Z	2
12X32	Project 2	Z	2
12X33	Project 3	Z	2
12Y1C1	Designing Roads in Civil 3D I	KZ	2
	voted 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 b	uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The	course also includ	es a basic
401/405	explanation of the traffic building design in the real-life profession.		
12Y1C2	Designing Roads in Civil 3D II	KZ	2
	voted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go througl uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The		-
Particular illiedi D	improved and developed. Students learn to design intersections.	proviously acquire	a skille ale
12Y1DS	Project Documentation in Practice	KZ	2
	ation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining process.		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	creation of some project documentation parts.		,
12Y1HD	Traffic Noise	KZ	2
	on, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulation		
	of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area		
	computing and measurement of transport noise. Acoustic studies, measuring protocol.		
12Y1KN	Combined Transportation	KZ	2
Combined transp	oort strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas	. Multimodal logisti	c centres.

12Y1PC	Pedestrian and Cycling Transport	KZ	2
	ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route		
for cyclists. Separ	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.	s with other transpo	ort modes,
12Y1PD	Assessment of Transport Structures	KZ	2
	sport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of		
	s on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of ass	-	
	the environment.		
12Y1PU	Organization Disposition of Railway Stations	KZ	2
_	on. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zon ve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic		on yards.
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 developr		
_	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.		
12Y1VC	Waterways and Shipping	KZ	2
	nsport. The position of water transport in the transport system of the Czech Republic and the EU. Advantages and disadvantages of varoes, a network of waterways in the Czech Republic. Construction of the waterway and its equipment. Management of waterways and	· ·	- 1
or waterways in Lu	in inland navigation, navigation rules of operation, navigation maps.	its operation. The i	egai regiirie
12Y1ZU	Principles of Urbanism	KZ	2
	of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial	arrangement of se	
	Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.		
12ZTS	Railway Lines and Stations	Z,ZK	. 4
Rail transport. Ra	ailway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. S	-	way lines.
12ZYDI	Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail tr 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, pr		
	impacts of transportation to environment and safety.		
14AS	Algorithm and Data Structures	KZ	2
	niliarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze		
solutions to the s	et task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart an	d use the basics o	f Boolean
14AZ	algebra with forming the conditions for the algorithms.  Data Analysis and Processing	KZ	2
	course is learn students how to prepare raw data for following processing and analysis. Knowledge of algorithms for determining the		
	an be used images, text, time series, etc. The next step is the theoretical skills and knowledge to apply in solving the problem, e. g. ex		
	image data or from the Internet.		
14DB	Database Systems	KZ	2
Basic concepts of	of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via t		database
14DMG	Datamining	KZ	2
_	ces and knowledge, data warehouses and OLAP technology for data mining, data preprocessing in the process of knowledge acquis		
	tics of concepts (classes), mining association rules from relational db. and data warehousing, classification (decisions tree, Bayesian		
	Prediction. Cluster analysis. Mining in complex structured data, multimedia dbf., www.		
14KSP	Constructing with Computer Aid	KZ	2
	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common worl Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible.)		
and Ort systems.	profiles, drawings with raster foundaments).	inico, ridioorib cir	VIIOIIIIOII
14MPG	Modern Programming Approaches	KZ	2
Principles of object	t oriented programming, polymorphism, references, memory allocation, inheritage, generic programming, operator overloading, STL	library, object impl	ementation
	of abstract data types, graph and graph algorithm implementation focused on logistic problems.		
14PRG	Programming	KZ	2
-	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python program rticipant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and searcl		
nere so that the pa	working with date and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).	mig, tapics, sets, t	alctionarios,
14X31	Project 1	Z	2
14X32	Project 2	Z	2
14X33	Project 3	Z	2
14Y1AV	Animation and Visualization	KZ	2
	tions and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Spa		
	s, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation		
14Y1BE	Barrierless Transport  less accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students v	KZ	2 knowledge
	ness accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students to In ment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems		
	Theoretical knowledge will be supplemented by practical examples.	-1	
14Y1BM	Biometric Methods	KZ	2
	rms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies, ha	-	- 1
retina recognition n	nethod, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavioral n	nethods, the use o	t biometrics
14Y1HW	in transport applications, safety and risks of biometric technologies.  Computer Hardware	KZ	2
	computer naroware pecture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate p	l l	
	arithmetic and logical units, I/O subsystem.		,

,			·
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2
Assemblies prog	gramming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipe Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.	lines, and distribut	tion lines.
14Y10P	Operating System	KZ	2
	tallation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Program		
runlevels. Basic c	console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, graph	nic editors, sound,	video and
	communication. Services management. Safe and secure configuration of OS. Remote administration.		
14Y1P2	Computer Aid of Transportation Projecting 2	KZ	2
	oplication for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, dat utes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic transition		
modification (attribu	section). Basics of 3D modelling.	r curve, cross-and	ı lorigitudirlar
14Y1PA	3D Modeling in AutoCAD	KZ	2
	arametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object	l	1
	connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.		
14Y1PG	Computer Graphics	KZ	2
Basic formats of g	graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with edition		nin the user
	level scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphic		
14Y1PI	Corporate Information System	KZ	2
	n-knowledge, components of information system, syntatic and semantic sense of data, structure of corporate information system, pa uction, storage, etc.), corporate information politic and information control, risks of information system operation, legal environment of		•
(personalistic, prodi	state information system, information system security, data protection, safety politics.	illomation syste	in operation,
14Y1PJ	C Programming Language	KZ	2
	guage. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation, strir	l	1
	Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise operations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise operations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise operations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise operations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise operations of the searching techniques (sorting, searching, recursion), using bitwise operations of the searching techniques (sorting, searching,	orerators.	
14Y1PZ	Advanced Data Processing in Spreadsheets	KZ	2
	familiar with principles of working in a spreadsheet. Graphic layout of the table appearance, formatting of numbers, insertion of formula to the specific product of the speci		
addressing, error de	etection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatting, s	olution finding, so	lver, macros,
4.4)/4.T.I	data analysis. Examples and questions from various companies and training.	1/7	
14Y1TI	Creating Interactive Internet Applications  ting language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions. You	KZ	2 programmed
rossibilities of scrip	in PHP language.	Town application (	programmeu
14Y1UP	Editing of Theses in MS Word	KZ	2
-	ntroduced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, crea	l	1
figures, tables, grap	ohs, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless ed	liting dissertations	and theses,
	so that they are able to concentrate mainly on writing a thesis.		_
14Y1VM	Development of Applications for Mobile Devices	KZ	2
Object oriented p	programming, Java programming language, development environment, operating system Android, development application - widgets,	, containers, threa	ds, menu,
4.43/438/4	permissions, services, GUI.	1/7	
14Y1W1	Webdesign 1 the basics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web accessibility	KZ	2 S proportios
	the basics of communication HTTP, ORE and addressing, markup ranguages HTML and AHTML, HTML tags, rules of web accessioning, the issue of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practice		
14Y1W2	Webdesign 2	KZ	2
	advanced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web ser		
	directives. Topics will be practiced on practical examples.		J
14Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2
Basics of work at pi	roducts and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from 2	D sketches. Impor	rt and export
	from and to another systems. Fundamentals of assemblies creation.		_
15JZ1A	Foreign Language - English 1	Z	3
Grammatical Struct	ures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and co		. Elementary
45 170 4	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of		
15JZ2A	Foreign Language - English 2  ures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and co	Z,ZK	3
Grammatical structi	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of		. Liementary
15JZ3F	Foreign Language - French 3	Z	3
	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	_	_
	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v		
	features. Practice of oral and written presentation.		
15JZ3I	Foreign Language - Italian 3	Z	3
· ·	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.		_
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and its
45 170N	features. Practice of oral and written presentation.	7	
15JZ3N Grammar and styli	Foreign Language - German 3 stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	Z	knowledge
	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v		
poroopiivo diit	features. Practice of oral and written presentation.	(p. 0.000101101)	απα πο
15JZ3R	Foreign Language - Russian 3	Z	3
	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	ı	1
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and its
	features. Practice of oral and written presentation.		

15JZ3S	Foreign Language - Spanish 3	Z	3
-	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la		_
and perceptive and	I communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work w	ith (professional)	text and its
45 1745	features. Practice of oral and written presentation.	7 71/	
15JZ4F	Foreign Language - French 4	Z,ZK	3
-	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la I communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work w		_
and perceptive and	features. Practice of oral and written presentation.	iii (proicssionai)	toxt and it
15JZ4I	Foreign Language - Italian 4	Z.ZK	3
1	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	,	_
and perceptive and	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work w	rith (professional)	text and it
	features. Practice of oral and written presentation.		
15JZ4N	Foreign Language - German 4	Z,ZK	3
· · · · · · · · · · · · · · · · · · ·	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la		_
and perceptive and	I communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work w features. Practice of oral and written presentation.	ith (professional)	text and it
15JZ4R		Z.ZK	3
	Foreign Language - Russian 4  tics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	,	_
-	I communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work w		_
	features. Practice of oral and written presentation.	(	
15JZ4S	Foreign Language - Spanish 4	Z,ZK	3
	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	•	_
nd perceptive and	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work w	ith (professional)	text and it
,	features. Practice of oral and written presentation.		1
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
undamental legisl	ative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. He	alth protection pr	ogrammes
	health insurance of home and foreign business trips, statistics, working practice.		1
15Y1DU	History of Art and Society	KZ	2
History of art - de	efinitions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. S	Stations, bridges,	industrial
	buildings. Design of transport vehicles.		
4 <i>E</i> V4D7	History of Dailyery	V7	
15Y1DZ	History of Railway	KZ	2
Horse-drawn railwa	ays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Repu	blic", electric trac	tion, World
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16Y1IS	Interactive simulators and simulations	KZ	2
	ry and application of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical m lation of vehicle dynamics, on-land carriage in particular. Virtual reality systems. Practical exercise with simulation software and intera		methods.
16Y1KS	Quality and Reliability of Vehicles	KZ	2
	pility theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. K	1	1
•	Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other methods upon the control of the cont	, ,	
	Knowledge-based systems of quality and reliability, data collection.		
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2
lethods of vehicle	e production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measurem	ent. Transmission	mechanism
10)/155	General principles of engine diagnostics.		
16Y1RE	Control and Electronic Vehicle Systems	KZ	2
	ots of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disadva e control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control,		
and nybrid anve	comfort systems.	oaroty, oorminariic	ation and
16Y1VT	Development in Railroad Vehicles	KZ	2
	s traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trai	1	
	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 basic	s. Introduction to 2	2D and 3D
40)/47!	graphics software.	1/2	
16Y1ZL	Vehicle Testing, Legislation and Construction otorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal of	KZ	2
	slation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical mod		, motorbike
17EDPO	Economics of Transport Company	Z.ZK	5
_	al utility, marginal costs, function of supply and demand, market equilibrium, perfect competition and types of market arrangement. Tra	,	_
	it's environment, balance sheet, costs, revenue, profit and maximalization of profit. Financial management in transport, business plar	=	
17EMY	Management Science	Z	2
The introduction	to economical-mathematical models before its application in concrete technical and economical cases. The basic mathematical meth	nods to modelise	economical
situations. Severa	al classes of problems are formulated and different methods used in qualitatively distinct real situations are introduced. The tasks of in	nterpretation and	application.
17FEU	Public Administration and Financing in Transport	Z,ZK	4
To get a basic ov	verview of the EU regional policy and its practical execution on the level of the member state, specific ability to find and analyze inform	nation about the E	EU support
470500	programmes.	1/7	
17GEDS	Geography of Transport Systems	KZ	2
	entiation of the transport system. Sociogeographic regionalization and its relation to transport. Transport and local and regional develo hodological framework. Mobility research - travel behavior, mode choice and the influence onto "modal-split." Modal competition. Practica		
corclical and met	analysis in transportation planning.	ar doc or transport	geograpino
17IVD	Integration of Public Transport	ZK	4
	sport policy, planning, contracts, funding, clearing of traffic receipts, tariff systems, traffic and carriage controls, legal conditions within	1	1
17LGT	Logistics	Z,ZK	6
ogistics definition	i, basic concepts, store, warehouse, transport and handling equipment, logistics technology, logistics centers, information and intellig	ent logistics syste	ms, logistic
	city.	_	1
17MAS	Small and Medium Enterprise	Z,ZK	3
47845144	Small and medium enterprise - plans, market, analysis, finance, management, decision making, survival, growth.	1/2	
17MEKA	Methods of Economics Analysis	KZ	2
ie techniques or	economical analysis in the domain of analysis of dependencies, analysis and construction of time series and comparsion of statistica indices.	ii values using dili	erencies ar
17MRZ	Managerial Decision Making	Z	2
	ded into two main sections. The first section deals with individual-level processes that influence managers' decisions. The second sec		
	is, group or organizational) forces that affect managers' decisions.		
17PAZ	Carriage and Forwarding	Z	2
	iage and forwarding, waybills and documents; transport modes, multimodal transport, tariffs and prices in transport, rights and obliga	tions of carriers, h	auliers and
	forwarders, duty and tariff agreements, INCOTERMS, insurance in transport.		
17RAC	Rationalization and Quality of Transport	Z,ZK	7
	ransportation funding, cost calculation, efficiency, transport rationalization, quality management, standards and quality standardization		-
uality manageme	ent in transport and logistics, marketing and transport quality, quality costs, quality measurement and monitoring, statistics in quality r	nanagement, impi	roving, focu
47DDT	on the customer.	7.71/	
17RPT	Project Management  project management, project management standards, organizational structures in the project management, projects in transport an	Z,ZK	5
ວລວາບ ເຮາກາຣ ປາ ເກີຍ	e project management, project management standards, organizational structures in the project management, projects in transport an their specifics, feasibility study and CBA, project evaluation, PPP projects.	u nanspon milasi	ructure and
17SFID	Public Administration and Financing in Transport	Z,ZK	4
	nsport and transport policy in the social context, environmental issues in transport, economical aspects of transport, public administra	1	1
17TEDL	Transport Technology and Logistics	KZ	3
	rearresport rechnology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight transport planning, line planning, timetabling, planning in pasanger and freight transport planning, line planning, timetabling, planning in pasanger and freight transport planning, line planning, timetabling, planning in pasanger and freight transport planning, line planning, timetabling, planning in pasanger and freight transport planning, line planning, timetabling, planning in pasanger and freight transport planning.	I	1
	lodus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication us		
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4
Basic terms of	f graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in		ciplines.
17TVD	Technology of Public Transport	Z,ZK	5
The course conte	ents a detailed description of new knowledge and basic principles of hierarchical planning of public transport system accenting the ge		anning and
	quantified transport demand. The course would be oriented on multiple and multi-level optimisation of passenger public transport		
17X31	Project 1	Z	2

47\\00	Desired 0		
17X32 17X33	Project 2	Z	2
	Project 3		
17Y1AF	Alternative Forms of Transportation Project Financing sifed such forms of financing in transportation, where the public sector body perform the final debtor, i. e. debtor payments come from	KZ	e final debtor
•	cipant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of securities as an alter project.	•	
17Y1EV	Public Sector Economy	KZ	2
	ancial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of pub	I .	l l
	CR, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding from		
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
Logistics airline pa	assenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial tran air cargo. Information systems in air transport. Global distribution systems.	sport process pas	ssengers and
17Y1MD	Marketing in Transportation	KZ	2
	s of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport at the application of marketing.	1	_
17Y1ND	Maritime Transportation	KZ	2
	tance of the maritime transportation, theoretical discipline in maritime transportation, seafaring vessels, maritime ports and their utilization.	1	T.
maritime ports, tra	nsport corridors and link by maritime, river and rail transport I and II, global maritime corridors, logistics of maritime transportation, mar containers, ITS in maritime transport.	ritime transportati	ion and smart
17Y1OF	Personal Finance	KZ	2
	(budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of house	I .	1
consumer loans, re	efinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and (retirement savings and insurance).	adequacy), secur	ring the future
17Y1PM	Personnel Management rces, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, inter	KZ	2
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 produce		I
	ntity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequence of financial corporate reports and they use this information for other business decisions.		•
18MTY	Materials Science and Engineering	Z,ZK	3
	aterials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructu		_
is paid to metals a	is the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and cor to degradation processes in materials, to defectoscopy and to main mechanical tests.	nposites. Attentio	n is also paid
18PZP	Elasticity and Strength	Z,ZK	3
Tension and comp	ression. 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.	and welded joints	of structures.
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		
Principle of virtual	work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions. of planar shapes. Fiber polygons and chains.	Cross-sectional of	characteristics
18TED	Technical Documentation	KZ	2
Technical stand	ards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensiona arrangement of drawing sheets.	al and geometrica	al accuracy,
18X31	Project 1	Z	2
18X32	Project 2	Z	2
18X33	Project 3	Z	2
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues.	Anatomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation	and nervous syst	em. Structure
and biomechanics	of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured r joint prostheses. Protective means and traffic safety regulations.	nan and his treati	ment. Human
18Y1EM	Experimental Methods in Mechanics	KZ	2
	role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive	ŭ	•
experimental pro	ocedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fa	itigue and lifetime	prediction.
40)/41/47	Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.	1/7	
18Y1MT	Engineering Materials  ew of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and	KZ	2
-	logical 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
	erview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model developme		
	rstems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions and tasks of structural and modal analysis. Introduction to complex nonlinear problems.		
18Y1UK	Introduction of Rail Vehicles	KZ	2
Basic characteris	tics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion transport running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle -	ain and unit trains	. Rolling and
	and electric drive. Design concept rail vehicles and drive of wheel set.		
20SYSA	Systems Analysis	Z,ZK	5
=	tem sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks	-	
and its analysis,	strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tal	oles, algorithms fo	or structural
	tasks. Soft and hard systems, methods for soft system analysis.		

20UITS	Introduction to Intelligent Transport Systems	Z.ZK	7
	Introduction to Intelligent Transport Systems egislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of infor	,	1
	egisiative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of infor rinciples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples		
systems for 110.1	principles of ITS.	or possible applic	cations of the
20X31	Project 1	Z	2
20X31 20X32	·		
	Project 2	Z	2
20X33	Project 3	Z	2
20Y1AE	Applied Electronics	KZ	2
	semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, tran	-	
amplifiers, basic	logic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transisto amplifier as an inverting and noninverting amplifier).	or as an amplifier,	operational
20Y1EA	Environmental Aspects of Transport	KZ	2
State of the atmos	phere, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabilistic	forecasts, forecas	st evaluation
Air quality, mai	n pollutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp	ortation in climate	e change.
20Y1EK	Qualification in Electrical Engineering	KZ	2
Practical experience	ce with measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock hazard,	symbols and labe	eling, nomina
voltage, maximun	n allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legislation	on, standards and	d regulations
	in relation to health and safety and electrical engineering.		
20Y1LN	Location and Navigation	KZ	2
Description and	examples of road networks, localization on the network. Routing algorithms, their properties and implementation. Description and examples of road networks, localization on the network.	mples of datasets	s for finding
	transport connections, routing algorithms, their properties and implementation.		
20Y1OI	Fare Collection and Information Systems	KZ	2
	ystems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components		1
	anels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems		. ,
20Y1PK	Product Quality Management Processes	KZ	2
	of organization management. Management systems and international standards; quality management systems. Quality products, pro		1
	stems management, management principles. Principles of process management, monitoring and measurement systems management. L		
	for systems management. Process management principles. Metrology and testing. Product certification.		
20Y1SC	Sensors and Actuators	KZ	2
	rs and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of		1
Tiricipies of seriso	state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase ele		ilo-magneti
24 V 24			1 2
21X31	Project 1	Z	2
21X32	Project 2	Z	2
21X33	Project 3	Z	2
21Y1FN		_	_
∠ I I I I I I I I	Factors Affecting the Rate of Accidents in Aviation		2
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22X33	Project 3	Z	2
22Y1SZ	Forensic Expertise	KZ	2
Historical evolution	n of forensic engineering, forensic activity, current legislature in the Czech Republic, different disciplines, notion of forensic, forensic legislature in the Czech Republic, different disciplines, notion of forensic, forensic legislature in the Czech Republic, different disciplines, notion of forensic, forensic legislature in the Czech Republic, different disciplines, notion of forensic, forensic legislature in the Czech Republic, different disciplines, notion of forensic, forensic legislature in the Czech Republic, different disciplines, notion of forensic, forensic legislature in the Czech Republic, different disciplines, notion of forensic, forensic legislature in the Czech Republic, different disciplines, notion of forensic legislature in the Czech Republic, different disciplines, notion of forensic legislature in the Czech Republic, different disciplines, notion of forensic legislature in the Czech Republic, different disciplines, notion of forensic legislature in the Czech Republic, different disciplines, notion of forensic legislature in the Czech Republic, different disciplines in the Czech Republic in the Czech	egislation, basic fo	rensic acts,
expert role in the	obtaining proofs, forensic methodology. Notion of the evidence, general principles of evidence obtaining, metrology, protocol, evidence	ces collection, site	inspection,
	forensic report, elements. Finding, expert testimony / report.		
23BDIS	Safety Technologies of Transportation and Information Systems	KZ	3
Safety of trans	portation means - principles, testing, evaluation. Safety of infrastructures, critical structures, crisis scenarios. Safety of information sys	tems and their rob	oustness.
23DPSP	Traffic Law and Related Regulations	Z	1
Analysis of sele	cted laws in transportation domain (e.g. Road Act, Road Transport Act, Civil Aviation Act, Railways Act, Inland Navigation Act), select	ted EU transport le	egislation.
23X31	Project 1	Z	2
23X32	Project 2	Z	2
23X33	Project 3	Z	2
23Y1DZ	Data and Their Processing for Engineering Fields Needs	KZ	2
Courses of risk, b	sisic terms, data collection, data sets, data random uncertainty and data epistemic uncertainty, data processing, hazard, risk, value sc	ales, analytical, e	mpirical and
	heuristic methods, hazard determination and risk determination, methods for variants' creation, decision support systems	i.	
23Y1KO	Quantum Physics and Optoelectronics	KZ	2
	Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics compor	nents.	
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2
Types of technolog	ical systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, safe	ty of critical object	s and critical
	infrastructures.		
23Y1VS	Negotiation and Cooperation	KZ	2
Code of conduct f	or negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Inform	al and formal role	in the team.
Principles of nego	iation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", specific	cations and biddin	g, the role of
	trust.		
23ZAP	Basics of Law	Z	2
	in the Czech legal system. The course is primarily intended to provide students with orientation in fundamentals of the Czech Republi		
forms of law, include	ting adoption of the basic principles of European Community law. The course consists of selected chapters from the public and private	law and European	Community
	law.		_
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 2024-03-28, time 17:12.