#### Study plan

#### Name of study plan: Bachelor TET-LOG Full-Time from 2022/23

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: 1S-BP-TET-20/21

Name of the group: 1st Sem. Bachelor Full-Time TET from 2020/21

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

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

Credits in the group: 30 Note on the group:

Note on the group	<i>5</i> .					
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 Bohumil Ková Ond ej Navrátil (Gar.)	Z,ZK	7	2P+4C+22B	Z	Z
11LA	Linear Algebra Lucie Kárná, Pavel Provinský, Martina Be vá ová Martina Be vá ová Martina Be vá ová (Gar.)	Z,ZK	3	2P+1C+10B	Z	Z
12ZYDI	Introduction to Transportation Engineering Zuzana arská, Dagmar Ko árková, Jan Kruntorád	Z,ZK	2	1P+1C	Z	Z
18MTY	Materials Science and Engineering Jaromír Kylar, Veronika Drechslerová, Jaromír Kylar, Nela Kr má ová, Jitka ezní ková, Jaroslav Valach, Vít Malinovský, Veronika Drechslerová, Jaromír Kylar Jaroslav Valach Jaroslav Valach (Gar.)	Z,ZK	3	2P+1C+10B	Z	Z
11GIE	Geometry Pavel Provinský, Old ich Hykš, Šárka Vorá ová Old ich Hykš Old ich Hykš (Gar.)	KZ	3	2P+2C+12B	Z	Z
14ASD	Algorithm and Data Structures Tomáš Brandejský, Michal Je ábek, Alena Kubá ová, Jan Procházka, Vít Fábera, Martin Fiala <b>Vít Fábera</b> Vít Fábera (Gar.)	KZ	3	0P+2C+8B	Z	Z
14KSP	Constructing with Computer Aid Vít Fábera, Radek Kratochvíl Lukáš Svoboda	KZ	2	0P+2C+8B	Z	Z
18TED	Technical Documentation  Jitka ezní ková, Vít Malinovský Jitka ezní ková Jitka ezní ková (Gar.)	KZ	2	1P+1C+8B	Z	Z
15DPLG	Transportation Psychology Eva Rezlerová, Jana Štikarová	Z	2	2P+0C+6B	Z	Z
16UDOP	Introduction into Vehicles Zuzana Radová, Petr Bouchner	Z	2	2P+0C+8B	Z	Z
TV-1	Physical Education	Z	1		Z	Z

#### Characteristics of the courses of this group of Study Plan: Code=1S-BP-TET-20/21 Name=1st Sem. Bachelor Full-Time TET from 2020/21

11CAL1	Calculus 1	Z,ZK	7
Sequence of real number	ers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Indefinite integral, Newton in	tegral, Riemann ir	ntegral, improper
Riemann integral. First-	order differential equations, linear differential equations.		

11LA Linear Algebra Z,ZK 3
Vector spaces (linear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvability. Determinants and their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.

	Introduction to Transportation Engineering	Z,ZK	2
Role of transport	ation in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of ro	oads, public mass trar	sport. Negative
impacts of transp	portation to environment and safety.		
18MTY	Materials Science and Engineering	Z,ZK	3
Basic course of n	naterials science and engineering explains mechanical properties of structural materials based on their bonding forces and micro	structure. However the	e main attention
is paid to metals	as the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers a	nd composites. Attent	ion is also paid
to degradation pr	ocesses in materials, to defectoscopy and to main mechanical tests.		
11GIE	Geometry	KZ	3
Differential geom	etry of curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajec	tory of the motion, the	e velocity, and
acceleration of a	particle moving on a curved path.		
14ASD	Algorithm and Data Structures	KZ	3
Students will ana	lyze problems, design a theoretical solution to a given problem and write the resulting algorithm using flowcharts, practice reading	g algorithms written u	sing flowcharts,
and use basic Bo	polean algebra to construct constraints in algorithms. Students will be introduced to the basics of the Python programming langua	age - variable, branch	ing, loops, they
will learn to work	with variables of basic data types (integer, floating point and string) and the list data structure in their programs.		
14KSP	Constructing with Computer Aid	KZ	2
"CAD systems" to	erm determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic commo	on work rules in graph	ic applications
and CA systems.	Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting policy projecting projecti	ossibilites, AutoCAD e	
nrofiles drawing			environment
promes, drawing:	s with raster foundaments).	, , , , , , , , , , , , , , , , , , , ,	environment
18TED	s with raster foundaments).  Technical Documentation	KZ	environment 2
18TED		KZ	2
18TED	Technical Documentation rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimens	KZ	2
18TED Technical standa	Technical Documentation rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimens trawing sheets.	KZ	2
18TED Technical standa arrangement of de 15DPLG	Technical Documentation rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimens	KZ   ional and geometrica	2 I accuracy,
18TED Technical standa arrangement of d 15DPLG Subject of psycho	Technical Documentation rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensification sheets.  Transportation Psychology	KZ   ional and geometrica   Z   e construction. Psychological   C   C   C   C   C   C   C   C   C	2 I accuracy,
18TED Technical standa arrangement of d 15DPLG Subject of psycho	Technical Documentation rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimens lrawing sheets.  Transportation Psychology  logy and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle	KZ   ional and geometrica   Z   e construction. Psychological   Z   E   E   E   E   E   E   E   E   E	2 I accuracy,
18TED Technical standa arrangement of d 15DPLG Subject of psycho of travel route an 16UDOP	Technical Documentation rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimens lrawing sheets.   Transportation Psychology ology and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle d traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transpo	KZ   cional and geometrica   Z   cional and geometrica   cional and geomet	2 I accuracy,  2 Dlogical aspects
18TED Technical standa arrangement of d 15DPLG Subject of psycho of travel route an 16UDOP Vehicles and trare	Technical Documentation rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensification sheets.  Transportation Psychology rlogy and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle d traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transpo	KZ   cional and geometrica   Z   cional and geometrica   cional and geomet	2 I accuracy,  2 Diogical aspects
18TED Technical standa arrangement of d 15DPLG Subject of psycho of travel route an 16UDOP Vehicles and trare	Technical Documentation rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensification sheets.  Transportation Psychology rlogy and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle diraffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transpo  Introduction into Vehicles reportation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and	KZ   cional and geometrica   Z   cional and geometrica   cional and geomet	2 I accuracy,  2 Dlogical aspects

Code of the group: 2S-BP-TET-20/21

Name of the group: 2nd Sem. Bachelor Full-Time TET from 2020/21

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

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

Credits in the group: 30 Note on the group:

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

## Characteristics of the courses of this group of Study Plan: Code=2S-BP-TET-20/21 Name=2nd Sem. Bachelor Full-Time TET from 2020/21

11CAL2	Calculus 2	Z,ZK	5
Linear differential equat	ions and their systems, differential calculus of functions of several real variables. Riemann integral in Rn. Line and surface in	tegrals.	

11STAT	Statistics	Z,ZK	4
Basics of probability De	scriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Paran	netric tests Nonpa	rametric tests
Regression and correla	tion analysis		
12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Railway	rack geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure.	Spatial layout of r	ailway lines.
Railway control systems	s in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport.		
18SAT	Structural Analysis	Z,ZK	4
General system of force	s in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determina	ate beams and sin	nple girders.
Principle of virtual work.	Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction	ons. Cross-section	al characteristics
of planar shapes. Fiber	polygons and chains.		
20SYSA	Systems Analysis	Z,ZK	5
Introduction to system s	ciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface ta	sks, processes, sy	stem behaviour
and its analysis, strong	functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision t	ables, algorithms t	for structural
tasks. Soft and hard sys	stems, methods for soft system analysis.		
14PRG	Programming	KZ	2
The Course Programmi	ng builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python progr	amming language	is expanded
here so that the particip	ant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and se	earching, tuples, se	ets, dictionaries,
working with date and t	me, regular expressions, functions and procedures, working with files (CSV, JSON, XML).		
17TEDL	Transport Technology and Logistics	KZ	3
Basic terms in transpor	t technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight t	ransport, organisa	ation of traffic in
each transport modus,	technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication u	sing various trans	port modus.
21ZALD	Basics of Air Transport	KZ	2
History, definitions, term	inology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigat	ion. Weight, baland	ce, performance.
Flight planning, optimiza	ation of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ç	round handling, s	ecurity. Air crew.
Airlines and economics	Space technologies.		
TV-2	Physical Education	Z	1

Code of the group: 3S-BP-TET-20/21

Name of the group: 3rd Sem. Bachelor Full-Time TET from 2020/21

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
11FYZ	Physics Old ich Hykš, Jana Kuklová, Pavel Demo, Zuzana Malá, Tomáš Vít Jana Kuklová Pavel Demo (Gar.)	Z,ZK	5	2P+2C+18B	Z	Z
12MDE	Transport Models and Transport Excesses Josef Kocourek, Tomáš Pad lek	Z,ZK	3	2P+1C+8B	Z	Z
17TGA	Graph Theory and its Applications in Transport Alena Rybi ková, Denisa Mocková, Dušan Teichmann	Z,ZK	4	2P+2C+12B	Z	Z
18PZP	Elasticity and Strength Jitka ezni ková, Daniel Kytý, Jan Vy ichl, Tomáš Doktor, Jan Šleichrt, Josef Jíra, Ond ej Jiroušek <b>Ond ej Jiroušek</b> Ond ej Jiroušek (Gar.)	Z,ZK	3	2P+1C+10B	Z	Z
20UITS	Introduction to Intelligent Transport Systems Ji í R ži ka, Patrik Horaž ovský, Kristýna Navrátilová, Viktor Beneš, Eva Haj iarová, Martin Langr, Vladimír Faltus, Pavel Hrubeš <b>Martin Langr</b>	Z,ZK	7	3P+2C+20B	Z	Z
12PPOK	Designing Roads, Highways and Motorways Josef Kocourek, Tomáš Pad lek, Polina Zayats, Petr Kumpošt Josef Kocourek (Gar.)	KZ	3	1P+2C+10B	Z	Z
14DATS	Database Systems Jana Kaliková, Jan Kr ál <b>Jana Kaliková</b> Jana Kaliková (Gar.)	KZ	2	1P+1C+10B	Z	Z
15JZ1A	Foreign Language - English 1 Eva Rezlerová, Markéta Vojanová, Dana Boušová, Marie Michlová, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková,	Z	3	0P+4C+10B	Z	Z

## Characteristics of the courses of this group of Study Plan: Code=3S-BP-TET-20/21 Name=3rd Sem. Bachelor Full-Time TET from 2020/21 11FYZ | Physics | Z,ZK | 5

Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current.

12MDE Transport Models and Transport Excesses Z,ZK 3

Parameters of the traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shock waves. Quality of transport and its assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. Improving of transport

transport and its assessment. Statistical characteristics of transport excesses, their analysis, the causes, identify and minimize the consequences. Improving of transport safety and fluency.

17TGA Graph Theory and its Applications in Transport Z,ZK 4

Basic terms of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in other scientific disciplines.

18PZP Elasticity and Strength Z,ZK

Tension and compression. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and welded joints of structures. Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability.

20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
Terminology and leg	islative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of i	information and tel	ecommunication
systems for ITS. Prir	nciples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real exam	ples of possible ap	oplications of the
principles of ITS.			
12PPOK	Designing Roads, Highways and Motorways	KZ	3
Definition tunes and		.'	
Delinition, types, ow	nership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and stand	lard speed. Route	in rural areas.
	nersnip, maintenance, management and categorization of roads and nignways. Curve and transition curve. Sinuosity and stand topping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. S	•	
		•	
Range of vision for s		•	
Range of vision for sintersections.  14DATS	stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. S	Safety device. Cros	ssings, junctions,
Range of vision for sintersections.  14DATS  Basic concepts of data	topping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. S  Database Systems	Safety device. Cros	ssings, junctions,
Range of vision for sintersections.  14DATS  Basic concepts of data	topping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. S  Database Systems  atabase systems, conceptual model, relational data model, the principles of normal forms, relational database design, security a	Safety device. Cros	ssings, junctions,

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

The role of the block: ZP

Code of the group: X1-BP-LOG-21/22

Name of the group: Research Groups Bachelor Full-Time TET-LOG from 2021/22

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

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 Michal Matowicki Michal Matowicki	Z	2	0P+1C	L	ZP
12X31	Project 1 Dagmar Ko árková, Martin Höfler	Z	2	0P+1C	L	ZP
14X31	Project 1	Z	2	0P+1C	L	ZP
15X31	Project 1	Z	2	0P+1C	L	ZP
16X31	Project 1	Z	2	0P+1C	L	ZP
17X31	Project 1 Vít Janoš, Michal Drábek, Zden k Michl, Rudolf Vávra, Stanislav Metelka, 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	Z	2	0P+1C	L	ZP
11X32	Project 2	Z	2	0P+2C	Z	ZP
12X32	Project 2	Z	2	0P+2C	Z	ZP
14X32	Project 2 Jana Kaliková, Jan Kr ál	Z	2	0P+2C	Z	ZP
15X32	Project 2	Z	2	0P+2C	Z	ZP
16X32	Project 2 Petr Bouchner, Tereza Kunclová	Z	2	0P+2C	Z	ZP
17X32	<b>Project 2</b> Vít Janoš, Michal Drábek, Zden k Michl, Rudolf Vávra, Stanislav Metelka, 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 Vladimír Faltus	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, Kate ina Grötschelová,	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, Martin Höfler	Z	2	0P+1C	L	ZP
14X33	Project 3 Jana Kaliková, Jan Kr ál	Z	2	0P+1C	L	ZP
15X33	Project 3	Z	2	0P+1C	L	ZP
16X33	Project 3 Petr Bouchner, Dmitrij Rožd stvenský	Z	2	0P+1C	L	ZP
17X33	Project 3 Vít Janoš, Michal Drábek, Zden k Michl, Rudolf Vávra, Stanislav Metelka, Alena Rybi ková, Denisa Mocková, Dušan Teichmann, Roman Št rba, Václav Baroch (Gar.)	Z	2	0P+1C	L	ZP
18X33	Project 3 Tomáš Fíla	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, Natalia Guskova, Stanislav Pleninger, Lukáš Popek, Viktor Valenta, Iveta Kameníková,	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=X1-BP-LOG-21/22 Name=Research Groups Bachelor Full-Time TET-LOG from 2021/22

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: 4S-BP-LOG-21/22

Name of the group: 4th Sem. Bachelor Full-Time TET-LOG from 2021/22 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 7 courses

Credits in the group: 26

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11MSP	Modeling of Systems and Processes Bohumil Ková, Lucie Kárná, Jana Kuklová Jana Kuklová Bohumil Ková (Gar.)	Z,ZK	4	2P+2C+12B	L	Р
17ESYS	Transport Systems Economy Roman Št rba, Rudolf Franz Heidu Rudolf Franz Heidu (Gar.)	Z,ZK	6	3P+2C+18B	L	Р
17LGT	Logistics Tomáš Horák, Eliška Glaserová Tomáš Horák (Gar.)	Z,ZK	6	3P+2C+18B	L	Р
17MDP	Transport Prognostic Methods	KZ	2	2P+0C+10B	L	Р
11LP	Linear Programming Šárka Vorá ová, Pavla Pecherková, Ivan Nagy <b>Pavla Pecherková</b> 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
15JZ2A	Foreign Language - English 2  Eva Rezlerová, Markéta Vojanová, Marie Michlová, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, Jitka He manová,	Z,ZK	3	0P+4C+10B		Р

### Characteristics of the courses of this group of Study Plan: Code=4S-BP-LOG-21/22 Name=4th Sem. Bachelor Full-Time TET-LOG from

11MSP	Modeling of Systems and Processes	Z,ZK	4
System and subsy	ystem, external and internal system description, continuous and discrete system, mathematics as a tool,	1 '	ntial equations.
Linear and nonline	near system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z tra	nsformations. Transfer function. Stability of LTI sys	stems.
	continuous systems. System interconnection.	, ,	
17ESYS	Transport Systems Economy	Z,ZK	6
Macroeconomics,	, macroeconomic indicators, transport system, transport externalities, energy in transport, shared econ	omy, state transport system and its quantification,	rationalization
of transport system	em.		
17LGT	Logistics	Z,ZK	6
Logistics definition	on, basic concepts, store, warehouse, transport and handling equipment, logistics technology, logistics	centers, information and intelligent logistics syste	ems, logistics
city.			
17MDP	Transport Prognostic Methods	KZ	2
The techniques of	of economical analysis in the domain of analysis of dependencies, analysis and construction of time se	eries and comparsion of statistical values using di	fferencies and
indices.			
11LP	Linear Programming	KZ	3
Formulation of the	e problem of linear programming, transcription of some practical problems to the linear programming	problems. Simplex and convex polyedra. Simplex	method, basic
solutions, duality p	principle in linear programming, stability of solution of linear programming problem. Traffic problem.		
16DPO	Vehicle Technology	KZ	2
Vehicle. Functions	s, principles. Drive, vehicle construction. Road transport, safety, heavy duty vehicle desing, dynamics.	Rail transport, safety, carriage design. Drive. Elec	ctric traction.
Transshipment. Te	echnological components of various modes of transport. Management and control of various means o	f transport. Safety.	
15JZ2A	Foreign Language - English 2	Z,ZK	3
Grammatical struc	ctures and style. Selection of conversation topics relating to transportation sciences. Extending vocabula	ary, developing perceptive and communicative skil	ls. Elementary

Code of the group: 5S-BP-LOG-22/23

Name of the group: 5th Sem. Bachelor Full-Time TET-LOG from 2022/23 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 6 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
12ZPV	Railway Operation Jan Kruntorád, Martin Jacura	Z,ZK	4	2P+1C+12B	Z	Р
17EPOD	Economics of Transport Company Václav Baroch, Alexandra Dvo á ková Alexandra Dvo á ková (Gar.)	Z,ZK	6	4P+2C+18B	Z	Р
17TVD	Technology of Public Transport Vít Janoš, Zden k Michl, Stanislav Metelka, Ji í Pospíšil 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
17MAGD	Marketing in Transport Petra Skolilová Petra Skolilová (Gar.)	KZ	4	2P+1C+12B	Z	Р

23ZAP Basics of Law	Z	2	2P+0C+10B	Z	Р
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## Characteristics of the courses of this group of Study Plan: Code=5S-BP-LOG-22/23 Name=5th Sem. Bachelor Full-Time TET-LOG from 2022/23

12ZPV Railway Operation Z,ZK 4
Legislation in railway transport. Railway vehicles. Railway signals and signal devices. Railway traffic organisation and operation. Simplified railway traffic operation. Railway vehicles brakes. Railway vehicles marking. Operation intervals. Theoretical graph of train running.

17EPOD Economics of Transport Company

Z.ZK

6

Economy, marginal utility, marginal costs, function of supply and demand, market equilibrium, perfect competition and types of market arrangement. Transportation market, transport company, it's environment, balance sheet, costs, revenue, profit and maximalization of profit. Business plan, taxation in transport.

17TVD Technology of Public Transport

7.7K

5

The course contents a detailed description of new knowledge and basic principles of hierarchical planning of public transport system accenting the general transport planning and quantified transport demand. The course would be oriented on multiple and multi-level optimisation of passenger public transport system.

14DMG Datamining

KZ

2

Types of data sources and knowledge, data warehouses and OLAP technology for data mining, data preprocessing in the process of knowledge acquisition systems for data mining, mining characteristics of concepts (classes), mining association rules from relational db. and data warehousing, classification (decisions tree, Bayesian cob., using neural networks). Prediction. Cluster analysis. Mining in complex structured data, multimedia dbf., www.

17MAGD Marketing in Transport

ΚZ

4

Development of strategic marketing plans. Implementation of marketing campaigns. Branding and brand promotion. Public relations industry, business and vertical market. Website development, search engine optimization. Government relations and industry organization lobbying. Advertising and strategic sponsorships. Multimedia presentations and corporate videos. Direct marketing and related lead generation campaigns.

23ZAP Basics of Law

Basic orientation in the Czech legal system. The course is primarily intended to provide students with orientation in fundamentals of the Czech Republic, legal system and in various forms of law, including adoption of the basic principles of European Community law. The course consists of selected chapters from the public and private law and European Community

Code of the group: 6S-BP-LOG-22/23

Name of the group: 6th Sem. Bachelor Full-Time TET-LOG from 2022/23 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 8 courses

Credits in the group: 23

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
17FID	Financing and Investment in Transport  Alexandra Dvo á ková, Olga Mertlová Olga Mertlová (Gar.)	Z,ZK	4	2P+1C+12E	B L	Р
17IVED	Integration of Public Transport Roman Št rba Roman Št rba (Gar.)	Z,ZK	3	2P+1C+10E	L	Р
17KLID	Quality in Transport Service Pavel Edvard Van ura Pavel Edvard Van ura (Gar.)	Z,ZK	3	2P+1C+10E	L L	Р
17MRR	Managerial Decision-making and Management Daniel Pilát, Petra Skolilová Petra Skolilová (Gar.)	Z,ZK	4	2P+2C	L	Р
14MPG	Modern Programming Approaches Michal Je ábek, Vít Fábera Michal Je ábek Vít Fábera (Gar.)	KZ	2	0P+2C+8E	L L	Р
17GEDS	Geography of Transport Systems Miroslav Marada Miroslav Marada (Gar.)	KZ	2	2P+0C+8E	B L	Р
12ZAR	Introduction to Architectural Design Karel Hájek	Z	3	2P+0C+8E	L L	Р
17NAPR	Freight Traffic Roman Št rba Roman Št rba (Gar.)	Z	2	2P+0C+8E	B L	Р

## Characteristics of the courses of this group of Study Plan: Code=6S-BP-LOG-22/23 Name=6th Sem. Bachelor Full-Time TET-LOG from 2022/23

17FID Financing and Investment in Transport Z,ZK 4
Sources of financing of transport infrastructure, the role of public administration in the financing and realization of investment in transport, the investment project cycle, subsidy programs and their rules, competition, effectiveness and efficiency of spending public funds, evaluation systems of public projects and programs.

17IVED Integration of Public Transport Z,ZK 3

Transport policy of both EU and CR, transport sectoral strategies, land use planning and evolution of space organization, integration of public service in territory, forms and content of activities and organizational structures of integrated public transport systems, internal and external bindings, contracting, carriage relations, conditions of both rail and bus transport operations, grading and quality, IS, marketing.

17KLID Quality in Transport Service

Z,ZK

3

General interpretation of quality, standards and international standardization, integrated management systems, modern attitudes of quality management, quality in transport service and logistics, methods of quality measurement, quality management, risks and opportunities, public transport quality, view of costumers, carriers and PT-organizers, quality standards, quality costs, marketing and costumer satisfaction.

17MRR Managerial Decision-making and Management

Z,ZK

4

Decision-making process; identifying exactly what the problem is; evaluating the issue; solving the issue; using multiple perspective analysis to make a decision; usual method of thinking.

14MPG	Modern Programming Approaches	KZ	2
Students will be ren	inded of some aspects of Pythom programming, learn basic concepts and constructs from object-oriented programming and the	eir implementation	in Python. They
will also try out the	asics of working with data libraries in Python, namely NumPy, Pandas, Matplotlib, and practice with examples of smaller and lai	rger data sizes.	
17GEDS	Geography of Transport Systems	KZ	2
Regional differentia	on of the transport system. Sociogeographic regionalization and its relation to transport. Transport and local and regional develo	opment. Spatial int	eraction -
theoretical and meth	odological framework. Mobility research - travel behavior, mode choice and the influence onto "modal-split." Modal competition. Pra	ctical use of transp	ort-geographical
analysis in transpor	ation planning.		
12ZAR	Introduction to Architectural Design	Z	3
	Introduction to Architectural Design ecture of traffic systems. Bus and trolley-bus transport. Tramway and town tracks. Design of vehicles. Subway. Railway transport	Z Railway stations.	3 Local
	ecture of traffic systems. Bus and trolley-bus transport. Tramway and town tracks. Design of vehicles. Subway. Railway transport	Z . Railway stations.	3 Local
Urbanism and archi	ecture of traffic systems. Bus and trolley-bus transport. Tramway and town tracks. Design of vehicles. Subway. Railway transport	Z Railway stations.	3 Local

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-BP-LOG-22/23

Name of the group: Comp. Sel. Courses Bachelor Full-Time TET-LOG from 2022/23

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
21Y1AM	Aeronautical Information Management (AIM)	KZ	2	2P+0C	Z	PV
00Y1XB	Active participation in a scientific project, workshop, short-term trip abroad  Patrik Horaž ovský Patrik Horaž ovský (Gar.)	KZ	2	2P+0C		PV
20Y1AF	Alternative Forms of Transportation Project Financing Mária Jánešová Mária Jánešová	KZ	2	2P+0C	Z	PV
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2	2P+0C	Z	PV
14Y1AV	Animation and Visualization	KZ	2	2P+0C	L	PV
12Y1AE	Applied Ecology Martin Jacura, Kristýna Neubergová	KZ	2	2P+0C	Z	PV
20Y1AE	Applied Electronics	KZ	2	2P+0C	Z	PV
14Y1BE	Barrierless Transport Jan Kr ál	KZ	2	2P+0C	L	PV
15Y1BO	Work Safety and Health Protection in Transportation Petr Musil	KZ	2	2P+0C	L	PV
11Y1BK	Error Detection Codes for Interlocking Systems Lucie Kárná Lucie Kárná Lucie Kárná (Gar.)	KZ	2	2P+0C	Z	PV
21Y1BS	Unmanned aircraft systems 1 Tomáš Tlu ho , Jakub Kraus, Michal erný	KZ	2	2P+0C	L	PV
14Y1BM	Biometric Methods	KZ	2	2P+0C	Z	PV
15Y1DZ	History of Railway Eva Rezlerová, Martin Jacura	KZ	2	2P+0C	L	PV
12Y1DS	Project Documentation in Practice	KZ	2	2P+0C	Z	PV
17Y1EV	Public Sector Economy	KZ	2	2P+0C	Z	PV
23Y1EH	Electronics and hardware in security of transportation	KZ	2	2P+0C	L	PV
20Y1EK	Qualification in Electrical Engineering	KZ	2	2P+0C	L	PV
16Y1EN	Energy Requirements of Vehicles	KZ	2	2P+0C	L	PV
20Y1EA	Environmental Aspects of Transport	KZ	2	2P+0C	Z	PV
15Y1EH	European Integration within Historical Context  Jan Feit	KZ	2	2P+0C	Z	PV
18Y1EM	Experimental Methods in Mechanics Daniel Kytý Daniel Kytý Daniel Kytý (Gar.)	KZ	2	2P+0C	Z	PV
15Y1FD	French Area Studies and Transportation	KZ	2	2P+0C	L	PV
14Y1HW	Computer Hardware	KZ	2	2P+0C	L	PV
15Y1HL	History of Civil Aviation Vladimír Plos	KZ	2	2P+0C	L	PV
15Y1HD	History of City Mass Transport Milan Dont	KZ	2	2P+0C	Z	PV

12Y1HD	Traffic Noise Dagmar Ko árková, Libor Ládyš	KZ	2	2P+0C	L	PV
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2	2P+0C	Z	PV
16Y1IS	Interactive simulators and simulations	KZ	2	2P+0C	L	PV
12Y1KN	Combined Transportation Petr Nejedlý	KZ	2	2P+0C	Z	PV
12Y1KP	Communication and Promotion of Transport Projects Dagmar Ko árková, Ond ej Kubala	KZ	2	2P+0C	L	PV
20Y1KP	Communication and presentation skills  Ji í R ži ka, Patrik Horaž ovský, Kristýna Navrátilová, Eva Haj iarová <b>Ji í</b> R ži ka	KZ	2	2P+0C	Z	PV
23Y1KM	Crisis Management	KZ	2	2P+0C	Z	PV
23Y1KO	Quantum Physics and Optoelectronics	KZ	2	2P+0C	L	PV
23Y1KY	Cybernality	KZ	2	2P+0C	L	PV
23Y1KB	Cyber security in transportation	KZ	2	2P+0C	L	PV
21Y1LJ	Aeronautical Radio and Flight Instruments	KZ	2	2P+0C	L	PV
21Y1LS	Air Traffic Services	KZ	2	2P+0C	L	PV
17Y1LL	Logistics of Passenger and Freight Air Transport Petra Skolilová Petra Skolilová (Gar.)	KZ	2	2P+0C	L	PV
20Y1LN	Location and Navigation Petr Bureš	KZ	2	2P+0C	L	PV
23Y1MK	Crisis Situation Management in Critical Infrastructure	KZ	2	2P+0C	L	PV
23Y1MU	Emergency Events Management Solution in Transport Infrastructure	KZ	2	2P+0C	Z	PV
17Y1MD	Marketing in Transportation	KZ	2	2P+0C	Z	PV
18Y1MT	Engineering Materials Jaroslav Valach Jaroslav Valach (Gar.)	KZ	2	2P+0C	L	PV
21Y1MP	Matlab for project-oriented study  Lenka Hanáková, Vladimír Socha Vladimír Socha	KZ	2	2P+0C	Z	PV
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2	2P+0C	Z	PV
15Y1MK	Modern History in Context: Every Day Life and Transport Marie Michlová	KZ	2	2P+0C	L	PV
15Y1NE	German in the Economy and Society  Eva Rezlerová	KZ	2	2P+0C	Z	PV
21Y1OH	Airline Business and Operations Peter Olexa, Eva Endrizalová Peter Olexa	KZ	2	2P+0C	Z	PV
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2	2P+0C	L	PV
20Y1OI	Fare Collection and Information Systems Patrik Horaž ovský, Milan Sliacky Milan Sliacky (Gar.)	KZ	2	2P+0C	L	PV
14Y1OJ	Object - oriented programming in JAVA	KZ	2	2P+0C	L	PV
14Y1OP	Operating System	KZ	2	2P+0C	Z	PV
17Y1OF	Personal Finance	KZ	2	2P+0C	Z	PV
20Y1OK	Road Lighting František Kekula	KZ	2	2P+0C	L	PV
11Y1PV	Parametrical and Multicriterial Programming Olga Vraštilová Olga Vraštilová (Gar.)	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 Petr Zlámal Petr Zlámal (Gar.)	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
21Y1PC	ATC Procedures and Activities Terézia Pilmannová Terézia Pilmannová	KZ	2	2P+0C	Z	PV
12Y1PD	Assessment of Transport Structures	KZ	2	2P+0C	Z	PV
20Y1PK	Product Quality Management Processes  Martin Leso 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	2D Modeling in AutoCAD	KZ	2	2P+0C	Z	PV
16Y1PV	3D Modeling in AutoCAD  Operation, Construction and Maintenance of Vehicles	KZ	2	2P+0C	L	PV
21Y1PL	Operational Aspects of Aerodromes	KZ	2	2P+0C	L	PV
21Y1PA	Air Traffic Control Operating Procedures  Terézia Pilmannová	KZ	2	2P+0C	Z	PV
12Y1PU	Organization Disposition of Railway Stations	KZ	2	2P+0C	L	PV
12Y1RU	Railway Lines Reconstruction	KZ	2	2P+0C	Z	PV
16Y1RE	Control and Electronic Vehicle Systems	KZ	2	2P+0C	Z	PV
_	Josef Mík, P emysl Toman			2P+0C	_	
21Y1RZ	Human Resources Management	KZ	2		L	PV
17Y1ST	Titan Simulation ATC Simulator	KZ	2	2P+0C	L	PV
21Y1SI	Terézia Pilmannová	KZ	2	2P+0C	L	PV
20Y1SC	Sensors and Actuators	KZ	2	2P+0C	L	PV
17Y1SL	Sociology of Human Resources	KZ	2	2P+0C	Z	PV
11Y1SI	Transportation Software Engineering	KZ	2	2P+0C	Z	PV
16Y1KS	Quality and Reliability of Vehicles Jan Leistner, Filip Kotas, Jaroslav Machan, David Lehet	KZ	2	2P+0C	Z	PV
12Y1SU	Road Management and Maintenance Dagmar Ko árková, Otakar Vacín	KZ	2	2P+0C	L	PV
16Y1SO	Strategy and innovation in mobility	KZ	2	2P+0C	Z	PV
17Y1SK	Urban and Regional Rail Transport Systems Ji í Pospíšil Ji í Pospíšil (Gar.)	KZ	2	2P+0C	L	PV
21Y1TH	Aircraft Technical Handling Peter Olexa	KZ	2	2P+0C	Z	PV
11Y1TG	Graph Theory Lucie Kárná Lucie Kárná Lucie Kárná (Gar.)	KZ	2	2P+0C	L	PV
23Y1TP	Criminal Law in IT and Transportation	KZ	2	2P+0C	Z	PV
14Y1TI	Creating Interactive Internet Applications	KZ	2	2P+0C	L	PV
21Y1UL	Aircraft Maintenance Tomáš T ma	KZ	2	2P+0C	L	PV
14Y1UP	Editing of Theses in MS Word	KZ	2	2P+0C	L	PV
18Y1UK	Introduction of Rail Vehicles  Jitka ezní ková, Josef Kolá, Josef Kolá Josef Kolá (Gar.)	KZ	2	2P+0C	L	PV
12Y1VR	Public Transport in Cities and Regions Vladimír Pušman	KZ	2	2P+0C	Z	PV
23Y1VS	Negotiation and Cooperation	KZ	2	2P+0C	Z	PV
14Y1VM	Development of Applications for Mobile Devices	KZ	2	2P+0C	Z	PV
16Y1VT	Development in Railroad Vehicles	KZ	2	2P+0C	L	PV
14Y1WG	Webdesign	KZ	2	2P+0C	Z	PV
14Y1W1	Webdesign 1	KZ	2	2P+0C	Z	PV
14Y1W2	Webdesign 2	KZ	2	2P+0C	L	PV
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2	2P+0C	L	PV
14Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2	2P+0C	L	PV
11Y1ZM	Foundation of MATLAB Programming Šárka Vorá ová <b>Šárka Vorá ová</b> Šárka Vorá ová (Gar.)	KZ	2	2P+0C	L	PV
14Y1ZJ	Fundamentals of programming in JAVA	KZ	2	2P+0C	Z	PV
12Y1ZU	Principles of Urbanism Karel Hájek	KZ	2	2P+0C	Z	PV
15Y1ZV	East-West dichotomy: Prelude to the Cold War Marie Michlová	KZ	2	2P+0C	Z	PV
16Y1ZL	Vehicle Testing, Legislation and Construction Zuzana Radová, Josef Mík	KZ	2	2P+0C	Z	PV

# Characteristics of the courses of this group of Study Plan: Code=Y1-BP-LOG-22/23 Name=Comp. Sel. Courses Bachelor Full-Time TET-LOG from 2022/23

TET-LOG HOM 202					
21Y1AM	Aeronautical Information Management (AIM)	KZ	2		
Definition and basic over	Definition and basic overview of AIS and AIM. Transition from AIS to AIM. Regulatory base. Provision of AIS/AIM in the Czech Rep. AIP (Aeronautical Inf. Publication). VFR Manual of				
the Czech Rep. AIRAC	System. NOTAM messages.PIB (Pre-flight Informtion Bulletin). AIC (Aeoronautical Inf. Circulars). Aeronautical Charts. EAD (	Europena AIS Da	tabase). QMS		
(Quality Mng. System).	ADQ (Aeronautical Data Quality). AIXM (Aeronautical Inf. Exchnage Format).				
00Y1XB	Active participation in a scientific project, workshop, short-term trip abroad	KZ	2		
20Y1AF	Alternative Forms of Transportation Project Financing	KZ	2		
In will be specifed such forms of financing in transportation and telecomunications, where the public sector body perform the final debtor, i. e. debt payments come from its budget but					
the final debtor is not a direct participant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of securities as an alternative source					
of transportation and te	of transportation and telecomunication projects.				

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 circul and biomechanics of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and inju		-
joint prostheses. Protective means and traffic safety regulations.	irea man ana ms ne	aunent. Human
14Y1AV Animation and Visualization	KZ	2
Advanced modifications and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems an		-
and other effects, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animat	ion using Inverse Ki	
12Y1AE   Applied Ecology	KZ	2
General ecology - ecological concepts and principles, ecosystem, ecological factors, energy flow through the ecosystem. Application of knowledge		=
ecology. Landscape ecology - origin and historical development. Landscape definition and classification. Success. Traffic constructions in the country protection. Applied ecology.	iryside. Landscape	and nature
20Y1AE Applied Electronics	KZ	2
Basic electronic semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes,	1 1	
amplifiers, basic logic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transport of their designs).	sistor as an amplific	er, operational
amplifier as an inverting and noninverting amplifier).		
14Y1BE   Barrierless Transport	KZ	2
The issue of barrierless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stuc of barrierless environment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation sys	_	_
Theoretical knowledge will be supplemented by practical examples.	sterris ariu trarisporta	ation technology.
15Y1BO Work Safety and Health Protection in Transportation	KZ	2
Fundamental legislative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation	1	
health insurance of home and foreign business trips, statistics, working practice.		
11Y1BK Error Detection Codes for Interlocking Systems	KZ	2
Safe communication and methods for its assuring. Safety codes linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission channels are considered to the codes of	els, detection of tran	smission errors,
probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN 50159.	147	
21Y1BS Unmanned aircraft systems 1	KZ	2
Unmanned Aviation Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division procedures. Practical flights.	i. Operational risks a	and operational
14Y1BM Biometric Methods	KZ	2
Basic biometric terms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies	1 1	
retina recognition method, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behav	ioral methods, the u	se of biometrics
in transport applications, safety and risks of biometric technologies.		
15Y1DZ History of Railway	KZ	2
Horse-drawn railways, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First F	•	
War II railways, railway development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train cor	nnections, railway iir	ies construction,
railway accidents, railway junctions, Excursions and projections		
railway accidents, railway junctions. Excursions and projections.  12Y1DS Project Documentation in Practice	K7	2
railway accidents, railway junctions. Excursions and projections.  12Y1DS   Project Documentation in Practice Project documentation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining proc	KZ ess. Budget and pri	2 cing. Practical
12Y1DS Project Documentation in Practice	1	
12Y1DS   Project Documentation in Practice Project documentation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining proc	1	
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15Y1HL History of Civil Aviation	KZ	2
Beginnings of flying, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Develop	-	-
World airports. Famous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Class	c era of aviation. Gold	en era of civil
aviation. Modern era of civil aviation. Airline companies. Supersonic flying.	1/7	
15Y1HD	KZ	2
clearance systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Republic	•	ients of tariii and
12Y1HD Traffic Noise	KZ	2
Acoustic introduction, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, r	1	_
area, principles of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the	area of interest. Meth	odology of
computing and measurement of transport noise. Acoustic studies, measuring protocol.		
15Y1HE Work Hygiene and Ergonomics in Traffic	KZ	2
Basic knowledge of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of		
Creation and protection of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technological examples from the field of transportation; relevant legislature.	logy to possibilities and	a skills of a man.
16Y1IS Interactive simulators and simulations	KZ	2
Simulation theory and application of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical simulations.	ı	
Simulation of vehicle dynamics, on-land carriage in particular. Virtual reality systems. Practical exercise with simulation software and interactive	· ·	
12Y1KN Combined Transportation	KZ	2
Combined transport strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshippin	g areas. Multimodal log	istic centres.
12Y1KP Communication and Promotion of Transport Projects	KZ	2
Fundamentals of Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication		
networks and beyond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preprint upon of political marketing and political PR on transport projects. Johking	aration for crisis comm	unication. The
influence of political marketing and political PR on transport projects. Lobbing.  20Y1KP Communication and presentation skills	KZ	2
Motivation, priorities and their fulfillment, current communication networks, work with various sources, formal requirements of emails and final	l l	
teamwork, emotional intelligence, manipulation and way of working with it, coping with stressful situations, formal requirements of presentation		
presentation, presentation skills, presentation skills in online environment.		Ü
23Y1KM Crisis Management	KZ	2
Theory and legal frame of crisis management with direction to Rescue system (IZS). After introduction to safety domain, there are terms and kn		position of crisis
management and its targets; IZS-crisis management-crisis planning; and basic legislation. Practical part is concentrated to responsibility matri	i	
23Y1KO Quantum Physics and Optoelectronics	KZ	2
Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics components.	1/7	
23Y1KY Cybernality  Juridical aspects of behavior on the computer network and computer systems. Cybernetic crime technology. Theory basis and models. Cyberteri	orism Infoware and so	nnocted aspects
23Y1KB Cyber security in transportation	KZ	2
Basic concepts of security and cyber security, legal status in the field of cyber security, virtual cyberspace and communities, taxonomy of crim		
engineering, cyber attack technology, information security, cyber attacks on telematics systems, security of systems with artificial intelligence,		,,
21Y1LJ Aeronautical Radio and Flight Instruments	KZ	2
Basic definitions, history of aircraft instrumentation, aerometric instrumentation, Earth magnetism, aircraft electric equipment, gyroscopic instru	mentation, airframe ins	trumentation and
other aircraft equipment, engine instrumentation, warning and recording systems, instrumentation operational requirements, radiocommunicate	on and radionavigation	٦.
21Y1LS Air Traffic Services	KZ	2
Airspace structure in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of T	WR, APP a ACC contr	ol. History of ATS
at USA and Czechoslovakia. ATS - Model of financing. Training System of Air Traffic Controllers. Future development of ATS.  17Y1LL Logistics of Passenger and Freight Air Transport	KZ	2
17Y1LL   Logistics of Passenger and Freight Air Transport   Logistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. A	l l	1
air cargo. Information systems in air transport. Global distribution systems.	eriai transport process	passerigers and
20Y1LN Location and Navigation	KZ	2
Description and examples of road networks, localization on the network. Routing algorithms, their properties and implementation. Description	1	ets for finding
transport connections, routing algorithms, their properties and implementation.		
23Y1MK Crisis Situation Management in Critical Infrastructure	KZ	2
Determination of critical infrastructute elements on all levels, their protection systems, responsibilities of particular agencies of the state admin	•	overnment, and
their responsibilities to anounce particular safety provisions. Physical and cyber protection of critical infrastructure with special attention to the		
23Y1MU Emergency Events Management Solution in Transport Infrastructure	KZ	2
Basic solutions of emergency events with emphasis of the transport infrastructure events and their solution management. Knowledge in the eme in liquidation work within the transport infrastructure.	rgency planning and sp	beciai procedures
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 as a service, specifics of public passenger transport as a service, specific of public passenger transport as a service of public pa	1	1
the application of marketing.	•	0
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, poly	mers and composites,	attention is paid
to biological materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's se		
21Y1MP Matlab for project-oriented study	KZ	2
The subject's syllabus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual		
particular examples, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an imp  14Y1MP Modeling Complex Assemblies and Models in Parametric Modeller	KZ	viatiab skills.
Assemblies programming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies	1	1
Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.	, , , , , , , , , , , , , , , , , , , ,	
15Y1MK Modern History in Context: Every Day Life and Transport	KZ	2

15Y1NE	German in the Economy and Society	KZ	2
selected topics.	social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic	analysis of texts.	Discussion on
21Y1OH	Airline Business and Operations	KZ	2
	comprehensive view of the commercial, operational and transportation activities of air transport companies. It focuses on the organic		
· ·	strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of tra		
•	nomic aspects of air transport.	, ,	
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2
	systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, s	1	
infrastructures.		saloty of official ob	jooto ana omicai
20Y1OI	Fare Collection and Information Systems	KZ	2
	in public transport and their components (on-board units, validators, turnstiles,). Information systems and their componen		
=	rs (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parking	•	abies, maps,
<u> </u>		1	
14Y1OJ	Object - oriented programming in JAVA	KZ	2
-	apsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters)	=	
	Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda e	<del>,                                      </del>	
14Y1OP	Operating System	KZ	2
	n GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Program	· · · · · · · · · · · · · · · · · · ·	
	e programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, graphs and a server and a server and files of OS. Parasta administration	pnic editors, sound	d, video and
	es management. Safe and secure configuration of OS. Remote administration.		
17Y1OF	Personal Finance	KZ	2
	et, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of h		
	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability a	and adequacy), se	curing the future
(retirement savings and	· · · · · · · · · · · · · · · · · · ·		
20Y1OK	Road Lighting	KZ	2
Basic lighting quantities	and terms, street lighting components (luminaires, control cabinets for street lighting, street lighting cables), characteristics of l	uminaires (lifetime	of light sources,
light distribution), stand	ards, measurement of illuminance and luminance in road lighting, tunnels, conceptual approach to street lighting design, ligh	ting calculations in	n DIALux and
Relux, street lighting co	ontrol systems.		
11Y1PV	Parametrical and Multicriterial Programming	KZ	2
Solution to the problem	of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints	. Computation of	efficient solution.
17Y1PM	Personnel Management	KZ	2
	group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, intercul	1	
12Y1PC	Pedestrian and Cycling Transport	KZ	2
	Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle ro	1	<del>-</del>
•	of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing		
	s and road marking for cyclists.	ngo war oaror aar	oport modoo,
14Y1PG	Computer Graphics	KZ	2
	ротпратег Graphiles c and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with ec		
	is, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.	alting programs (w	unin the user
		1/7	2
14Y1P2	Computer Aid of Transportation Projecting 2	KZ	_
	ation for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting,		
	relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic trans	silion curve, cross-	and longitudinal
section). Basics of 3D r		147	
18Y1PS	Computer Simulations in Mechanics	KZ	2
-	v of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model develop		
-	s. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions	and application o	the load. Basic
	modal analysis. Introduction to complex nonlinear problems.	1	
14Y1PI	Corporate Information System	KZ	2
	edge, components of information system, syntatic and semantic sense of data, structure of corporate information system, pa		-
	on, storage, etc.), corporate information politic and information control, risks of information system operation, legal environmer	nt of information sy	stem operation,
state information syster	n, information system security, data protection, safety politics.		
14Y1PZ	Advanced Data Processing in Spreadsheets	KZ	2
Students will be familia	rwith principles of working in a spreadsheet. Graphic layout of the table appearance, formatting of numbers, insertion of form	ulas and functions	s, including
addressing, error detec	tion. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formattir	ng, solution finding	, solver, macros,
data analysis. Example	s and questions from various companies and training.		
21Y1PC	ATC Procedures and Activities	KZ	2
Air traffic control proced	Jures, basics of communication and phraseology, aircraft identification, spacing and traffic coordination. In addition, the cours		iffic control at
the airports and low vis	ibility operational procedures. Students will during the course learn basic safety management applications applied across the	infrastructure.	
12Y1PD	Assessment of Transport Structures	KZ	2
	t structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilitie	1	
· ·	the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of	· ·	
the environment.			J
20Y1PK	Product Quality Management Processes	KZ	2
	ganization management. Management systems and international standards; quality management systems. Quality products,		
	s management, management principles. Principles of process management, monitoring and measurement systems managemen	-	
	ent. Process management principles. Metrology and testing. Product certification.		
14Y1PJ	C Programming Language	KZ	2
	ge. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation,		
	go. From the first of the control of the control of the control of the first of the first of the first of the control of the control of the first of	ourng, mes, suddu	aros aria uriiviis.
Implementations of abo	tract data types (FIFO_LIFO_list), programming techniques (sorting_searching_recursion), using hitwise operators		
	tract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.	<b>⊬</b> 7	2
12Y1C1	Designing Roads in Civil 3D I	KZ	2
12Y1C1 The course is devoted to	Designing Roads in Civil 3D I to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through	igh the complete o	esign of this
12Y1C1 The course is devoted to particular linear building	Designing Roads in Civil 3D I	igh the complete o	esign of this

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 particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculating.		_
improved and developed. Students learn to design intersections.	on. The previously acqu	illed skills are
14Y1PA 3D Modeling in AutoCAD	KZ	2
Work in 3D non-parametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation	, object data creation, v	vork with data
connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.		
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 me General principles of engine diagnostics.	easurement. Iransmissi	on mecnanism.
21Y1PL Operational Aspects of Aerodromes	KZ	2
Operational aspects of aerodromes. Location of aerodrome and orientation of runways. Requirements for apron. Capacity of airports runways a		
conditions. Firefighting units. Protection against unlawful interference. Local transport connection. Environmental protection.		
21Y1PA   Air Traffic Control Operating Procedures	KZ	2
Practical exercises on the ATC simulator with the following focus - getting familiar with the simulation environment, acquiring basic habits, aircrafteel changes, ATC clearance, use of RNAV points. Practical exercises focused on the basis of vectoring, timely application of vertical spacing,	•	_
Exercises in the APPROACH airspace, arrivals, departures and conflict solutions.	LOT and INEV messag	e transmission.
12Y1PU Organization Disposition of Railway Stations	KZ	2
Connecting station. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company are		ation yards.
Reserve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic rail		
12Y1RU   Railway Lines Reconstruction	KZ	2
Keeping railway line operational, maintaining lines and stations, geometrical alignment of railway line, vehicles for railway superstructure and stations and organising possesions, preparation of railway lines reconstruction and maintenance, process of ralway line reconstruction.	ubstructure maintenand	e, scheduling
16Y1RE Control and Electronic Vehicle Systems	KZ	2
Elementary concepts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages		· <del>-</del>
and hybrid drive control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic co		
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 menvironment of human resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation	-	
dismissal and redundancies of employees. Education of employees. Planning career management.	in and remuneration of s	stan. Fositioning,
17Y1ST Titan Simulation	KZ	2
Titan is a management game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same	1 1	
determine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the cons	equences of their decis	ions by the form
of financial corporate reports and they use this information for other business decisions.		
21V1CI ATC Cimulator		
21Y1SI ATC Simulator	KZ	2 Draetical
Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearant	ce, use of RNAV points	. Practical
	ce, use of RNAV points	. Practical
Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearan exercises focusing on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPER	ce, use of RNAV points	. Practical
Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearan exercises focusing on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPF departure management procedures, conflict resolution.  20Y1SC  Sensors and Actuators  Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors and actuators.	ce, use of RNAV points ROACH area, practicing	. Practical arrival and
Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearan exercises focusing on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPF departure management procedures, conflict resolution.  20Y1SC  Sensors and Actuators  Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Setate (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.	ce, use of RNAV points ROACH area, practicing KZ Sensors of mechanical, e	. Practical arrival and 2 electro-magnetic,
Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearant exercises focusing on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPF departure management procedures, conflict resolution.  20Y1SC Sensors and Actuators  Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. State (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.  17Y1SL Sociology of Human Resources	ce, use of RNAV points  ROACH area, practicing  KZ  Sensors of mechanical, e	. Practical arrival and 2 electro-magnetic,
Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearant exercises focusing on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPF departure management procedures, conflict resolution.  20Y1SC  Sensors and Actuators  Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. State (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.  17Y1SL  Sociology of Human Resources  Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management.	ce, use of RNAV points  ROACH area, practicing  KZ  Sensors of mechanical, e	. Practical arrival and 2 electro-magnetic,
Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearant exercises focusing on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPF departure management procedures, conflict resolution.  20Y1SC  Sensors and Actuators  Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. State (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.  17Y1SL  Sociology of Human Resources  Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management of the organization.	ce, use of RNAV points  ROACH area, practicing  KZ  Sensors of mechanical, e  KZ  nent, human resources	. Practical arrival and  2 electro-magnetic,  2 olanning, culture
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Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearan exercises focusing on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPf departure management procedures, conflict resolution.  20Y1SC   Sensors and Actuators   Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. State (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.  17Y1SL   Sociology of Human Resources   Human resources and their importance, work group as a special kind of social group, communication, personal management, modern manager of the organization.  11Y1SI   Transportation Software Engineering   Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and and practical usuage.  16Y1KS   Quality and Reliability of Vehicles   Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability and reliability, data collection.  12Y1SU   Road Management and Maintenance   Getting familiar with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented or medium and long-term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities a classroom as well as investment activity in highway engineering.  16Y1SO   Strategy and innovation in mobility   Introduction to innovation, definition. Innovation is makely. Innovation business model - main patterns and examples, design, strategy, processes and of use). Creating an innovation strategy. Customer and value map, design and testing.  17Y1SK   Urban and Regional Rail Transport Systems   F	KZ censors of mechanical, expensive sections of mechanical sections of mechanical, expensive sections of mechanical sections of mechanica	Practical arrival and  2 electro-magnetic,  2 colanning, culture  2 cormal techniques  2 MEA (Failure I applications.  2 covers, short, discussed in the  2 CPIs, budget; and possibilities  2 creating and the role of  2 coment for  2 cores, shortest

23Y1TP Criminal Law in IT and Transportation KZ Introduction of criminal law into legal order, conception of culpability and criminal delict, consequency of other legal standards. international treaty and criminal law, inversing, specific indicia of criminal court cases, practical examples.	2 estigation of
14Y1TI Creating Interactive Internet Applications KZ Possibilities of scripting language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions. Your own application in PHP language.	2 on programmed
21Y1UL Aircraft Maintenance KZ Aircraft operations and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and qualification of avia Basic documentation for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft maintenance. Regulat EASA for aircraft maintenance. Seminars will be focused on practical application.	
14Y1UP Editing of Theses in MS Word Students will be introduced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, create tables of conte figures, tables, graphs, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless editing dissertations of that they are able to concentrate mainly on writing a thesis.	·
18Y1UK Introduction of Rail Vehicles  Basic characteristics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion train and unit train track resistance. Total running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle - hydromechanic and electric drive. Design concept rail vehicles and drive of wheel set.	•
Public Transport in Cities and Regions  Professional and political pillars of public transport. Accessibility of public transport. Transport demand management and directional coordination of lines. Principles of Basic operating parameters and transport variations. Types of lines according to their routing and basic operating parameters. Time coordination of lines. Operational transport of tram operation in Prague. Tram safety.	raffic control.
23Y1VS   Negotiation and Cooperation   KZ   Code of conduct for negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Informal and formal round principles of negotiation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", specifications and bid trust.	ding, the role of
14Y1VM Development of Applications for Mobile Devices KZ Object oriented programming, Java programming language, development environment, operating system Android, development application - widgets, containers, threat permissions, services, GUI.	2 ads, menu,
16Y1VT Development in Railroad Vehicles KZ Railroad vehicles traction. Railroad vehicles traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal transportation. Critical assessment. New materials in design. International standardization.	2 al situation
14Y1WG Webdesign Students will learn the basics of HTTP communication, URL and addressing, HTML5 markup language, advanced CSS3 techniques, accessible and usable web rules, webdesign, content management systems, web server installation + configuration directives. The subject matter will be trained on examples.	2 , responsive
14Y1W1 Webdesign 1  Students will learn the basics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web accessibility and usability, and selectors, the issue of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practiced on practical exam	
14Y1W2 Webdesign 2 Students will learn advanced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web server installation directives. Topics will be practiced on practical examples.	2 + configuration
16Y1ZG Introduction into Applied Computer Graphics KZ Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour schemes, models, pand 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basics. Introduction to 2 graphics software.	
14Y1ZM Fundamentals of parametric and adaptive modeling KZ Basics of work at products and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from 2D sketches. Im from and to another systems. Fundamentals of assemblies creation.	
11Y1ZM   Foundation of MATLAB Programming   KZ   To explain the principle of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, matrices and element control flow, inputs and outputs, graphics, optimization and program code debugging.	2 ents operations,
14Y1ZJ Fundamentals of programming in JAVA KZ Introduction to the Java SE Platform. IDE Installation and First Project. Comments. Variables and Type System. Operators. User Input and Parsing. Chain and Chain Co Chain and Mathematical Methods. Terms. Relational Operators and Switches. Cycles for, while, foreach. Field - declaration, initialization, methods for field work. ASCII. parameters, return value, recursion. Program creation.	
12Y1ZU Principles of Urbanism KZ Survey on history of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial arrangement of Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.	2 settlements.
15Y1ZV East-West dichotomy: Prelude to the Cold War Historical prologue, evolution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and continuity of the internal in the end of 19th century and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, the causes and consequences and financial history. Social changes. Discussions on texts, sources.	
16Y1ZL Vehicle Testing, Legislation and Construction KZ Vehicle, bus and motorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal cars, trucks, bus legislation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical modelling in testing.	2 ses, motorbikes,

Name of the block: Elective courses Minimal number of credits of the block: 0

The role of the block: V

Code of the group: VP-BP-TET-20/21

Name of the group: Bachelor Full-Time TET voluntary

Requirement credits in the group: Requirement courses in the group:

Credits in the group: 0 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
14DPK	Digital Support for Designing of Roads and Highways  Libor Žídek, Drahomír Schmidt Drahomír Schmidt (Gar.)	Z	0	0P+2C	Z	V
14DZT	Digital Support for Railway Lines Martin Brumovský Martin Brumovský (Gar.)	Z	0	0P+2C	L	٧
11SCFZ	Seminar of Physics Old ich Hykš, Jana Kuklová, Zuzana Malá, Tomáš Vít Zuzana Malá Zuzana Malá (Gar.)	Z	0	0P+2C	Z	V
21SLD	Seminar of Air Transport  Jakub Kraus, Natalia Guskova, Vladimír Plos Vladimír Plos	Z	0	0P+2C	L	٧
18SPP	Seminary from Elasticity and Strength Jan Vy ichl, Tomáš Doktor Jan Vy ichl Jan Vy ichl (Gar.)	Z	0	0P+2C	Z	٧
18STD	Seminary from Technical Documentation	Z	0	0P+2C	Z	V
18SS	Seminary from Structural Analysis  Jan Vy ichi	Z	0	0P+2C	L	V
11SSF	Secondary School Physics Course Zuzana Malá Zuzana Malá Zuzana Malá (Gar.)	Z	0	0P+2C	L	V
TVKLV	Physical Education Course	Z	0	7dní	L	V
TVKZV	Physical Education Course	Z	0	7dní	Z	V

Characteristics of the courses of this group of Study Plan: Code=VP-BP-TET-20/21 Name=Bachelor Full-Time TET voluntary

14DPK	Digital Support for Designing of Roads and Highways	Z	0
Seminars possibilitie	es of technical processing problems focused on designing of roads and highways.	'	'
14DZT	Digital Support for Railway Lines	Z	0
Seminars possibilitie	es of technical processing problems solved in the field of railway lines.	•	•
11SCFZ	Seminar of Physics	Z	0
Solving problems or	n kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.	'	'
21SLD	Seminar of Air Transport	Z	0
History, definitions, f	terminology, basic rules. VFR / IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio	o navigation. Weight,	balance,
performance. Flight	planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Tral	ffic management, gro	ound handling,
security. Air crew. Ai	irlines and economics. Space technologies.		
18SPP	Seminary from Elasticity and Strength	Z	0
Excersise for practic	ce. Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section	of beam. Analysis of	deflection curve
•	ce. Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section circle cross section. Combined loading. Stability of compressed bar and buckling.	of beam. Analysis of	deflection curve
•		of beam. Analysis of	deflection curve
of beam. Torsion of o	circle cross section. Combined loading. Stability of compressed bar and buckling.	Z	0
of beam. Torsion of o	circle cross section. Combined loading. Stability of compressed bar and buckling.  Seminary from Technical Documentation s, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimer	Z	0
of beam. Torsion of one of 18STD Technical standards	circle cross section. Combined loading. Stability of compressed bar and buckling.  Seminary from Technical Documentation s, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimer	Z	0
of beam. Torsion of on 18STD Technical standards arrangement of draw 18SS	circle cross section. Combined loading. Stability of compressed bar and buckling.  Seminary from Technical Documentation s, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimerwing sheets.	Znsional and geometri	0 cal accuracy,
of beam. Torsion of on 18STD Technical standards arrangement of draw 18SS Examples for practise	circle cross section. Combined loading. Stability of compressed bar and buckling.  Seminary from Technical Documentation s, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimerwing sheets.  Seminary from Structural Analysis	Z nsional and geometri  Z am and simple frame	0 cal accuracy, 0 ework. Application
of beam. Torsion of on 18STD  Technical standards arrangement of draw 18SS  Examples for practis of principle of virtual	circle cross section. Combined loading. Stability of compressed bar and buckling.  Seminary from Technical Documentation s, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimerwing sheets.  Seminary from Structural Analysis se. General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate be	Z nsional and geometri  Z am and simple frame	0 cal accuracy, 0 ework. Application
of beam. Torsion of on 18STD  Technical standards arrangement of draw 18SS  Examples for practis of principle of virtual	circle cross section. Combined loading. Stability of compressed bar and buckling.    Seminary from Technical Documentation     s, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimer wing sheets.    Seminary from Structural Analysis     see. General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate be all works for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction - meti	Z nsional and geometri  Z am and simple frame	0 cal accuracy, 0 ework. Application
of beam. Torsion of or 18STD Technical standards arrangement of draw 18SS Examples for practis of principle of virtual Geometry of cross sentings.	circle cross section. Combined loading. Stability of compressed bar and buckling.    Seminary from Technical Documentation     s, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimer wing sheets.    Seminary from Structural Analysis     see. General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate be all works for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction - metisections. Plane fiber polygons.	Z nsional and geometri  Z am and simple frame	0 cal accuracy, 0 ework. Application
of beam. Torsion of or 18STD Technical standards arrangement of draw 18SS Examples for practis of principle of virtual Geometry of cross sentings.	circle cross section. Combined loading. Stability of compressed bar and buckling.    Seminary from Technical Documentation     s, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimer wing sheets.    Seminary from Structural Analysis     se. General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate be all works for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction - met sections. Plane fiber polygons.    Secondary School Physics Course	Z nsional and geometri  Z am and simple frame	0 cal accuracy, 0 ework. Applicatio

Name of the block: Jazyky

Minimal number of credits of the block: 6

The role of the block: J

Code of the group: JZ-BP-TET-22/23

Name of the group: Bachelor TET (ex LED) 2nd Language Courses from 2022/23

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

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

Credits in the group: 6 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
15JZ3F	Foreign Language - French 3 Irena Veselková	Z	3	0P+4C+10B	Z	J
15JZ3I	Foreign Language - Italian 3 Irena Veselková	Z	3	0P+4C+10B	Z	J
15JZ3N	Foreign Language - German 3 Eva Rezlerová, Jana Štikarová, Martina Navrátilová	Z	3	0P+4C+10B	Z	J
15JZ3R	Foreign Language - Russian 3 Marie Michlová	Z	3	0P+4C+10B	Z	J
15JZ3S	Foreign Language - Spanish 3 Nina Hricsina Puškinová	Z	3	0P+4C+10B	Z	J
15JZ4F	Foreign Language - French 4 Irena Veselková	Z,ZK	3	0P+4C+10B	L	J
15JZ4I	Foreign Language - Italian 4	Z,ZK	3	0P+4C+10B	L	J
15JZ4N	Foreign Language - German 4 Eva Rezlerová, Jana Štikarová, Martina Navrátilová	Z,ZK	3	0P+4C+10B	L	J
15JZ4R	Foreign Language - Russian 4 Marie Michlová	Z,ZK	3	0P+4C+10B	L	J
15JZ4S	Foreign Language - Spanish 4 Zuzana Krinkova	Z,ZK	3	0P+4C+10B	L	J

15JZ4R	Foreign Language - Russian 4  Marie Michlová	Z,ZK	3	0P+4C+10B	L	J
15JZ4S	Foreign Language - Spanish 4 Zuzana Krinková	Z,ZK	3	0P+4C+10B	L	J
from 2022/23	f the courses of this group of Study Plan: Code=JZ-BP-TE	T-22/23 Name=Bachelo	rTET (e	ex LED) 2nd	Languaç	je Course
and perceptive and con	Foreign Language - French 3  S. Selection of conversation and professional topics based on the language level mmunicative skills, vocabulary development. Basic stylistic forms. Presentational and written presentation.	•		ement of langua	U	J
and perceptive and con	Foreign Language - Italian 3 s. Selection of conversation and professional topics based on the language lever mmunicative skills, vocabulary development. Basic stylistic forms. Presentational and written presentation.	•		ement of langua	ū	•
and perceptive and con	Foreign Language - German 3 s. Selection of conversation and professional topics based on the language lever mmunicative skills, vocabulary development. Basic stylistic forms. Presentational and written presentation.	•		ement of langua	•	•
and perceptive and con	Foreign Language - Russian 3 s. Selection of conversation and professional topics based on the language levemmunicative skills, vocabulary development. Basic stylistic forms. Presentational and written presentation.	•		ement of langua	•	•
and perceptive and con	Foreign Language - Spanish 3 s. Selection of conversation and professional topics based on the language lever mmunicative skills, vocabulary development. Basic stylistic forms. Presentational and written presentation.			ement of langua	-	_
and perceptive and con	Foreign Language - French 4 s. Selection of conversation and professional topics based on the language lew mmunicative skills, vocabulary development. Basic stylistic forms. Presentation al and written presentation.	•		ement of langua	ū	
15JZ4I Grammar and stylistics and perceptive and con	Foreign Language - Italian 4  s. Selection of conversation and professional topics based on the language lew mmunicative skills, vocabulary development. Basic stylistic forms. Presentational and written presentation.	· · · · · · · · · · · · · · · · · · ·		ement of langua	_	_
and perceptive and con	Foreign Language - German 4 s. Selection of conversation and professional topics based on the language lever mmunicative skills, vocabulary development. Basic stylistic forms. Presentational and written presentation.	•		ement of langua	•	•
and perceptive and con	Foreign Language - Russian 4 s. Selection of conversation and professional topics based on the language lever mmunicative skills, vocabulary development. Basic stylistic forms. Presentational and written presentation.	•		ement of langua	•	•
and perceptive and con	Foreign Language - Spanish 4 s. Selection of conversation and professional topics based on the language lever mmunicative skills, vocabulary development. Basic stylistic forms. Presentational and written presentation.	•		ement of langua	•	•

## List of courses of this pass:

Code	Name of the course	Completion	Credits
00Y1XB	Active participation in a scientific project, workshop, short-term trip abroad	KZ	2
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. Indefinite integral, Newton integ Riemann integral. First-order differential equations, linear differential equations.	ral, Riemann integr	al, imprope
11CAL2 Line	Calculus 2 ear differential equations and their systems, differential calculus of functions of several real variables. Riemann integral in Rn. Line and	Z,ZK surface integrals.	5
11FYZ	Physics Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and elec	Z,ZK	5
11GIE	Geometry	KZ	3
	netry of curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory of acceleration of a particle moving on a curved path.	l	_
11LA	Linear Algebra	Z,ZK	3
Vector spaces (lir	near combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and the their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classificat		minants an
11LP	Linear Programming	KZ	3
	e 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.	olyedra. Simplex m	ethod, basi
	Modeling of Systems and Processes ystem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differe onlinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function Discretization of continuous systems. System interconnection.		
11SCFZ	Seminar of Physics Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics of particle systems and rigid body.	Z mamics	0
11SSF	Secondary School Physics Course	Z	0
11001	Basics of kinematics, dynamics, thermodynamics, electric field and magnetic field.	_	0
11STAT Basics of probal	Statistics bility Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parame Regression and correlation analysis	Z,ZK tric tests Nonparan	4 netric tests
11X31	Project 1	Z	2
11X32	Project 2	Z	2
11X33	Project 3	Z	2
11Y1BK Safe communicat	Error Detection Codes for Interlocking Systems ion and methods for its assuring. Safety codes linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission channels, deprobability of undetected error. Design and assessment of detection codes; requirements of the European standard EN 501:		2 ssion errors
11Y1PV	Parametrical and Multicriterial Programming  blem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Co	KZ	2
11Y1SI	Transportation Software Engineering	KZ	2
_	ransportation Software Engineering is oftware architectures to analyses, design and implement analysis and software architectures to analyses, design and implement and practical usuage.		l
11Y1TG	Graph Theory	KZ	2
Basic concepts a	nd terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, minerian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence a for their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.	nimum spanning tr	ee, shortes
11Y1ZM To explain the pri	Foundation of MATLAB Programming  nciple of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, mat  control flow, inputs and outputs, graphics, optimization and program code debugging.	KZ rices and elements	2 operations
	Transport Models and Transport Excesses e traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of quest assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequence safety and fluency.		-
	Designing Roads, Highways and Motorways s, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard or stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safer intersections.		
12X31	Project 1	Z	2
12X32	Project 2	Z	2
12X33	Project 3	Z	2
12Y1AE General ecology	Applied Ecology - ecological concepts and principles, ecosystem, ecological factors, energy flow through the ecosystem. Application of knowledge with	KZ in EIA documentat	2 ion. Specia
	scape ecology - origin and historical development. Landscape definition and classification. Success. Traffic constructions in the country protection. Applied ecology.		-

			1
12Y1C1	Designing Roads in Civil 3D I  voted 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
	uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The design in the real-life profession.	•	J
12Y1C2	Designing Roads in Civil 3D II	KZ	2
	pesigning reads in Grain 3D in proceed to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through		
	uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The pimproved and developed. Students learn to design intersections.		
12Y1DS	Project Documentation in Practice	KZ	2
	ation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining process. I		I
	creation of some project documentation parts.		
12Y1HD	Traffic Noise	KZ	2
coustic introducti	on, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulations	s. Creation acoust	ic climate i
area, principles	of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area of the country of the	of interest. Metho	dology of
10)(11(1)	computing and measurement of transport noise. Acoustic studies, measuring protocol.		
12Y1KN	Combined Transportation	KZ	2
12Y1KP	ort strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas.  Communication and Promotion of Transport Projects		2
	Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the	KZ	1
	round. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for	•	
iotinomio ana boj	influence of political marketing and political PR on transport projects. Lobbing.	5. 00.0 00a	04
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		I .
	ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings		
	crossroads. Traffic signs and road marking for cyclists.		
12Y1PD	Assessment of Transport Structures	KZ	2
	sport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of		
ansport structures	s on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of asse	essment of traffic	buildings (
10)/1511	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. Zone The stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic		lion yards.
12Y1RU			2
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14DZT	Digital Support for Railway Lines  Seminars possibilities of technical processing problems solved in the field of railway lines.	Z	0
14KSP	Constructing with Computer Aid	KZ	2
"CAD systems" ter	rm determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common work	k rules in graphic a	applications
and CA systems.	Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possib profiles, drawings with raster foundaments).	ilites, AutoCAD en	vironment
14MPG	Modern Programming Approaches	KZ	2
	minded of some aspects of Pythom programming, learn basic concepts and constructs from object-oriented programming and their in	=	
14PRG	ry out the basics of working with data libraries in Python, namely NumPy, Pandas, Matplotlib, and practice with examples of smaller a  Programming	Na larger data size	es. 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 searc working with date and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).		
14X31	Project 1	Z	2
14X32	Project 2	Z	2
14X33	Project 3	Z	2
14Y1AV	Animation and Visualization	KZ	2
	tions and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Spa is, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animatior		
14Y1BE	Barrierless Transport	KZ	2
	rless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students		
of barrierless enviro	onment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems  Theoretical knowledge will be supplemented by practical examples.	and transportation	technology.
14Y1BM	Biometric Methods	KZ	2
	erms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies, ha	•	
retina recognition n	nethod, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavioral r in transport applications, safety and risks of biometric technologies.	nethods, the use o	of biometrics
14Y1HW	Computer Hardware	KZ	2
Computer archite	ecture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate parithmetic and logical units, I/O subsystem.	oarts designing - c	ontrollers,
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	lines, and distribut	ion lines.
14Y1OJ	Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.  Object - oriented programming in JAVA	KZ	2
	Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters). Ba		
data types. Inherita	ance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda expre	essions, anonymou	s functions.
14Y10P	Operating System	KZ	2
	stallation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Programs console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, graph	•	
	communication. Services management. Safe and secure configuration of OS. Remote administration.	,	
14Y1P2	Computer Aid of Transportation Projecting 2	KZ	2
	pplication 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)		
	section). Basics of 3D modelling.	,	
14Y1PA	3D Modeling in AutoCAD arametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object	KZ	2 k with data
WORK III 3D HOH-P	connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.	data creation, wor	K Willi dala
14Y1PG	Computer Graphics	KZ	2
Basic formats of	graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editi		n the user
4.4V4.DI	level scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphic		
14Y1PI Data-informatio	Corporate Information System on-knowledge, components of information system, syntatic and semantic sense of data, structure of corporate information system, pa	KZ rticular information	2 system
	luction, storage, etc.), corporate information politic and information control, risks of information system operation, legal environment of		-
	state information system, information system security, data protection, safety politics.		
14Y1PJ	C Programming Language	KZ	2
C programming lan	guage. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation, strir Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise or	_	and unions.
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 familiar with principles of working in a spreadsheet.		
addressing, error de	etection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatting, s data analysis. Examples and questions from various companies and training.	olution finding, sol	ver, macros,
14Y1TI	Creating Interactive Internet Applications	KZ	2
Possibilities of scrip	oting language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions. You	r own application p	rogrammed
14Y1UP	in PHP language.  Editing of Theses in MS Word	KZ	2
	Editing of Theses in MS vvord   introduced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, crea		ts, lists of
	phs, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless ed		
	so that they are able to concentrate mainly on writing a thesis.		
14Y1VM Object oriented p	Development of Applications for Mobile Devices programming, Java programming language, development environment, operating system Android, development application - widgets,	KZ containers, thread	2 ds, menu,
	permissions services GIII		

14Y1W1 Students will learn t			
Students will learn t	Webdesign 1	KZ	2
	he basics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web accessibility	-	
and selectors,	the issue of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practice	d on practical exa	mples.
14Y1W2	Webdesign 2	KZ	2
Students will learn	advanced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web ser	ver installation + o	configuration
	directives. Topics will be practiced on practical examples.		
14Y1WG	Webdesign	KZ	2
Students will learn	n the basics of HTTP communication, URL and addressing, HTML5 markup language, advanced CSS3 techniques, accessible and u		responsive
	webdesign, content management systems, web server installation + configuration directives. The subject matter will be trained on e		T
14Y1ZJ	Fundamentals of programming in JAVA	KZ	2
	Java SE Platform. IDE Installation and First Project. Comments. Variables and Type System. Operators. User Input and Parsing. Chair		
Chain and Mathe	matical Methods. Terms. Relational Operators and Switches. Cycles for, while, foreach. Field - declaration, initialization, methods for	field work. ASCII.	Functions,
	parameters, return value, recursion. Program creation.		
14Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2
Basics of work at pr	roducts and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from 2	D sketches. Impor	rt and expor
	from and to another systems. Fundamentals of assemblies creation.		
15DPLG	Transportation Psychology	Z	2
	gy and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle const		-
	el route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in tra		
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
	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of the stylistics forms.		
15JZ2A	Foreign Language - English 2	Z,ZK	3
Grammatical structi	ures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and col		. Elementar
	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles		
15JZ3F	Foreign Language - French 3	Z	3
-	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of $k$		_
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.		
15JZ3I	Foreign Language - Italian 3	Z	3
-	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la		_
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.		
15JZ3N	Foreign Language - German 3	Z	3
-	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of $k$		_
and perceptive and	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work w	with (professional)	text and its
	features. Practice of oral and written presentation.		
		_	
15JZ3R	Foreign Language - Russian 3	Z	3
Grammar and styli	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	anguage structure	knowledge
Grammar and styli	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of lad communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work was a communicative skills, vocabulary development.	anguage structure	knowledge
Grammar and styli	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of lad communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work vocabulary development. Basic stylistic forms are presentation of own knowledge in oral and written form. Work vocabulary development. Basic stylistic forms are presentation.	anguage structure with (professional)	knowledge text and its
Grammar and styli and perceptive and 15JZ3S	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of lad communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work votations. Practice of oral and written presentation.  Foreign Language - Spanish 3	anguage structure with (professional)	knowledge text and its
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15Y1DZ	History of Railway	KZ	2
Horse-drawn raily	ays, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep	ıblic", electric tracti	on, World
War II railways, railv	vay development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti	ons, railway lines co	onstruction,
	railway accidents, railway junctions. Excursions and projections.		
15Y1EH	European Integration within Historical Context	KZ	2
	formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism. Li		
goals. Europe and	er Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and it	s consequences to	i Europe.
	New quality of French-German relationship - a driving power of starting European integration.		
15Y1FD	French Area Studies and Transportation	KZ	2
France - geograp	ohy and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air traf	fic, specialised terr	ninology.
Frei	nch society and culture. Current political system. System of education, studying in France. Selected authors of French literature. Frenc	ch gastronomy.	
15Y1HD	History of City Mass Transport	KZ	2
	s transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current trends		
	nce systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Reput		
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
	of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these		
Creation and prote	ction of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to po	ssibilities and skills	s of a man.
	Practical examples from the field of transportation; relevant legislature.		
15Y1HL	History of Civil Aviation	KZ	2
Beginnings of flyin	g, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of a	irports in the Czech	n Republic.
World airports. Fa	amous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era o	aviation. Golden e	ra of civil
•	aviation. Modern era of civil aviation. Airline companies. Supersonic flying.		
15Y1MK	Modern History in Context: Every Day Life and Transport	KZ	2
131 HVIIX		IVE	2
4527415	Historical overview of modern history of every day life, science, technology and transport in a wider context.	1/7	
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 an	alysis of texts. Disc	ussion on
	selected topics.		
15Y1ZV	East-West dichotomy: Prelude to the Cold War	KZ	2
Historical prologue	evolution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and continuing	ı tv of the internation	al relations
	century and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, the	-	
	Economic and financial history. Social changes. Discussions on texts, sources.		,440000.
16DPO		KZ	
	Vehicle Technology		
venicle. Functions	, principles. Drive, vehicle construction. Road transport, safety, heavy duty vehicle desing, dynamics. Rail transport, safety, carriage d	-	ic traction.
	Transshipment. Technological components of various modes of transport. Management and control of various means of transport	Safety.	
16UDOP	Introduction into Vehicles	Z	2
Vehicles and trans	portation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and wate	transport. Alternat	ive means
	of transport. Lifting equipment and conveyors. Legislation.		
16X31	Project 1	Z	2
	· · · · · · · · · · · · · · · · · · ·		
16X32	Project 2	Z	2
16X33	Project 3	Z	2
16Y1EN	Energy Requirements of Vehicles	KZ	2
	driving inertial of the vehicles. Types of energy - kinetic, static, heat, chemical and others. Ways of energy change into kinetic energy	. Combustion engin	e. electric
•	drive, steam engine, air engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW anal		·
16Y1IS	Interactive simulators and simulations	KZ	2
	y and application of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical m		
			ietrious.
	ation of vehicle dynamics, on-land carriage in particular. Virtual reality systems. Practical exercise with simulation software and intera		
16Y1KS	Quality and Reliability of Vehicles	KZ	2
Quality and reliab	illity theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. K	ey legislation. FME	A (Failure
Mode and Effects	Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other methods u	sed in industrial ap	plications.
	Knowledge-based systems of quality and reliability, data collection.		
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2
	production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measureme		
	General principles of engine diagnostics.		
16Y1RE		KZ	2
	Control and Electronic Vehicle Systems ts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disadva		
and hybrid drive	control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control,	safety, communica	tion and
16Y1SO	comfort systems.		2
	Strategy and innovation in mobility	KZ	
Introduction to in	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation, definition.	vation project, KPIs	s, budget;
Introduction to in	Strategy and innovation in mobility	vation project, KPIs	s, budget;
Introduction to in	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation, definition.	vation project, KPIs	s, budget;
Introduction to in	Strategy and innovation in mobility  novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.	vation project, KPIs	s, budget;
Introduction to inroco-financing, evalu	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.  Development in Railroad Vehicles	vation project, KPIs ousiness plan and p	s, budget; possibilities
Introduction to inroco-financing, evalu	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.  Development in Railroad Vehicles straction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal transportance in the succession of the succession	vation project, KPIs ousiness plan and p	s, budget; possibilities
Introduction to inr co-financing, evalu 16Y1VT Railroad vehicles	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.  Development in Railroad Vehicles straction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal transassesment. New materials in design. International standardization.	vation project, KPIs pusiness plan and p  KZ sportation. Critical	s, budget; possibilities 2 situation
Introduction to introduction to introduction to introduce in the confidence in the c	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.  Development in Railroad Vehicles straction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trar assesment. New materials in design. International standardization.  Introduction into Applied Computer Graphics	vation project, KPIs pusiness plan and p KZ sportation. Critical	s, budget; possibilities  2 situation
Introduction to introduction to introduction to introduce in 16Y1VT Railroad vehicles  16Y1ZG Computer graphics	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.  Development in Railroad Vehicles straction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trar assesment. New materials in design. International standardization.  Introduction into Applied Computer Graphics s, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour sche	vation project, KPIs pusiness plan and p  KZ sportation. Critical  KZ mes, models, princi	s, budget; possibilities  2 situation  2 iples of 2D
Introduction to introduction to introduction to introduce in 16Y1VT Railroad vehicles  16Y1ZG Computer graphics	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.  Development in Railroad Vehicles straction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trar assesment. New materials in design. International standardization.  Introduction into Applied Computer Graphics s, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour sche on, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basics	vation project, KPIs pusiness plan and p  KZ sportation. Critical  KZ mes, models, princi	s, budget; possibilities  2 situation  2 iples of 2D
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Introduction to introduction to introduction, evalued 16Y1VT Railroad vehicles 16Y1ZG Computer graphics and 3D generation 16Y1ZL Vehicle, bus and more	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.  Development in Railroad Vehicles straction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal transport. New materials in design. International standardization.  Introduction into Applied Computer Graphics standardizations with emphasis on transport, including development and research. Colours, colour perception, colour sche on, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basics graphics software.  Vehicle Testing, Legislation and Construction	wation project, KPIs pusiness plan and pusiness plan and pusiness plan and pusiness plan and pusiness. KZ  mes, models, princes. Introduction to 2D  KZ  ars, trucks, buses, puses, puse	s, budget; cossibilities  2 situation  2 iples of 2D o and 3D

Economics of Transport Company  Economy, marginal utility, marginal costs, function of supply and demand, market equilibrium, perfect competition and types of market arrangement. Tra company, it's environment, balance sheet, costs, revenue, profit and maximalization of profit. Business plan, taxation in transp  17ESYS   Transport Systems Economy  Macroeconomics, macroeconomic indicators, transport system, transport externalities, energy in transport, shared economy, state transport system and its of transport system.  17FID   Financing and Investment in Transport  Sources of financing of transport infrastructure, the role of public administration in the financing and realization of investment in transport, the investment programs and their rules, competition, effectiveness and efficiency of spending public funds, evaluation systems of public projects and 17GEDS   Geography of Transport Systems  Regional differentiation of the transport system. Sociogeographic regionalization and its relation to transport. Transport and local and regional develop theoretical and methodological framework. Mobility research - travel behavior, mode choice and the influence onto "modal-split." Modal competition. Practica analysis in transportation planning.  17IVED   Integration of Public Transport	z,ZK s quantification, ra Z,ZK t project project cy d programs. KZ pment. Spatial into	6 ationalization
Transport Systems Economy  Macroeconomics, macroeconomic indicators, transport system, transport externalities, energy in transport, shared economy, state transport system and its of transport system.  17FID Financing and Investment in Transport  Sources of financing of transport infrastructure, the role of public administration in the financing and realization of investment in transport, the investment programs and their rules, competition, effectiveness and efficiency of spending public funds, evaluation systems of public projects and 17GEDS Geography of Transport Systems  Regional differentiation of the transport system. Sociogeographic regionalization and its relation to transport. Transport and local and regional develop heoretical and methodological framework. Mobility research - travel behavior, mode choice and the influence onto "modal-split." Modal competition. Practica analysis in transportation planning.  17IVED Integration of Public Transport	Z,ZK s quantification, ra Z,ZK t project project cy d programs. KZ pment. Spatial into	ationalizatio
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analysis in transportation planning.  17IVED Integration of Public Transport		
17IVED Integration of Public Transport	race or transport	geograpnic
	Z,ZK	3
ransport policy of both EU and CR, transport sectoral strategies, land use planning and evolution of space organization, integration of public service in		_
activities and organizational structures of integrated public transport systems, internal and external bindings, contracting, carriage relations, conditions	-	
operations, grading and quality, IS, marketing.	0. 20	aoaopo.
17KLID Quality in Transport Service	Z.ZK	3
General interpretation of quality, standards and international standardization, integrated management systems, modern attitudes of quality managemen	,	1
nd logistics, methods of quality measurement, quality management, risks and opportunities, public transport quality, view of costumers, carriers and PT-		
quality costs, marketing and costumer satisfaction.	= ' ' ' ' ' '	
17LGT Logistics	Z,ZK	6
ogistics definition, basic concepts, store, warehouse, transport and handling equipment, logistics technology, logistics centers, information and intellige		_
city.		
17MAGD Marketing in Transport	KZ	4
Development of strategic marketing plans. Implementation of marketing campaigns. Branding and brand promotion. Public relations industry, business	and vertical mark	et. Website
development, search engine optimization. Government relations and industry organization lobbying. Advertising and strategic sponsorships. Multimedia	presentations an	d corporat
videos. Direct marketing and related lead generation campaigns.		
17MDP Transport Prognostic Methods	KZ	2
he techniques of economical analysis in the domain of analysis of dependencies, analysis and construction of time series and comparsion of statistical	values using diffe	erencies a
indices.		
17MRR Managerial Decision-making and Management	Z,ZK	4
Decision-making process; identifying exactly what the problem is; evaluating the issue; solving the issue; using multiple perspective analysis to make	a decision; usual	method of
thinking.		
17NAPR Freight Traffic	Z	2
Freight traffic and transportation system, conditions of implementation, forwarding.		•
17TEDL Transport Technology and Logistics	KZ	3
Basic terms in transport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight trans	sport, organisatio	n of traffic
each transport modus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication using	ng various transp	ort modus.
17TGA Graph Theory and its Applications in Transport	Z,ZK	4
Basic terms of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in o		ciplines.
17TVD Technology of Public Transport	Z,ZK	5
The course contents a detailed description of new knowledge and basic principles of hierarchical planning of public transport system accenting the ger		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
17X32 Project 2	Z	2
17X33 Project 3	Z	2
17Y1EV Public Sector Economy	KZ	2
conomic and financial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of publ	ic projects (CBA,	MCA, CEA
ix system of the CR, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding fro	om EU funds, prog	gram HDM-
17Y1LL Logistics of Passenger and Freight Air Transport	KZ	2
	sport process pas	sengers a
		2
ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial trans	KZ	_
ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transaction air cargo. Information systems in air transport. Global distribution systems.  17Y1MD Marketing in Transportation		1
ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transaction air cargo. Information systems in air transport. Global distribution systems.  17Y1MD Marketing in Transportation		
ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transports air cargo. Information systems in air transport. Global distribution systems.  17Y1MD  Marketing in Transportation  General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport are		
ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transports air cargo. Information systems in air transport Global distribution systems.  17Y1MD   Marketing in Transportation  General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport at the application of marketing.  17Y1OF   Personal Finance	nd the resulting di	ifferences 2
ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transports air cargo. Information systems in air transport. Global distribution systems.  17Y1MD   Marketing in Transportation  General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport at the application of marketing.  17Y1OF   Personal Finance  Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of house on summer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and a summer loans, refinancing).	nd the resulting di KZ sing (rent, mortgag	ifferences  2 ge, savings
ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transports air cargo. Information systems in air transport. Global distribution systems.  17Y1MD	KZ sing (rent, mortgagadequacy), securi	2 ge, savingsing the futu
ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transports air cargo. Information systems in air transport. Global distribution systems.  17Y1MD   Marketing in Transportation  General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport at the application of marketing.  17Y1OF   Personal Finance  Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of house on summer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and a summer loans, refinancing).	nd the resulting di KZ sing (rent, mortgag	ifferences  2 ge, savings
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ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transports are cargo. Information systems in air transport. Global distribution systems.  17Y1MD   Marketing in Transportation   General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport at the application of marketing.  17Y1OF   Personal Finance   Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of house onsumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and a credit savings and insurance).  17Y1PM   Personnel Management   Human sources, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, interest.	KZ sing (rent, mortgaç adequacy), securi  KZ cultural communic	2 ge, savings ing the futu 2 cation.
ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transports are cargo. Information systems in air transport. Global distribution systems.  17Y1MD	KZ sing (rent, mortgagedequacy), securion  KZ cultural communic  KZ ne networking. Cre	2 ge, savings ing the futu 2 cation. 2 eating and
Orgistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transports are cargo. Information systems in air transport. Global distribution systems.  17Y1MD	KZ sing (rent, mortgagedequacy), securion  KZ cultural communic  KZ ne networking. Cre	2 ge, savings ting the future 2 cation. 2 eating and
ogistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transports are cargo. Information systems in air transport. Global distribution systems.  17Y1MD	KZ sing (rent, mortgagedequacy), securion  KZ cultural communic  KZ ne networking. Cre	2 ge, savings ing the futu 2 cation. 2 eating and
Aerial transports airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transports air cargo. Information systems in air transport. Global distribution systems.  17Y1MD   Marketing in Transportation   General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport at the application of marketing.  17Y1OF   Personal Finance   Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of house onsumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and a (retirement savings and insurance).  17Y1PM   Personnel Management   Human sources, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, interest   17Y1SK   Urban and Regional Rail Transport Systems   Factors affecting transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, line evaluation of the timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transport marketing.	KZ sing (rent, mortgage adequacy), securi  KZ cultural communic  KZ ne networking. Cre ort preferences. Ti	2 ge, savings ing the futu 2 cation. 2 eating and he role of

17Y1ST	Titan Simulation	KZ	2
Titan is a manad	gement game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same produ		
	ntity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequences		
·	of financial corporate reports and they use this information for other business decisions.		,
18MTY	Materials Science and Engineering	Z,ZK	3
	terials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructu		
	s the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and con		
to para to motaro ac	to degradation processes in materials, to defectoscopy and to main mechanical tests.	ipooloo. / ttorition	io aloo pala
18PZP		Z,ZK	3
	Elasticity and Strength ession. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted a		_
rension and compr		ina weidea joints o	i structures.
400AT	Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability.	7 714	
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		· I
Principle of virtual w	vork. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions.	Cross-sectional ch	aracteristics
	of planar shapes. Fiber polygons and chains.		
18SPP	Seminary from Elasticity and Strength	Z	0
Excersise for pract	tice. Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of bean	n. Analysis of defle	ction curve
	of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling.		
18SS	Seminary from Structural Analysis	Z	0
Examples for practi	se. General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate beam and	simple framework.	Application
of principle of virtu	al works for calculation of reactions of staticaly determinate systems. Determination of axial forces in truss construction - method of j	oints and method	of sections.
	Geometry of cross sections. Plane fiber polygons.		
18STD	Seminary from Technical Documentation	Z	0
	rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensiona	_	_
	arrangement of drawing sheets.	J. 1	,,
18TED	Technical Documentation	KZ	2
	recrifical Documeritation  Irds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensiona		
recrimical standa	arrangement of drawing sheets.	ii and geometrical	accuracy,
10V21		7	
18X31	Project 1	Z	2
18X32	Project 2	Z	2
18X33	Project 3	Z	2
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues. A	natomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation	and nervous syste	m. Structure
and biomechanics	of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured n	nan and his treatm	ent. Human
	joint prostheses. Protective means and traffic safety regulations.		
18Y1EM	Experimental Methods in Mechanics	1/7	
		KZ	2
The purpose and r	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive		
		testing of materials	s. Design of
	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive	testing of materials	s. Design of
experimental prod	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive cedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fa  Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.	testing of materials tigue and lifetime p	s. Design of
experimental production and the second secon	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive cedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fa Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  Engineering Materials	testing of materials tigue and lifetime p	s. Design of prediction.
18Y1MT Systematic overvie	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive cedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fa  Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  Engineering Materials  w of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and	testing of materials tigue and lifetime p KZ I composites, atter	s. Design of prediction.
experimental production 18Y1MT Systematic overvies to biole	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive cedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fa Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  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 optical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's	testing of materials tigue and lifetime p KZ d composites, atter s selection charts.	s. Design of prediction.  2 htton is paid
18Y1MT Systematic overvie to biole 18Y1PS	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive cedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Far Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  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 optical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's Computer Simulations in Mechanics	testing of materials tigue and lifetime positions KZ discomposites, atters selection charts.	s. Design of prediction.  2 nation is paid
18Y1MT Systematic overvie to biole 18Y1PS Principles and over	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive cedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Far Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  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 optical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's Computer Simulations in Mechanics  eview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model developments	testing of materials tigue and lifetime positions. KZ a composites, atters a selection charts. KZ and adaptation of	s. Design of prediction.  2 prition is paid  2 prition geometry
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20Y1EA	Environmental Aspects of Transport	KZ	2				
	here, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabilistic						
Air quality, main	pollutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp		change.				
20Y1EK	Qualification in Electrical Engineering	KZ	2				
	e with measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock hazard,						
voltage, maximum allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legislation, standards and regulations in relation to health and safety and electrical engineering.							
20Y1KP	Communication and presentation skills	KZ	2				
-	es and their fulfillment, current communication networks, work with various sources, formal requirements of emails and final theses, b						
	ional intelligence, manipulation and way of working with it, coping with stressful situations, formal requirements of presentations, way						
	presentation, presentation skills, presentation skills in online environment.		_				
20Y1LN	Location and Navigation	KZ	2				
Description and e	examples of road networks, localization on the network. Routing algorithms, their properties and implementation. Description and examples of road networks, localization on the network.	mples of datasets	for finding				
	transport connections, routing algorithms, their properties and implementation.						
20Y1OI	Fare Collection and Information Systems	KZ	2				
-	stems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components		les, maps,				
20Y1OK	nels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance syste  Road Lighting	KZ	2				
	ities and terms, street lighting components (luminaires, control cabinets for street lighting, street lighting cables), characteristics of lumin						
	standards, measurement of illuminance and luminance in road lighting, tunnels, conceptual approach to street lighting design, lightin	·	- 1				
3 ,,	Relux, street lighting control systems.	9					
20Y1PK	Product Quality Management Processes	KZ	2				
General principles	of organization management. Management systems and international standards; quality management systems. Quality products, pro	cesses, systems. A	A framework				
of standards for sys	tems management, management principles. Principles of process management, monitoring and measurement systems management. U	Iniform framework	of standards				
	for systems management. Process management principles. Metrology and testing. Product certification.						
20Y1SC	Sensors and Actuators	KZ	2				
Principles of sensor	s and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of		ro-magnetic,				
24 CL D	state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase ele						
21SLD History definiti	Seminar of Air Transport ons, terminology, basic rules. VFR / IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio na	Z Weight h	0				
	ht planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic ma	-					
p a	security. Air crew. Airlines and economics. Space technologies.		, , , , , , , , , , , , , , , , , , , ,				
21X31	Project 1	Z	2				
21X32	Project 2	Z	2				
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21X33	Project 3	7	2				
21X33 21Y1AM	Project 3 Aeronautical Information Management (AIM)	Z KZ	2				
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21Y1AM Definition and basi	Aeronautical Information Management (AIM)	KZ f. Publication). VFF	2 R Manual of				
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21Y1SI	ATC Simulator	KZ	2
	with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearance, us	•	
	ng on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPROACH departure management procedures, conflict resolution.	area, practicing a	irríval and
21Y1TH	Aircraft Technical Handling	KZ	2
_	and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and unlo		ment for
	ssangers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and techn	ical progress.	
21Y1UL	Aircraft Maintenance	KZ	2
•	and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and qua ion for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft mainte EASA for aircraft maintenance. Seminars will be focused on practical application.		
21ZALD	Basics of Air Transport	KZ	2
	, terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation.	Weight, balance, p	erformance.
Flight planning, opt	timization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ground Airlines and economics. Space technologies.	nd handling, secur	ity. Air crew.
22X31	Project 1	Z	2
22X32	Project 2	Z	2
22X33	Project 3	Z	2
23X31	Project 1	Z	2
23X32	Project 2	Z	2
23X33	Project 3	Z	2
23Y1EH	Electronics and hardware in security of transportation	KZ	2
Types and parame	eters of signals. Passive circuits, properties, basic measurements. Passive filters, semiconductors. Operational amplifiers, basic circuits gic circuits. AD converters. Connection of analog and digital parts. Basic blocks of digital signal processing. Measurement processing. D in electronics.	its, parameters. Ac	tive filters.
23Y1KB	Cyber security in transportation	KZ	2
	Cyber Security III transportation		1
•	ng, cyber attack technology, information security, cyber attacks on telematics systems, security of systems with artificial intelligence, n		
23Y1KM	Crisis Management	KZ	2
	ame of crisis management with direction to Rescue system (IZS). After introduction to safety domain, there are terms and knowledge of		1
	gement and its targets; IZS-crisis management-crisis planning; and basic legislation. Practical part is concentrated to responsibility m		
23Y1KO	Quantum Physics and Optoelectronics	KZ	2
	Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics compon		ı
23Y1KY	Cybernality	KZ	2
Juridical aspects of	behavior on the computer network and computer systems. Cybernetic crime technology. Theory basis and models. Cyberterrorism. Info	oware and connect	ted aspects.
23Y1MK	Crisis Situation Management in Critical Infrastructure	KZ	2
Determination of o	critical infrastructute elements on all levels, their protection systems, responsibilities of particular agencies of the state administration	and the self-gover	nment, and
their	responsibilities to anounce particular safety provisions. Physical and cyber protection of critical infrastructure with special attention to	the soft targets.	
23Y1MU	Emergency Events Management Solution in Transport Infrastructure	KZ	2
Basic solutions of e	mergency events with emphasis of the transport infrastructure events and their solution management. Knowledge in the emergency pla in liquidation work within the transport infrastructure.		procedures
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2
	ical systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, safet infrastructures.		and critical
23Y1TP	Criminal Law in IT and Transportation	KZ	2
Introduction of cri	iminal law into legal order, conception of culpability and criminal delict, consequency of other legal standards. international treaty and crime, specific indicia of criminal court cases, practical examples.	criminal law, inves	stigation of
23Y1VS	Negotiation and Cooperation	KZ	2
	or negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Informa iation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", specific trust.		
23ZAP	Basics of Law	Z	2
	n the Czech legal system. The course is primarily intended to provide students with orientation in fundamentals of the Czech Republic ling adoption of the basic principles of European Community law. The course consists of selected chapters from the public and private law.		
TV-1	Physical Education	Z	1
TV-2	Physical Education	Z	1
T\/KL\/	Physical Education Course	7	0

For updated information see <a href="http://bilakniha.cvut.cz/en/FF.html">http://bilakniha.cvut.cz/en/FF.html</a> Generated: day 2025-04-28, time 01:11.

TVKZV

Physical Education Course

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