Study plan

Name of study plan: Bachelor TET-ITS Full-Time from 2023/24

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: 162 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:

Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their Code Completion Credits Scope Semester Role members) Tutors, authors and guarantors (gar.) Calculus 1 11CAL1 Olga Vraštilová, Tomáš Tasák, Magdalena Hykšová, Bohumil Ková, Ond ej Z,ZK 7 2P+4C+22B Ζ Ζ Navrátil Bohumil Ková Ond ej Navrátil (Gar.) Linear Algebra 11LA Z.ZK 3 2P+1C+10B Ζ 7 Lucie Kárná, Pavel Provinský, Martina Be vá ová Martina Be vá ová Martina Be vá ová (Gar.) Introduction to Transportation Engineering Z.ZK 7 12ZYDI 2 1P+1C7 Zuzana arská, Dagmar Ko árková, Jan Kruntorád Materials Science and Engineering Jaromír Kylar, Veronika Drechslerová, Jaromír Kylar, Nela Kr má ová, Jitka ezní ková, Jaroslav Valach, Vít Malinovský, Veronika Drechslerová, Jaromír 18MTY Z,ZK 2P+1C+10B Ζ 3 7 Kylar Jaroslav Valach Jaroslav Valach (Gar.) Geometry 11GIE 2P+2C+12B Ζ ΚZ 3 Pavel Provinský, Old ich Hykš, Šárka Vorá ová Old ich Hykš Old ich Hykš Ζ (Gar.) Algorithm and Data Structures 14ASD K7 3 0P+2C+8B Ζ Ζ Tomáš Brandejský, Michal Je ábek, Alena Kubá ová, Jan Procházka, Vít Fábera, Martin Fiala Vít Fábera Vít Fábera (Gar.) **Constructing with Computer Aid** 14KSP ΚZ 2 0P+2C+8B Ζ 7 Vít Fábera, Radek Kratochvíl Lukáš Svoboda **Technical Documentation** 2 Ζ 18TED ΚZ 1P+1C+8B Ζ Jitka ezní ková, Vít Malinovský **Jitka ezní ková** Jitka ezní ková(Gar.) Transportation Psychology 15DPLG 7 2 7 2P+0C+6B 7 Eva Rezlerová, Jana Štikarová Introduction into Vehicles 16UDOP Ζ 2 2P+0C+8B Ζ 7 Zuzana Radová, Petr Bouchner TV-1 Ζ Ζ 1 **Physical Education** Ζ

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 numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Indefinite integral, Newton integral, Riemann integral,

12ZYDI	Introduction to Transportation Engineering	7 71/	2
	Introduction to Transportation Engineering	Z,ZK	-
	I land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of road in to environment and safety.	s, public mass tra	insport. Negative
<u> </u>		/	
18MTY	Materials Science and Engineering	Z,ZK	3
	Is science and engineering explains mechanical properties of structural materials based on their bonding forces and microstru		
1 ·	most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and	composites. Atter	ntion is also paid
to degradation process	es in materials, to defectoscopy and to main mechanical tests.		
11GIE	Geometry	KZ	3
Differential geometry of	curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajector	y of the motion, th	ne velocity, and
acceleration of a particl	e moving on a curved path.		
14ASD	Algorithm and Data Structures	KZ	3
Students will analyze pr	volumes, design a theoretical solution to a given problem and write the resulting algorithm using flowcharts, practice reading a	gorithms written	using flowcharts,
and use basic Boolean	algebra to construct constraints in algorithms. Students will be introduced to the basics of the Python programming language	- variable, branc	hing, loops, they
will learn to work with v	ariables 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" term de	termination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common	work rules in grap	hic applications
and CA systems. Co-or	dinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting poss	ibilites, AutoCAD	environment
profiles, drawings with r	aster foundaments).		
18TED	Technical Documentation	KZ	2
Technical standards, int	, ernational standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensior	al and geometric	al accuracy,
arrangement of drawing	j sheets.		
15DPLG	Transportation Psychology	Z	2
Subject of psychology a	nd its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle or	onstruction. Psych	ological aspects
of travel route and traffi	c conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport of	peration.	
16UDOP	Introduction into Vehicles	Z	2
Vehicles and transporta	, tion systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and w	ater transport. Alt	ernative means
of transport. Lifting equi	pment and conveyors. Legislation.		
TV-1	Physical Education	Z	1
1 V 1		2	I

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:

	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 Magdalena Hykšová Ond ej Navrátil (Gar.)	Z,ZK	5	2P+3C+20B	3 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	B L	Z
12ZTS	Railway Lines and Stations Lukáš Týfa, Martin Jacura, Petr Šatra, Tornáš 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	S 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	3 L	Z
14PRG	Programming Alena Kubá ová, Jan Procházka, Martin Fiala, Jana Kaliková, Jan Kr ál, Lukáš Svoboda Jana Kaliková Jana Kaliková (Gar.)	КZ	2	0P+2C+8B	3 L	Z
17TEDL	Transport Technology and Logistics Vít Janoš, Michal Drábek, Zden k Michl, Rudolf Vávra, Stanislav Metelka Zden k Michl Vít Janoš (Gar.)	КZ	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	κz	2	0P+2C+8B	B 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

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

11STAT	Statistics	Z,ZK	4				
Basics of probability De	Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparametric tests						
Regression and correla	Regression and correlation analysis						
12ZTS	Railway Lines and Stations	Z,ZK	4				
Rail transport. Railway t	rack geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure.	Spatial layout of	ailway lines.				
Railway control systems	in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport.						
18SAT	Structural Analysis	Z,ZK	4				
General system of force	s in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determina	ate beams and sir	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, s	ystem behaviour				
and its analysis, strong	functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision t	ables, algorithms	for structural				
tasks. Soft and hard 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	e is expanded				
	ant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and se	earching, tuples, s	ets, dictionaries,				
working with date and ti	me, regular expressions, functions and procedures, working with files (CSV, JSON, XML).						
17TEDL	Transport Technology and Logistics	KZ	3				
Basic terms in transport	t technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight t	ransport, organis	ation of traffic in				
each transport modus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication using various transport modus.							
21ZALD	Basics of Air Transport	KZ	2				
History, definitions, term	nology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigat	ion. Weight, balan	ce, performance.				
Flight planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ground handling, security. 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 ezní ková, Daniel Kytý, Jan Vy ichl, Tomáš Doktor, Jan Šleichrt, Josef Jíra, Ond ej Jiroušek Ond ej Jiroušek 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 Martin Langr	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 Jana Kaliková 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,	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	f queues, shock w	vaves. Quality of				
transport and its assess	ment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consec	quences. Improvin	ig 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	3				
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.							

	Introduction to Intelligent Transport Systems			1	,ZK	7	
Terminology and legislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of information and telecommunication systems for ITS. Principles and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples of possible applications of the							
principles of ITS.				inampiee er p			
12PPOK	Designing Roads, Highways and Motorways				KZ	3	
	hip, maintenance, management and categorization of roads and highways. Curve and tra						
	ping and overtaking. Road body - shapes and proportions, bottom and superstructure. Dra	inage and compor	nents of road	ds. Safety de	evice. Crossin	gs, junctions,	
intersections.	Database Systems				KZ	2	
	ase systems, conceptual model, relational data model, the principles of normal forms, relational data model, the principl	ational database d	esian secu		1		
	ra, SQL language, client / server, multilayer architectures, distributed database systems. A				grity of data, c		
15JZ1A	Foreign Language - English 1				Z	3	
	and Style. Selection of conversation topics relating to transportation sciences. Extending voc		• •	e and comm	unicative skills	s. Elementary	
stylistics forms. Oral and	written presentation of original research. Academic text principles and reading comprehe	nsion. Principles o	of rhetoric.				
Code of the gro	pup: 4S-BP-ITS-22/23						
Name of the gr	oup: 4th Sem. Bachelor Full-Time TET-ITS from 202	2/23					
Requirement c	redits in the group: In this group you have to gain 22	credits					
	ourses in the group: In this group you have to comple		ses				
Credits in the g							
-							
Note on the gro	Jup. Name of the course / Name of the group of courses	1	1	1			
	(in case of groups of courses the list of codes of their						
Code	members)	Completion	Credits	Scope	Semester	Role	
	Tutors, authors and guarantors (gar.)						
11MAMY	Mathematical Methods Michal Matowicki, Jan P ikryl Jan P ikryl (Gar.)	Z,ZK	7	3P+3C	L	z	
14AM	Automation and Measurement	Z,ZK	6	3P+3C	L	z	
	Tomáš Brandejský, Vít Fábera Vít Fábera Tomáš Brandejský (Gar.)	2,21	0	51 +50	L	2	
16DOTE	Transport Technology Josef Mík, Michal Cenkner, P emysl Toman, Josef Svoboda Josef Mík	Z,ZK	6	3P+3C	L	z	
15JZ2A	Foreign Language - English 2 Eva Rezlerová, Markéta Vojanová, Marie Michlová, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, Jitka He manová,	Z,ZK	3	0P+4C+10B	L	z	
Characteristics of 2022/23	Characteristics of the courses of this group of Study Plan: Code=4S-BP-ITS-22/23 Name=4th Sem. Bachelor Full-Time TET-ITS from						
	Mathematical Methods			7	,ZK	7	
	The system and its mathematical description. Types of signals. Basic system responses. (Convolution. State	models. Pri	1	·	-	

Mathematical modeling. The system and its mathematical description. Types of signals. Basic system responses. Convolution. State models. Principle of general / stationary / linear						
state description. Data r	state description. Data measurement. Uncertainty in measured data. Data normalization. Preparation of data for further processing. Linear state model over noisy data. Kalman filter					
condition estimation. Sta	atistical learning methods. Regression, classification.					
14AM	Automation and Measurement	Z,ZK	6			
Introduction into terms a	agent, rational agent, their unification to elements of transportation systems, analogies in nature, regulation in openen loop a	nd control in close	ed loop, reactive			
systems, control using f	inite state machines. Dynamic system identification. Measurement of basic electric and other physical quantities, principles c	of measurement in	struments, DC			
and AC measurement, a	actuators, measurement automation, measurement laboratories.					
16DOTE	Transport Technology	Z,ZK	6			
Types of vehicles, main features and principles. Construction and design elements, important legislation, testing. Drives and transmission, energy accumulation and changes. Road						
vehicle dynamics (lateral, transversal, vertical, driveability, suspension, wheel-road contact), mathematic solution of dynamic systems. Design features of passive, active and integrated						
safety.						
15JZ2A	Foreign Language - English 2	Z,ZK	3			
Grammatical structures and style. Selection of conversation tonics relating to transportation sciences. Extending vocabulary, developing percentive and communicative skills. Elementary						

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

Code of the group: 4S-BP-ITS-V1-22/23

Name of the group: 4th Sem. Bachelor Full-Time TET-ITS alternative subject from 2022/23 Requirement credits in the group: In this group you have to gain 4 credits Requirement courses in the group: In this group you have to complete 1 course Credits in the group: 4

Note on the group:

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

Characteristics of the courses of this group of Study Plan: Code=4S-BP-ITS-V1-22/23 Name=4th Sem. Bachelor Full-Time TET-ITS alternative subject from 2022/23

11EMO	Electromagnetic Field and Optics	Z,ZK	4		
Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.					
20ZEKT	Fundamentals of Electrical Engineering	Z,ZK	4		
Maxwell equations, electrotechnical quantities (electrical current, voltage, resistance, conductivity, resistivity, conductivity, power, energy), Ohm's law, Kirchhoff laws, electrical circuits					
(elements, methods, DC and AC circuits, accumulators, photovoltaics), electric machines, transmission lines, reflections on transmission lines, basic electrical measurements.					

Code of the group: 5S-BP-ITS-23/24

Name of the group: 5th Sem. Bachelor Full-Time TET-ITS from 2023/24 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 4 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
14ISYD	Information Systems in Transportation Jana Kaliková, Jan Kr ál, Marek Kalika Marek Kalika Marek Kalika (Gar.)	Z,ZK	7	2P+4C	Z	Z
14TAMS	Telecommunications and Local Area Networks Zden k Lokaj, Martin Šrotý, Tomáš Zelinka Tomáš Zelinka Tomáš Zelinka (Gar.)	Z,ZK	7	3P+3C	Z	Z
20RIZE	Railway Traffic Management Jind ich Sadil, Martin Leso, Dušan Kamenický, Petr Koutecký Dušan Kamenický	Z,ZK	7	3P+3C	z	Z
20ELKA	Qualification in Electrical Engineering Jind ich Sadil, Daniel Beránek Daniel Beránek	KZ	2	2P+0C	Z	Z

Characteristics of the courses of this group of Study Plan: Code=5S-BP-ITS-23/24 Name=5th Sem. Bachelor Full-Time TET-ITS from 2023/24

14ISYD Information Systems in Transportation	Z,ZK	7		
Architecture and cloud services concept, eGovernment-structure. Electronic communication and signature. IS life cycle and IT projects. Types of information systems and specific				
implementation in transport. Roles, processes, management, optimization in IS. Oracle data types. SQL Developer, SQL queries. Comprehensive examples and the second s	ample and web a	pplication		
programming.				
14TAMS Telecommunications and Local Area Networks	Z,ZK	7		
Summary of the current state and introduction of the new trends in the development of telecommunication systems. The legal environment for the provis	sion and use of tel	ecommunication		
services is explained, basic telecommunication solutions in the hierarchical architecture of telecommunication networks are presented, and the links	between the para	ameters of the		
parts and the performance of telecommunication systems.				
20RIZE Railway Traffic Management	Z,ZK	7		
Historical development of security technology, external elements (switches, signals, detection means), station, track and crossing security equipment	, existing train se	curity equipment		
and ETCS, traffic control structure, traffic control technology, automation and traffic control optimization, power supply systems, energy calculations a	and train running	dynamics.		
20ELKA Qualification in Electrical Engineering	KZ	2		
Practical experience with measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock hazard, symbols and labeling, nominal				
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.				

Code of the group: 6S-BP-ITS-23/24

Name of the group: 6th Sem. Bachelor Full-Time TET-ITS from 2023/24 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 4 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
16SVIR	Vehicle Systems and Interaction with Driver Petr Bouchner, Stanislav Novotný Stanislav Novotný (Gar.)	Z,ZK	7	3P+3C	L	Z
20ATEL	Applied Telematics Ji í R ži ka, Petr Bureš, Martin Langr, Pavel Hrubeš Pavel Hrubeš (Gar.)	Z,ZK	7	3P+3C	L	Z
20RISI	Road Traffic Control Ji í R ži ka, Martin Langr, Vladimír Faltus, Tomáš Tichý Tomáš Tichý (Gar.)	Z,ZK	7	3P+3C	L	Z
20APEL	Applied Electronics Vít Fábera, Tomáš Musil	KZ	2	0P+2C	L	Z

Characteristics of the courses of this group of Study Plan: Code=6S-BP-ITS-23/24 Name=6th Sem. Bachelor Full-Time TET-ITS from 2023/24

16SVIR Vehicle Systems and Interaction with Driver Z,ZK	7
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20ATEL	Applied Telematics	Z,ZK	7
Transport telematics - de	efinition, benefits, ITS legislation, ITS organizations, ITS architecture and its practical use, data structures and data, geographic	information syste	ms, toll systems,
e-call, fleet management	nt, check-in and information systems, ITS connection to Smart City, ITS applications on specific examples.		
20RISI	Road Traffic Control	Z,ZK	7
Traffic node manageme	nt - basic concepts, SSZ design criteria, SSZ production project, dynamic SSZ management, public transport preferences, traf	iic area managem	ient, microscopic
traffic models, macrosc	opic traffic models, traffic management on motorways, tunnel systems.		
20APEL	Applied Electronics	KZ	2
Basic electronic semico	nductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes. Tr	ansistors. Thyristo	or. Operational
amplifiers, basic logic g	ates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transi	stor as an amplific	er, operational
amplifier as an inverting	and noninverting amplifier)		

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-ITS-22/23 Name of the group: Research Groups Bachelor Full-Time TET-ITS 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:

Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their Code Completion Credits Semester Scope Role members) Tutors, authors and guarantors (gar.) Project 1 ITS Ζ 0P+1C 16X31S 2 L 7P Petr Bouchner, Milan Sliacky, Michal Cenkner Ζ 0P+1C 15X31S 2 L ΖP Project 1 ITS Project 1 ITS Ζ 2 14X31S 0P+1C L ZΡ Tomáš Brandejský, Vít Fábera, Jana Kaliková, Jan Kr ál, Mária Jánešová 12X31S Ζ 2 0P+1C L ZΡ Project 1 ITS Project 1 ITS Ζ 2 0P+1C 11X31S L 7P Jan Pikryl Jan Pikryl Jan Pikryl (Gar.) 23X31S Ζ 2 0P+1C L 7P Project 1 ITS Ζ 18X31S 2 0P+1C L 7P Project 1 ITS Project 1 ITS 20X31S Ji í Ř ži ka, Patrik Horaž ovský, Milan Sliacky, Vladimír Faltus, Martin Leso, Ζ 2 0P+1C L ZΡ Ji í Brož 21X31S 0P+1C Ζ 2 L ZΡ Project 1 ITS Project 1 ITS Michal Frydrýn, Tomáš Mi unek, Luboš Nouzovský, Tomáš Kohout, Zden k Svatý Luboš Nouzovský Ζ 22X31S 2 0P+1C L ZΡ Ζ 0P+1C 17X31S 2 L 7P Project 1 ITS **Project 2 ITS** Ζ 2 0P+1C Ζ 16X32S ZP Milan Sliacky, Josef Mík, Michal Cenkner, Tereza Kunclová 15X32S Ζ 2 0P+1C Ζ **Project 2 ITS** ZΡ **Project 2 ITS** 14X32S Ζ 2 0P+1C Ζ 7P Jana Kaliková, Jan Kr ál, Zden k Lokaj, Martin Šrotý, Tomáš Zelinka 7 7 12X32S 2 0P+1C 7P Project 2 ITS Project 2 ITS 11X32S Ζ 2 0P+1C Ζ ZΡ Evženie Uglickich, Pavla Pecherková, Michal Matowicki, Ivan Nagy, Jana Kuklová, Jan P ikryl, Ond ej P ibyl Jana Kuklová Jana Kuklová (Gar.) Ζ 2 0P+1C Ζ 17X32S **Project 2 ITS** ZΡ 23X32S Ζ 0P+1C Ζ 2 **Project 2 ITS** ZΡ 22X32S Ζ 2 0P+1C Ζ **Project 2 ITS** ZΡ 21X32S Ζ 0P+1C Ζ 2 ZΡ **Project 2 ITS** Project 2 ITS 0P+1C Ζ 20X32S Ζ 2 7P <u>Ji í Ř ži ka, Patrik Horaž ovský, Milan Sliac</u>ky, Vladimír Faltus, Martin Leso 7 0P+1C 7 18X32S 2 Project 2 ITS 7P **Project 3 ITS** 11X33S Ζ 2 0P+2C L 7P Jan Pikryl Jan Pikryl Jan Pikryl (Gar.) 12X33S Ζ 2 0P+2C L ZΡ **Project 3 ITS** Project 3 ITS 14X33S Ζ 2 L 0P+2C ΖP Jana Kaliková, Jan Kr ál, Zden k Lokaj, Martin Šrotý , Tomáš Zelinka Ζ 0P+2C 15X33S 2 L ZΡ Project 3 ITS

16X33S	Project 3 ITS Milan Sliacky, Josef Mík, Michal Cenkner, Tereza Kunclová	Z	2	0P+2C	L	ZP
23X33S	Project 3 ITS	Z	2	0P+2C	L	ZP
21X33S	Project 3 ITS	Z	2	0P+2C	L	ZP
20X33S	Project 3 ITS	Z	2	0P+2C	L	ZP
18X33S	Project 3 ITS	Z	2	0P+2C	L	ZP
17X33S	Project 3 ITS	Z	2	0P+2C	L	ZP
22X33S	Project 3 ITS	Z	2	0P+2C	L	ZP

Characteristics of the courses of this group of Study Plan: Code=X1-BP-ITS-22/23 Name=Research Groups Bachelor Full-Time TET-ITS from 2022/23

110m 2022/23			
16X31S	Project 1 ITS	Z	2
15X31S	Project 1 ITS	Z	2
14X31S	Project 1 ITS	Z	2
12X31S	Project 1 ITS	Z	2
11X31S	Project 1 ITS	Z	2
23X31S	Project 1 ITS	Z	2
18X31S	Project 1 ITS	Z	2
20X31S	Project 1 ITS	Z	2
21X31S	Project 1 ITS	Z	2
22X31S	Project 1 ITS	Z	2
17X31S	Project 1 ITS	Z	2
16X32S	Project 2 ITS	Z	2
15X32S	Project 2 ITS	Z	2
14X32S	Project 2 ITS	Z	2
12X32S	Project 2 ITS	Z	2
11X32S	Project 2 ITS	Z	2
17X32S	Project 2 ITS	Z	2
23X32S	Project 2 ITS	Z	2
22X32S	Project 2 ITS	Z	2
21X32S	Project 2 ITS	Z	2
20X32S	Project 2 ITS	Z	2
18X32S	Project 2 ITS	Z	2
11X33S	Project 3 ITS	Z	2
12X33S	Project 3 ITS	Z	2
14X33S	Project 3 ITS	Z	2
15X33S	Project 3 ITS	Z	2
16X33S	Project 3 ITS	Z	2
23X33S	Project 3 ITS	Z	2
21X33S	Project 3 ITS	Z	2
20X33S	Project 3 ITS	Z	2
18X33S	Project 3 ITS	Z	2
17X33S	Project 3 ITS	Z	2
22X33S	Project 3 ITS	Z	2

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-ITS-23/24 Name of the group: Comp. Sel. Courses Bachelor Full-Time TET-ITS from 2023/24 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	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	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	KZ	2	2P+0C	Z	PV
18Y1EM	San Feit Experimental Methods in Mechanics Daniel Kytý Daniel Kytý	KZ	2	2P+0C	Z	PV
15Y1FD	French Area Studies and Transportation	KZ	2	2P+0C	L	PV
14Y1HW	Computer Hardware	KZ	2	2P+0C	L	PV
15Y1HL	History of Civil Aviation	KZ	2	2P+0C	L	PV
15Y1HD	Vladimír [*] Plos 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 Ji í 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	KZ	2	2P+0C	Z	PV
17Y1MD	Marketing in Transportation	KZ	2	2P+0C	Z	PV
18Y1MT	Engineering Materials	KZ	2	2P+0C	L	PV
21Y1MP	Jaroslav Valach Jaroslav Valach Jaroslav Valach (Gar.) Matlab for project-oriented study	KZ	2	2P+0C	Z	PV
	Lenka Hanáková, Vladimír Socha Vladimír Socha Modeling Complex Assemblies and Models in Parametric					
14Y1MP	Modeller	KZ	2	2P+0C	Z	PV

15Y1MK	Modern History in Context: Every Day Life and Transport	KZ	2	2P+0C	L	PV
15Y1NE	German in the Economy and Society	КZ	2	2P+0C	Z	PV
21Y10H	Eva Rezierová Airline Business and Operations	KZ	2	2P+0C	Z	PV
23Y10K	Peter Olexa, Eva Endrizalova Peter Olexa Protection of Critical Objects and Infrastructures	KZ	2	2P+0C	L	PV
20Y10I	Fare Collection and Information Systems	KZ	2	2P+0C		PV
	Patrik Horaž ovský, Milan Sliacky Milan Sliacky (Gar.)					
14Y1OJ 14Y1OP	Object - oriented programming in JAVA	KZ KZ	2	2P+0C 2P+0C	L Z	PV PV
17Y10F	Operating System Personal Finance	KZ	2	2P+0C 2P+0C	Z	PV PV
20Y1OK	Road Lighting	KZ	2	2P+0C	L	
	František Kekula					PV
11Y1PV	Parametrical and Multicriterial Programming Olga Vraštilová 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	KZ	2	2P+0C	Z	PV
14Y1PJ	C Programming Language	KZ	2	2P+0C	Z	PV
12Y1C1	Designing Roads in Civil 3D I	KZ	2	2P+0C	L	PV
12Y1C2	Tomáš Honc Designing Roads in Civil 3D II	КZ	2	2P+0C	Z	PV
14Y1PA	Tomáš Honc 3D Modeling in AutoCAD	KZ	2	2P+0C	Z	PV
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2	2P+0C	L	PV
12Y1PU	Organization Disposition of Railway Stations	KZ	2	2P+0C	L	PV
12Y1RU	Railway Lines Reconstruction	KZ	2	2P+0C	Z	PV
16Y1RE	Control and Electronic Vehicle Systems Josef Mik, P emysl Toman	KZ	2	2P+0C	Z	PV
21Y1RZ	Human Resources Management	KZ	2	2P+0C	L	PV
17Y1ST	Titan Simulation	KZ	2	2P+0C	L	PV
21Y1SI	ATC Simulator 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.)	КZ	2	2P+0C	L	PV
11Y1TG	Graph Theory	KZ	2	2P+0C	L	PV
23Y1TP	Lucie Kárná Lucie Kárná Lucie Kárná (Gar.) Criminal Law in IT and Transportation	KZ	2	2P+0C	Z	PV
14Y1TI	Creating Interactive Internet Applications	KZ	2	2P+0C	L	PV
21Y1UL	Aircraft Maintenance	KZ	2	2P+0C	L	PV
14Y1UP	Tomáš T ma Editing of Theses in MS Word	KZ	2	2P+0C	L	PV
	Introduction of Rail Vehicles	KZ		2P+0C		

12Y1VR	Public Transport in Cities and Regions Vladimír Pušman	КZ	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
I4Y1W2	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 Šárka Vorá ová 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
haracteristics ET-ITS from 20	of the courses of this group of Study Plan: Code=Y1-BP-ITS-23/)23/24	24 Name=Comp	. Sel. Co	ourses Bac	helor Ful	I-Time
21Y1AM	Aeronautical Information Management (AIM)				<z< td=""><td>2</td></z<>	2
efinition and basic	overview of AIS and AIM. Transition from AIS to AIM. Regulatory base. Provision of AIS/	AIM in the Czech Rep.	AIP (Aeroi	nautical Inf. Pu	blication). VI	R Manual
ie Czech Rep. AIRA	AC System. NOTAM messages.PIB (Pre-flight Informtion Bulletin). AIC (Aeoronautical Inf	Circulars). Aeronautio	al Charts.	EAD (Europer	a AIS Datat	ase). QMS
Quality Mng. Systen	n). ADQ (Aeronautical Data Quality). AIXM (Aeronautical Inf. Exchnage Format).					
	Active participation in a scientific project workshop short term tri				(7	2

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 p	ayments come fro	m 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 a	Iternative source
of transportation and tel	ecomunication projects.		
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues. Anato	mical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulat	tion and nervous s	system. Structure
	uscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injure	ed man and his tre	eatment. Human
	ive means and traffic safety regulations.		. <u>.</u>
14Y1AV	Animation and Visualization	KZ	2
	and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and	· · · ·	•
	ring filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animatio	-	
12Y1AE	Applied Ecology	KZ	2
	gical concepts and principles, ecosystem, ecological factors, energy flow through the ecosystem. Application of knowledge v		-
	logy - origin and historical development. Landscape definition and classification. Success. Traffic constructions in the country	/side. Landscape	and nature
protection. Applied ecol			
20Y1AE	Applied Electronics	KZ	2
	nductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, tra	-	-
	ates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transi	stor as an amplifi	er, operational
	and noninverting amplifier).		·
14Y1BE	Barrierless Transport	KZ	2
	accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude	•	•
	nt roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation syste	ems and transport	ation technology.
	vill be supplemented by practical examples.		
15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
-	, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation	. Health protectio	n programmes,
	e and foreign business trips, statistics, working practice.		
11Y1BK	Error Detection Codes for Interlocking Systems	KZ	2
	d methods for its assuring. Safety codes linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission channels	s, detection of trar	ismission errors,
	d error. Design and assessment of detection codes; requirements of the European standard EN 50159.		
21Y1BS	Unmanned aircraft systems 1	KZ	2
	relopment. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division.	Operational risks	and operational
procedures. Practical flip			
14Y1BM	Biometric Methods	KZ	2
	uthentication methods, principles and performance measurement of biometric systems, overview of biometric technologies,	• •	
	d, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavio	ral methods, the u	use of biometrics
	, safety and risks of biometric technologies.		1
15Y1DZ	History of Railway	KZ	2
	team railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Re	•	
	levelopment in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train conn	ections, railway li	nes construction,
	y junctions. Excursions and projections.		
12Y1DS	Project Documentation in Practice	K7	2

 12Y1DS
 Project Documentation in Practice
 KZ
 2

 Project documentation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining process. Budget and pricing. Practical creation of some project documentation parts.
 Project documentation parts.

17Y1EV Public Sector Economy	KZ	2
Economic and financial theory of public sector, public choice theory, externalites, decisions about public fi	inance allocation, economic assesment of public projects (C	BA, MCA, CEA),
tax system of the CR, state budget, management of public projects a their economic efficiency assessment	, way of elaboration of PPP projects, funding from EU funds,	program HDM-4.
23Y1EH Electronics and hardware in security of transportation	KZ	2
Types and parameters of signals. Passive circuits, properties, basic measurements. Passive filters, semic		· – ·
Power supplies. Logic circuits. AD converters. Connection of analog and digital parts. Basic blocks of digital	signal processing. Measurement processing. Design and lac	incation methods
in electronics.		
20Y1EK Qualification in Electrical Engineering	KZ	2
Practical experience with measurements in laboratories, electrical equipment, power supply, electrical ins	tallation of low voltage, electric shock hazard, symbols and	labeling, nominal
voltage, maximum allowed currents, electrical equipment protection against short circuit and overload pro	tection, control and revision, first aid, legislation, standards	and regulations
in relation to health and safety and electrical engineering.		
16Y1EN Energy Requirements of Vehicles	KZ	2
Dynamics and the driving inertial of the vehicles. Types of energy - kinetic, static, heat, chemical and othe		
	, , , , , , , , , , , , , , , , , , , ,	engine, electric
drive, steam engine, air engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recu		
20Y1EA Environmental Aspects of Transport	KZ KZ	2
State of the atmosphere, weather observation network, weather in transportation, road meteorology. Weat	her forecasting, data assimilation, probabilistic forecasts, for	ecast evaluation.
Air quality, main pollutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses	s, carbon cycle, a role of energy and transportation in climate	e change.
15Y1EH European Integration within Historical Context	KZ	2
Versailles system, formation of new states. Europe and the powers, League of Nations. European policy in	I	
		· · ·
goals. Europe after Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrange	ement of powers during www. Cold war and its consequence	es for Europe.
New quality of French-German relationship - a driving power of starting European integration.		
18Y1EM Experimental Methods in Mechanics	KZ	2
The purpose and role of experimental mechanics. Sensors for mechanical testing. Overview of experimer	ntal methods. Destructive and non-destructive testing of mate	erials. Design of
experimental procedures and sample preparation. Tensile and bending tests. Electrical resistance strain g		
Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.		
	KZ	2
15Y1FD French Area Studies and Transportation		1 1
France - geography and regions, transport infrastructure. Paris and its sights, city public transport. Road to		terminology.
French society and culture. Current political system. System of education, studying in France. Selected au	uthors of French literature. French gastronomy.	
14Y1HW Computer Hardware	KZ	2
Computer architecture, basics of logical circuits design and their realization using FPGA. In detail, description	otion of computer architecture and separate parts designing	- controllers,
arithmetic and logical units, I/O subsystem.		,
	KZ	2
		1
Beginnings of flying, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czed		
World airports. Famous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia	between the years 1945-1989. Classic era of aviation. Golde	en era of civil
aviation. Modern era of civil aviation. Airline companies. Supersonic flying.		
45)(4) ID Listen of Oits Mass Transment		•
15Y1HD History of City Mass Transport	KZ	2
HISTORY OF CITY MASS TRANSPORT History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of tr		. – .
History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of the	ransport networks in the world, current trends and developm	. –
History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of the clearance systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus operations.	ransport networks in the world, current trends and developm ation systems in the Czech Republic and Slovakia.	ents of tariff and
History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of the clearance systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus opera12Y1HDTraffic Noise	ransport networks in the world, current trends and developm ation systems in the Czech Republic and Slovakia.	ents of tariff and
History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of transport in Prague and Brno. History of tram, bus and trolley-bus operative and Brno. History of tram, bus and trolley-bus operative and Brno. History of tram, bus and trolley-bus operative. 12Y1HD Traffic Noise Acoustic introduction, basic terms, quantities. Basics of physiological acoustic, noise impacts on human bus	ransport networks in the world, current trends and developm ation systems in the Czech Republic and Slovakia. KZ wody. Acoustic legislation, standarts, regulations. Creation ac	ents of tariff and 2 oustic climate in
History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of transport in Prague and Brno. History of tram, bus and trolley-bus operative and Brno	ransport networks in the world, current trends and developm ation systems in the Czech Republic and Slovakia. KZ wody. Acoustic legislation, standarts, regulations. Creation ac	ents of tariff and 2 oustic climate in
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21Y1LS	Air Traffic Services	KZ	2
	zech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, A	APP a ACC contro	I. History of ATS
	vakia. ATS - Model of financing. Training System of Air Traffic Controllers. Future development of ATS.		
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
	ger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial t ystems in air transport. Global distribution systems.	ransport process	passengers and
20Y1LN	Location and Navigation	KZ	2
	les of road networks, localization on the network. Routing algorithms, their properties and implementation. Description and ex	I I	_
	routing algorithms, their properties and implementation.	·	5
23Y1MK	Crisis Situation Management in Critical Infrastructure	KZ	2
	infrastructute elements on all levels, their protection systems, responsibilities of particular agencies of the state administration	•	vernment, and
	anounce particular safety provisions. Physical and cyber protection of critical infrastructure with special attention to the soft ta	-	
23Y1MU	Emergency Events Management Solution in Transport Infrastructure	KZ	2
	gency events with emphasis of the transport infrastructure events and their solution management. Knowledge in the emergency	y planning and sp	ecial procedures
	n the transport infrastructure.	1/7	0
17Y1MD	Marketing in Transportation arketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transpo	KZ	2 a differences in
the application of mark			y unerences in
18Y1MT	Engineering Materials	KZ	2
	main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers	I I	
	and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's selection	•	
21Y1MP	Matlab for project-oriented study	KZ	2
The subject's syllabus i	s focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercise	ses will be prepar	ed according to
particular examples, ba	sed on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvem	nent of students' N	latlab skills.
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2
	ng - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipe	elines, and distribu	ition lines.
	ndering - physical and material properties, lighting sources. MKP - visual example.		
15Y1MK	Modern History in Context: Every Day Life and Transport	KZ	2
	nodern history of every day life, science, technology and transport in a wider context.	1/7	
15Y1NE	German in the Economy and Society social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic	KZ	2 Discussion on
selected topics.	social issues of German speaking countries and of the EO. Reduing and istening of texts. Lexical, grammatical and semantic	analysis of lexis.	DISCUSSION
21Y1OH	Airline Business and Operations	KZ	2
	omprehensive view of the commercial, operational and transportation activities of air transport companies. It focuses on the orga	I I	
-	strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of tra		-
a basic view of the eco	nomic aspects of air transport.		
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2
Types of technological	Protection of Critical Objects and Infrastructures systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, s	••=	—
Types of technological s infrastructures.	systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, s	safety of critical ob	jects and critical
Types of technological s infrastructures. 20Y1OI	systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, s Fare Collection and Information Systems	safety of critical ob	jects and critical
Types of technological s infrastructures. 20Y1OI Fare collection systems	Systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, s Fare Collection and Information Systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their component	safety of critical ob	jects and critical
Types of technological s infrastructures. 20Y1OI Fare collection systems panels) and operator	Fare Collection and Information Systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parking	KZ ts for users (timeta)	jects and critical 2 ables, maps,
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18Y1PS Computer Simulations in Mechanics	KZ	2
Principles and overview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model develo from other CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary condition		• ,
tasks of structural and modal analysis. Introduction to complex nonlinear problems.	s and application o	n the load. Dasie
14Y1PI Corporate Information System	KZ	2
Data-information-knowledge, components of information system, syntatic and semantic sense of data, structure of corporate information system, p	articular informatio	n system
(personalistic, production, storage, etc.), corporate information politic and information control, risks of information system operation, legal environment	ent of information s	ystem operation,
state information system, information system security, data protection, safety politics.		
14Y1PZ Advanced Data Processing in Spreadsheets	KZ	2
Students will be familiar with principles of working in a spreadsheet. Graphic layout of the table appearance, formatting of numbers, insertion of form		-
addressing, error detection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatt	ing, solution finding	, solver, macros,
data analysis. Examples and questions from various companies and training.	1/7	2
21Y1PC ATC Procedures and Activities Air traffic control procedures, basics of communication and phraseology, aircraft identification, spacing and traffic coordination. In addition, the court	KZ	2
the airports and low visibility operational procedures. Students will during the course learn basic safety management applications applied across th		and control at
12Y1PD Assessment of Transport Structures	KZ	2
Assessment of transport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilit	1	
transport structures on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of	-	
the environment.		0
20Y1PK Product Quality Management Processes	KZ	2
General principles of organization management. Management systems and international standards; quality management systems. Quality products	, processes, syster	ms. A framework
of standards for systems management, management principles. Principles of process management, monitoring and measurement systems management	ent. Uniform framev	vork of standards
for systems management. Process management principles. Metrology and testing. Product certification.		
14Y1PJ C Programming Language	KZ	2
C programming language. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation	, string, files, struct	ures and unions.
Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.		
12Y1C1 Designing Roads in Civil 3D I	KZ	2
The course is devoted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go thro		-
particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. T	The course also inc	cludes a basic
explanation of the traffic building design in the real-life profession.	1/7	0
12Y1C2 Designing Roads in Civil 3D II 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 thro	KZ	2
particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation.		-
improved and developed. Students learn to design intersections.	no providuoly doqu	
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, obj	1	-
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 measu		on mechanism.
General principles of engine diagnostics.		
12Y1PU Organization Disposition of Railway Stations	KZ	2
Connecting station. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. 2		nation yards.
Reserve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic railway	network.	
12Y1RU Railway Lines Reconstruction	KZ	2
Keeping railway line operational, maintaining lines and stations, geometrical alignment of railway line, vehicles for railway superstructure and subst	ructure maintenanc	ce, scheduling
and organising possesions, preparation of railway lines reconstruction and maintenance, process of ralway line reconstruction.		
16Y1RE Control and Electronic Vehicle Systems	KZ	2
Elementary concepts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, dis	-	
and hybrid drive control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic contro comfort systems.	n, salety, communic	cation and
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 management		
environment of human resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation an	5	
dismissal and redundancies of employees. Education of employees. Planning career management.		0,
17Y1ST Titan Simulation	KZ	2
Titan is a management game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same produce	1 1	1
determine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequence	ences of their decis	sions by the form
of financial corporate reports and they use this information for other business decisions.		
21Y1SI ATC Simulator	KZ	2
Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearance, u	-	
exercises focusing on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPROA	CH area, practicing	g arrival and
departure management procedures, conflict resolution.		
20Y1SC Sensors and Actuators	KZ	2
Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors	ors of mechanical, e	electro-magnetic,
state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.	1/7	2
17Y1SL Sociology of Human Resources Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management,	KZ	2
of the organization.	numan resources	Planning, culture
11Y1SI Transportation Software Engineering	KZ	2
Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and impl	1	1
and practical usuage.		

16Y1KS Quality and Reliability of Vehicles		
	KZ	2
Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliab	ility. Key legislation. FN	MEA (Failure
Mode and Effects Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other met	thods used in industria	l applications.
Knowledge-based systems of quality and reliability, data collection.		
	1/7	
12Y1SU Road Management and Maintenance	KZ	2
Getting familiar with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented de	evelopment of road net	work, short,
medium and long-term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities ar	nd repair methods are	discussed in the
classroom as well as investment activity in highway engineering.		
		-
16Y1SO Strategy and innovation in mobility	KZ	2
Introduction to innovation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successf	ul innovation project,	(Pls, budget;
co-financing, evaluation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and o	utlook (business plan	and possibilities
of use). Creating an innovation strategy. Customer and value map, design and testing.		
17Y1SK Urban and Regional Rail Transport Systems	KZ	2
Factors affecting transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line managem	ent. line networking. C	reating and
	-	-
evaluation of the timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public tra	ansport preierences. I	ne role ol
marketing.		
11Y1TG Graph Theory	KZ	2
Basic concepts and terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, tr	1 1	a tree shortest
	-	-
path problem, Eulerian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of exist	stence and optimization	n and algorithms
for their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.		
23Y1TP Criminal Law in IT and Transportation	KZ	2
	1 1	
Introduction of criminal law into legal order, conception of culpability and criminal delict, consequency of other legal standards. international trea	ity and criminal law, inv	vestigation of
crime, specific indicia of criminal court cases, practical examples.		
	KZ	2
	1 1	_
Possibilities of scripting language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solution	ons. Your own applicati	ion programmed
in PHP language.		
	1/7	
21Y1UL Aircraft Maintenance	KZ	2
Aircraft operations and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection	and qualification of avi	ation personnel.
Basic documentation for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft	t maintenance. Regula	tion of director
EASA for aircraft maintenance. Seminars will be focused on practical application.		
14Y1UP Editing of Theses in MS Word	KZ	2
Students will be introduced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles	create tables of conte	ents lists of
figures, tables, graphs, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for sean	niess ealling dissertau	ons and theses,
so that they are able to concentrate mainly on writing a thesis.		
18Y1UK Introduction of Rail Vehicles	KZ	2
	1 1	
Basic characteristics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of mo		- 1
track resistance. Total running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail v	ehicle - hydromechani	c, hydrodynamic
and electric drive. Design concept rail vehicles and drive of wheel set.		
	V7	
12Y1VR Public Transport in Cities and Regions	KZ	2
12Y1VR Public Transport in Cities and Regions Professional and political pillars of public transport. Accessibility of public transport. Transport demand management and directional coordination	1 1	
Professional and political pillars of public transport. Accessibility of public transport. Transport demand management and directional coordination	n of lines. Principles of	line tracing.
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14Y1ZJ	Fundamentals of programming in JAVA	KZ	2	
Introduction to the Java	SE Platform. IDE Installation and First Project. Comments. Variables and Type System. Operators. User Input and Parsing. C	hain and Chain C	Conversion. Text	
Chain and Mathematica	I Methods. Terms. Relational Operators and Switches. Cycles for, while, foreach. Field - declaration, initialization, methods fo	r field work. ASCI	I. Functions,	
parameters, return value	e, recursion. Program creation.			
12Y1ZU	Principles of Urbanism	KZ	2	
Survey on history of city	Survey on history of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial arrangement of settlements.			
Types of towns or cities	with a certain prevailing function, forms of their development. Brief overview of land-use planning.			
15Y1ZV	East-West dichotomy: Prelude to the Cold War	KZ	2	
Historical prologue, evol	ution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and con	tinuity of the interi	national relations	
in the end of 19th centu	ry and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, i	the causes and co	onsequences.	
Economic and financial	history. Social changes. Discussions on texts, sources.			
16Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2	
/ehicle, bus and motorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal cars, trucks, buses, motorbikes,				
legislation in the EU and	I in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical modelling in testi	ing.		

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	V
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, Vladimír Plos, Natalia Guskova Vladimír Plos	Z	0	0P+2C	L	V
18SPP	Seminary from Elasticity and Strength Jan Vy ichl, Tomáš Doktor Jan Vy ichl Jan Vy ichl (Gar.)	Z	0	0P+2C	Z	V
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 possibilities of	f technical processing problems focused on designing of roads and highways.		
14DZT	Digital Support for Railway Lines	Z	0
Seminars possibilities of	f technical processing problems solved in the field of railway lines.		
11SCFZ	Seminar of Physics	Z	0
Solving problems on kir	nematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.		
21SLD	Seminar of Air Transport	Z	0
History, definitions, tern	ninology, basic rules. VFR / IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio nav	igation. Weight, I	balance,
performance. Flight plan	nning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic m	nanagement, grou	und handling,
security. Air crew. Airline	es and economics. Space technologies.		
18SPP	Seminary from Elasticity and Strength	Z	0
Excersise for practice. T	ension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of be	am. Analysis of c	leflection curve
of beam. Torsion of circ	e cross section. Combined loading. Stability of compressed bar and buckling.		
18STD	Seminary from Technical Documentation	Z	0
Technical standards, inf	ernational standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimension	al and geometric	al accuracy,
arrangement of drawing	sheets.		
18SS	Seminary from Structural Analysis	Z	0
Examples for practise.	Seneral system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate beam a	and simple frame	work. Application
of principle of virtual wo	rks for calculation of reactions of staticaly determinate systems. Determination of axial forces in truss construction - method of	of joints and meth	nod of sections.
Geometry of cross sect	ions. Plane fiber polygons		

11SSF	Secondary School Physics Course	Z	0
Basics of kinematics, d	ynamics, thermodynamics, electric field and magnetic field.	-	
TVKLV	Physical Education Course	Z	0
TVKZV	Physical Education Course	Z	0

Code of the group: VP-BP-TET-ITS

Name of the group: Bachelor Full-Time TET-ITS 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
11SEMO	Seminar of Electromagnetic Field and Optics Old ich Hykš, Zuzana Malá, Tomáš Vít Zuzana Malá Zuzana Malá (Gar.)	Z	0	0P+2C	L	V

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

11SEMO	Seminar of Electromagnetic Field and Optics	Z	0
Solving problems on ele	ectric and magnetic field, electromagnetic field, optics and basics of solid-state physics.		·

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:

	g. e a p.					
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+10E	8 Z	J
15JZ3I	Foreign Language - Italian 3 Irena Veselková	Z	3	0P+4C+10E	8 Z	J
15JZ3N	Foreign Language - German 3 Eva Rezlerová, Jana Štikarová, Martina Navrátilová	Z	3	0P+4C+10E	8 Z	J
15JZ3R	Foreign Language - Russian 3 Marie Michlová	Z	3	0P+4C+10E	8 Z	J
15JZ3S	Foreign Language - Spanish 3 Nina Hricsina Puškinová	Z	3	0P+4C+10E	8 Z	J
15JZ4F	Foreign Language - French 4 Irena Veselková	Z,ZK	3	0P+4C+10E	B L	J
15JZ4I	Foreign Language - Italian 4	Z,ZK	3	0P+4C+10E	B L	J
15JZ4N	Foreign Language - German 4 Eva Rezlerová, Jana Štikarová, Martina Navrátilová	Z,ZK	3	0P+4C+10E	B L	J
15JZ4R	Foreign Language - Russian 4 Marie Michlová	Z,ZK	3	0P+4C+10E	B L	J
15JZ4S	Foreign Language - Spanish 4 Zuzana Krinková	Z,ZK	3	0P+4C+10E	B L	J

Characteristics of the courses of this group of Study Plan: Code=JZ-BP-TET-22/23 Name=Bachelor TET (ex LED) 2nd Language Courses from 2022/23

15JZ3F	Foreign Language - French 3	Z	3
	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement		-
	municative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	ork with (profession	hal) text and its
features. Practice of ora	I and written presentation.		
15JZ3I	Foreign Language - Italian 3	Z	3
Grammar and stylistics.	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	of language struct	ure knowledge
and perceptive and con	nmunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	rk with (profession	nal) text and its
features. Practice of ora	I and written presentation.		

15JZ3N	Foreign Language - German 3	Z	3
Grammar and stylistics	. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and cor	nmunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	k with (professior	al) text and its
features. Practice of ora	al and written presentation.		
15JZ3R	Foreign Language - Russian 3	Z	3
Grammar and stylistics	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and cor	nmunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	k with (professior	al) text and its
features. Practice of ora	al and written presentation.		
15JZ3S	Foreign Language - Spanish 3	Z	3
Grammar and stylistics	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and cor	nmunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	k with (professior	al) text and its
features. Practice of ora	al and written presentation.		
15JZ4F	Foreign Language - French 4	Z,ZK	3
Grammar and stylistics	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and cor	nmunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	k with (professior	al) text and its
features. Practice of ora	al and written presentation.		
15JZ4I	Foreign Language - Italian 4	Z,ZK	3
Grammar and stylistics	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and cor	nmunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	k with (professior	al) text and its
features. Practice of ora	al and written presentation.		
15JZ4N	Foreign Language - German 4	Z,ZK	3
Grammar and stylistics	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and cor	nmunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	k with (professior	al) text and its
features. Practice of ora	al and written presentation.		
15JZ4R	Foreign Language - Russian 4	Z,ZK	3
Grammar and stylistics	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and cor	nmunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	k with (professior	al) text and its
features. Practice of ora	al and written presentation.		
15JZ4S	Foreign Language - Spanish 4	Z,ZK	3
Grammar and stylistics	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and cor	nmunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	k with (professior	al) text and its
features Practice of ora	al and written presentation.		

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 nur	mbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Indefinite integral, Newton int Riemann integral. First-order differential equations, linear differential equations.	egral, Riemann integr	al, imprope
11CAL2	Calculus 2	Z,ZK	5
Linear	differential equations and their systems, differential calculus of functions of several real variables. Riemann integral in Rn. Line a	nd surface integrals.	
11EMO	Electromagnetic Field and Optics	Z,ZK	4
•	Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.		
11FYZ	Physics	Z,ZK	5
ĸ	(inematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and e	lectric current.	•
11GIE	Geometry	KZ	3
Differential geometr	ry of curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajector	y of the motion, the v	elocity, and
	acceleration of a particle moving on a curved path.		
11LA	Linear Algebra	Z,ZK	3
Vector spaces (linea	r combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and t	their solvability. Deter	minants and
	their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classific	cation.	
11MAMY	Mathematical Methods	Z,ZK	7
Mathematical mode	eling. The system and its mathematical description. Types of signals. Basic system responses. Convolution. State models. Princip	le of general / station	ary / linear
state description. Da	ata measurement. Uncertainty in measured data. Data normalization. Preparation of data for further processing. Linear state mo	del over noisy data. K	alman filter
	condition estimation. Statistical learning methods. Regression, classification.		
11SCFZ	Seminar of Physics	Z	0
	Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, therm		
11SEMO	Seminar of Electromagnetic Field and Optics	Z	0
	Solving problems on electric and magnetic field, electromagnetic field, optics and basics of solid-state physics.		
11SSF	Secondary School Physics Course	Z	0
•	Basics of kinematics, dynamics, thermodynamics, electric field and magnetic field.		
11STAT	Statistics	Z,ZK	4
Basics of probabilit	y Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parar	metric tests Nonparan	netric tests
	Regression and correlation analysis		
11X31S	Project 1 ITS	Z	2

11X32S	Project 2 ITS	Z	2
11X33S	Project 3 ITS	Z	2
11Y1BK	Error Detection Codes for Interlocking Systems	KZ	2
	n and methods for its assuring. Safety codes linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission channels, de		ssion errors,
	probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN 5015	59.	
11Y1PV	Parametrical and Multicriterial Programming	KZ	2
Solution to the prob	lem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Co	mputation of efficient	ent solution.
11Y1SI	Transportation Software Engineering	KZ	2
Basic concepts of s	oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implement	ntation using forma	l techniques
	and practical usuage.		-
11Y1TG	Graph Theory	KZ	2
	d terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, mir rian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence a		
paul problem, Eulei	for their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.	nu optimization and	u algoritrins
11Y1ZM	Foundation of MATLAB Programming	KZ	2
	iple of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, matr	I	1
	control flow, inputs and outputs, graphics, optimization and program code debugging.		
12MDE	Transport Models and Transport Excesses	Z,ZK	3
	traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of qu	· ·	
transport and its a	assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences	ences. Improving c	of transport
	safety and fluency.		
12PPOK	Designing Roads, Highways and Motorways	KZ	3
	ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard	•	
Range of vision for	stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safet	y device. Crossing	s, junctions,
40)(040	intersections.		
12X31S	Project 1 ITS	Z	2
12X32S	Project 2 ITS	Z	2
12X33S	Project 3 ITS	Z	2
12Y1AE	Applied Ecology	KZ	2
	ecological concepts and principles, ecosystem, ecological factors, energy flow through the ecosystem. Application of knowledge with		-
ecology. Landsci	ape ecology - origin and historical development. Landscape definition and classification. Success. Traffic constructions in the countrys protection. Applied ecology.	side. Landscape ar	na nature
12Y1C1	Designing Roads in Civil 3D I	KZ	2
	voted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through	1	
	uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The		-
	explanation of the traffic building design in the real-life profession.		
12Y1C2	Designing Roads in Civil 3D II	KZ	2
The course is dev	voted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through	n the complete des	sign of this
particular linear b	uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The	previously acquire	d skills are
	improved 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. creation of some project documentation parts.	Budget and pricing	g. Practical
12Y1HD	Traffic Noise	KZ	2
	on, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulation	1	1
	of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area		
	computing and measurement of transport noise. Acoustic studies, measuring protocol.		
12Y1KN	Combined Transportation	KZ	2
Combined transp	ort strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas	. Multimodal logisti	c centres.
12Y1KP	Communication and Promotion of Transport Projects	KZ	2
	Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with th		
networks and bey	ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation f	or crisis communic	cation. The
40)(150	influence of political marketing and political PR on transport projects. Lobbing.		
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 ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing:		-
	crossroads. Traffic signs and road marking for cyclists.	s with other transp	on modes,
12Y1PD	Assessment of Transport Structures	KZ	2
	sport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of	I	
	s on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of ass		
	the environment.		
12Y1PU	Organization Disposition of Railway Stations	KZ	2
-	on. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zon		ion yards.
	ve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic	-	-
12Y1RU	Railway Lines Reconstruction	KZ	2
Keeping railway lii	ne operational, maintaining lines and stations, geometrical alignment of railway line, vehicles for railway superstructure and substruct and organising possesions, preparation of railway lines reconstruction and maintenance, process of ralway line reconstruction		scheduling
12Y1SU		KZ	2
	Road Management and Maintenance vith ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented develop	I	1
-	erm strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and repair		
	classroom as well as investment activity in highway engineering.		

12Y1VR	Public Transport in Cities and Regions	KZ	2
	political pillars of public transport. Accessibility of public transport. Transport demand management and directional coordination of line		•
Basic operating p	arameters and transport variations. Types of lines according to their routing and basic operating parameters. Time coordination of line	es. Operational traf	fic control.
40)/470	Organization of tram operation in Prague. Tram safety.	1/7	2
12Y1ZU	Principles of Urbanism of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial	KZ	2
Survey on history	Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.	analigement of se	elliements.
12ZTS	Railway Lines and Stations	Z,ZK	4
_	ailway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. S		1
	Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail tr	ansport.	
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2
Role of transportat	ion in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, planning and traffic prognosis.	ublic mass transpo	ort. Negative
	impacts of transportation to environment and safety.		-
14AM	Automation and Measurement	Z,ZK	6
	rms agent, rational agent, their unification to elements of transportation systems, analogies in nature, regulation in openen loop and c Ising finite state machines. Dynamic system identification. Measurement of basic electric and other physical quantities, principles of m		-
	and AC measurement, actuators, measurement automation, measurement laboratories.		
14ASD	Algorithm and Data Structures	KZ	3
	ze problems, design a theoretical solution to a given problem and write the resulting algorithm using flowcharts, practice reading algori	thms written using	flowcharts,
and use basic Boo	lean algebra to construct constraints in algorithms. Students will be introduced to the basics of the Python programming language - va		loops, they
	will learn to work with variables of basic data types (integer, floating point and string) and the list data structure in their progra		1
14DATS	Database Systems	KZ	2
Basic concepts of	of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and		database
14DPK	queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via t		0
14DPK	Digital Support for Designing of Roads and Highways Seminars possibilities of technical processing problems focused on designing of roads and highways.	Z	0
14DZT	Digital Support for Railway Lines	Z	0
	Seminars possibilities of technical processing problems solved in the field of railway lines.	2	0
14ISYD	Information Systems in Transportation	Z,ZK	7
	cloud services concept, eGovernment-structure. Electronic communication and signature. IS life cycle and IT projects. Types of inform	,	d specific
implementation	in transport. Roles, processes, management, optimization in IS. Oracle data types. SQL Developer, SQL queries. Comprehensive examples and the second se	ample and web ap	plication
	programming.		
14KSP	Constructing with Computer Aid	KZ	2
	rm determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common worl		
and CA systems.	Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possibl profiles, drawings with raster foundaments).	intes, Autocad en	VIIOIIIIEIIL
44000			
14PRG	Programming	KZ	2
14PRG The Course Prog	Programming ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python program	KZ ming language is	2 expanded
The Course Prog		nming language is	expanded
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The Course Prog here so that the particle of the course Prog here so that the particle of the curser	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python program riticipant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and search working with date and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML). Telecommunications and Local Area Networks rrent state and introduction of the new trends in the development of telecommunication systems. The legal environment for the provision ned, basic telecommunication solutions in the hierarchical architecture of telecommunication networks are presented, and the links be parts and the performance of telecommunication systems. Project 1 ITS Project 3 ITS Animation and Visualization s, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation soment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems. Theoretical knowledge will be supplemented by practical examples. Biometric Methods Biometric Methods	Thing language is hing, tuples, sets, of Z,ZK and use of telecon tween the parame Z Z KZ A ce Warp objects. A using Inverse Kin KZ will gain theoretica and transportation KZ nd geometry, iris ro	expanded dictionaries, 7 nmunication eters of the 2 2 2 2 Atmospheric eematics. 2 I knowledge technology. 2 ecognition,
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14Y1P2	Computer Aid of Transportation Projecting 2	KZ	2
	pplication for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, dat		
modification (attrib	utes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic transitio	n curve, cross-and	longitudinal
14Y1PA	section). Basics of 3D modelling. 3D Modeling in AutoCAD	KZ	2
	barametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object	I I	1
	connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.		
14Y1PG	Computer Graphics	KZ	2
Basic formats of	graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editi	ng programs (withi	in the user
	level scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphic		
14Y1PI	Corporate Information System	KZ	2
	on-knowledge, components of information system, syntatic and semantic sense of data, structure of corporate information system, pa		
(personalistic, proc	duction, 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.	information system	n operation,
14Y1PJ	C Programming Language	KZ	2
	guage. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation, stri	I I	1
	Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise of	-	and amons.
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 formu	I I	1
addressing, error d	letection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatting, s	olution finding, solv	ver, macros,
	data analysis. Examples and questions from various companies and training.		
14Y1TI	Creating Interactive Internet Applications	KZ	2
Possibilities of scri	pting language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions. You	r own application p	programmed
	in PHP language.	1/7	0
14Y1UP	Editing of Theses in MS Word	KZ	2
	introduced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, crea phs, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless ec		
	so that they are able to concentrate mainly on writing a thesis.		and moods,
14Y1VM	Development of Applications for Mobile Devices	KZ	2
	programming, Java programming language, development environment, operating system Android, development application - widgets	I I	1
	permissions, services, GUI.		
14Y1W1	Webdesign 1	KZ	2
	the basics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web accessibilit		
	s, the issue of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practice		-
14Y1W2	Webdesign 2	KZ	2
Students will learn	advanced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web ser directives. Topics will be practiced on practical examples.	ver installation + c	onfiguration
14Y1WG	Webdesign	КZ	2
	rn the basics of HTTP communication, URL and addressing, HTML5 markup language, advanced CSS3 techniques, accessible and u	I I	1
	webdesign, content management systems, web server installation + configuration directives. The subject matter will be trained on e		
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. Cha		
Chain and Math	ematical Methods. Terms. Relational Operators and Switches. Cycles for, while, foreach. Field - declaration, initialization, methods for	field work. ASCII. F	unctions,
	parameters, return value, recursion. Program creation.		-
14Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2
Basics of work at p	products and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from 2 from and to another systems. Fundamentals of assemblies creation.	D sketches. Import	t and export
15DPLG	Transportation Psychology	Z	2
	ogy and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle consi	I I	1
	el route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in tr		
15JZ1A	Foreign Language - English 1	Z	3
	tures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and co	mmunicative skills.	Elementary
	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of	of rhetoric.	
15JZ2A	Foreign Language - English 2	Z,ZK	3
Grammatical struc	tures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and co		Elementary
451705	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles		0
15JZ3F	Foreign Language - French 3 listics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of I	Z	3 knowledge
-	istics. Selection of conversation and professional topics based on the language level and study locus at the Faculty. Improvement of Ind communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work to		-
	features. Practice of oral and written presentation.		
15JZ3I	Foreign Language - Italian 3	Z	3
	listics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of I	anguage structure	
and perceptive an	d communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work	with (professional)	text and its
	features. Practice of oral and written presentation.		-
15JZ3N	Foreign Language - German 3	Z	3
-	listics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of I Ind communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work is the faculty of the state of th		-
	features. Practice of oral and written presentation.	(אינוי (איטופפפוטווטו)	IGAL ANU ILS

15JZ3R			
	Foreign Language - Russian 3	Z	3
-	tics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la		-
and perceptive and	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work w	with (professional)	text and its
	features. Practice of oral and written presentation.	_	
15JZ3S	Foreign Language - Spanish 3	Z	3
	tics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la		-
and perceptive and (communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and its
151745	features. Practice of oral and written presentation.	Z,ZK	2
15JZ4F	Foreign Language - French 4 tics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of li		
	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v		0
	features. Practice of oral and written presentation.		
15JZ4I	Foreign Language - Italian 4	Z,ZK	3
I	ics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la		-
	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work		-
	features. Practice of oral and written presentation.		
15JZ4N	Foreign Language - German 4	Z,ZK	3
Grammar and stylist	tics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	anguage structure	knowledge
and perceptive and	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.		
15JZ4R	Foreign Language - Russian 4	Z,ZK	3
	tics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la		-
and perceptive and	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and its
451740	features. Practice of oral and written presentation.	7 71/	0
15JZ4S	Foreign Language - Spanish 4	Z,ZK	3
	tics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v		-
and perceptive and t	features. Practice of oral and written presentation.	with (professional)	
15X31S	Project 1 ITS	Z	2
15X32S	Project 2 ITS	Z	2
15X33S	Project 2 113	Z	2
15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
	tive, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. H		
	and, dominion of torne, note and people found damage, working conduction and reduct protocillor man body of a damper allority in		
r undumontal logiola	health insurance of home and foreign business trips, statistics, working practice.		i ogranni oo,
	health insurance of home and foreign business trips, statistics, working practice. History of Railway		-
15Y1DZ	History of Railway	KZ	2
15Y1DZ	History of Railway ys, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Repu	KZ ublic", electric trac	2 tion, World
15Y1DZ	History of Railway	KZ ublic", electric trac	2 tion, World
15Y1DZ Horse-drawn railwa Var II railways, railwa	History of Railway ys, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep ay development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connection railway accidents, railway junctions. Excursions and projections.	KZ ublic", electric trac	2 tion, World
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15Y1DZ Horse-drawn railwa Var II railways, railwa 15Y1EH Versailles system, fo	History of Railway ys, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep ay development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connection railway accidents, railway junctions. Excursions and projections. European Integration within Historical Context	KZ ublic", electric trac ons, railway lines KZ ttle Entente, its pr	2 etion, World construction
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15Y1DZ Horse-drawn railwa Var II railways, railwa Versailles system, for goals. Europe after 15Y1FD France - geograph France - geograph France - geograph ISY1HD History of city mass to clearand 15Y1HE Basic knowledge o Creation and protect 15Y1HL Beginnings of flying, World airports. Fan 15Y1NE Recent economic at 15Y1NE Recent economic at 15Y1ZV distorical prologue, e in the end of 19th c 16DOTE Types of vehicles, m	History of Railway ys, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Rep sy development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connecti railway accidents, railway junctions. Excursions and projections. European Integration within Historical Context rmation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism. Li Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WVII. Cold war and i New quality of French-German relationship - a driving power of starting European integration. French Area Studies and Transportation y and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motoways, railway traffic, TGV, air trai h society and culture. Current political system of education, studying in France. Selected authors of French Iterature. Fren History of City Mass Transport transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current trends ic ce systems. History of city transport in Prague and Brno. History of Civil Mass Transport foccupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these ion of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to py Practical examples from the field of transportation; relevant legislature. History of Civil Avaition development of aircrafts legihter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of a aviation. Modern era of civil aviation. Airline companies. Supersonic flying. Modern History of Covert y day life, science, technology and transport in a wider context. German in the Economy and Society Mod relatin sub of the EUN centu	KZ ublic", electric tractors, railway lines ons, railway lines KZ ttle Entente, its prists consequences KZ ffic, specialised tech gastronomy. KZ and developments blic and Slovakia. KZ factors on health opsibilities and ski KZ iriports in the Czee f aviation. Golden KZ kZ isoports of texts. District the international courses and construction and characteristic courses and construction and characteristic constructional courses and courses courses and constructional courses and courses courses and courses courses and courses courses and courses	2 tition, World construction 2 inciples and for Europe. 2 rminology. 2 soft tariff and 2 of workers. Ills of a man 2 ch Republic era of civil 2 scussion on 2 onal relation: sequences. 6 nges. Road

			-1
16UDOP	Introduction into Vehicles	Z	2
venicles and transport	ation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and wa of transport. Lifting equipment and conveyors. Legislation.	ter transport. Altern	ative means
16X31S	Project 1 ITS	Z	2
16X32S	Project 2 ITS	Z	2
16X33S	Project 3 ITS	Z	2
16Y1EN	Energy Requirements of Vehicles	KZ	2
	ving inertial of the vehicles. Types of energy - kinetic, static, heat, chemical and others. Ways of energy change into kinetic ener		
	drive, steam engine, air engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW an		,, 0.000.10
16Y1IS	Interactive simulators and simulations	KZ	2
	nd application of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical	models. Computing	methods.
Simulatio	n of vehicle dynamics, on-land carriage in particular. Virtual reality systems. Practical exercise with simulation software and inter-	ractive simulators.	
16Y1KS	Quality and Reliability of Vehicles	KZ	2
	theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability.		
Mode and Effects Ana	Ilysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other methods Knowledge-based systems of quality and reliability, data collection.	used in industrial a	applications.
16Y1PV		KZ	2
	Operation, Construction and Maintenance of Vehicles aduction. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measure		
	General principles of engine diagnostics.		incontainern.
16Y1RE	Control and Electronic Vehicle Systems	KZ	2
1	f regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disad		
and hybrid drive con	ntrol. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control	ol, safety, communio	cation and
	comfort systems.		
16Y1SO	Strategy and innovation in mobility	KZ	2
	tion, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful in		-
o-financing, evaluatior	n. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook	(business plan and	d possibilities
40)(4)/T	of use). Creating an innovation strategy. Customer and value map, design and testing.	1/7	0
16Y1VT	Development in Railroad Vehicles	KZ	2
Railload vehicles tra	ction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal tr assesment. New materials in design. International standardization.	ansportation. Child	ai Silualion
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2
	vision and applications with emphasis on transport, including development and research. Colours, colour perception, colour scl		1
	elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW bas		
	graphics software.		
16Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2
	ike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of persona		, motorbikes
	on in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical mo		
17TEDL	Transport Technology and Logistics	KZ .	3
	rt technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight tra s, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication u		
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4
	ph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in		
17X31S	Project 1 ITS	Z	2
17X32S	Project 2 ITS	Z	2
17X33S	Project 3 ITS	Z	2
17Y1EV	Public Sector Economy	KZ	2
	I theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of pu		
	tate budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding		
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
	nger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial tra		1
5	air cargo. Information systems in air transport. Global distribution systems.		U
17Y1MD	Marketing in Transportation	KZ	2
General principles of m	narketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport	and the resulting c	lifferences in
	the application of marketing.		
17Y10F	Personal Finance	KZ	2
Personal finance (bud	get, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of ho	using (rent, mortga	ge, savings,
onsumer loans, refinar			ing the future
47)(47)	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability an	d adequacy), secur	
17Y1PM	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability an (retirement savings and insurance).		-
	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability an (retirement savings and insurance). Personnel Management	KZ	2
Human sources,	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability an (retirement savings and insurance). Personnel Management work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, int	KZ ercultural communi	cation.
Human sources, 17Y1SK	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability an (retirement savings and insurance). Personnel Management work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, int Urban and Regional Rail Transport Systems	KZ ercultural communi	cation.
Human sources, 17Y1SK Factors affecting tran	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability an (retirement savings and insurance). Personnel Management work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, int Urban and Regional Rail Transport Systems isport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management,	KZ ercultural communi KZ line networking. Cr	cation. 2 reating and
Human sources, 17Y1SK Factors affecting tran	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability an (retirement savings and insurance). Personnel Management work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, int Urban and Regional Rail Transport Systems asport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, netable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transport	KZ ercultural communi KZ line networking. Cr	cation. 2 reating and
Human sources, 17Y1SK Factors affecting tran evaluation of the tim	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability an (retirement savings and insurance). Personnel Management work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, int Urban and Regional Rail Transport Systems asport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, netable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public trans marketing.	KZ ercultural communi KZ line networking. Cr sport preferences. T	cation. 2 reating and he role of
Human sources, 17Y1SK Factors affecting tran evaluation of the tim 17Y1SL	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability an (retirement savings and insurance). Personnel Management work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, int Urban and Regional Rail Transport Systems asport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, netable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public trans marketing. Sociology of Human Resources	KZ ercultural communi KZ line networking. Cr sport preferences. T KZ	cation. 2 reating and the role of 2
Human sources, 17Y1SK Factors affecting tran evaluation of the tim 17Y1SL	ncing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability an (retirement savings and insurance). Personnel Management work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, int Urban and Regional Rail Transport Systems asport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, netable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public trans marketing.	KZ ercultural communi KZ line networking. Cr sport preferences. T KZ	cation. 2 reating and the role of 2

17Y1ST	Titan Simulation	KZ	2
	gement game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same produ		
determine the qua	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.	s of their decisions	by the form
18MTY	Materials Science and Engineering	Z,ZK	3
	aterials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructu		-
	s the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and con		
	to degradation processes in materials, to defectoscopy and to main mechanical tests.		
18PZP	Elasticity and Strength	Z,ZK	3
Tension and comp	ression. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted a	ind welded joints of	f structures.
400 AT	Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability.		
18SAT	Structural Analysis of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate	Z,ZK	4 le girders
	work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions.		
	of planar shapes. Fiber polygons and chains.		
18SPP	Seminary from Elasticity and Strength	Z	0
Excersise for prac	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
	tise. General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate beam and al works for calculation of reactions of staticaly determinate systems. Determination of axial forces in truss construction - method of j	-	
	Geometry of cross sections. Plane fiber polygons.	oints and method t	
18STD	Seminary from Technical Documentation	Z	0
	ards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional	al and geometrical	-
	arrangement of drawing sheets.		
18TED	Technical Documentation	KZ	2
Technical standa	ards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional	I and geometrical	accuracy,
407040	arrangement of drawing sheets.	7	0
18X31S	Project 1 ITS	ZZ	2
18X32S 18X33S	Project 2 ITS Project 3 ITS	Z	2
		KZ	2
18Y1AM	Anatomy, Mobility and Safety of Man Anatomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation	I I	
	of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured n	-	
	joint prostheses. Protective means and traffic safety regulations.		
18Y1EM	Experimental Methods in Mechanics	KZ	2
	role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive	•	•
experimental pro	bedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fa	tigue and lifetime p	prediction.
18Y1MT	Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.	KZ	2
	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	I I	
	logical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's		
18Y1PS	Computer Simulations in Mechanics	KZ	2
	rview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model development	-	
from other CAE sy	stems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions and	d application of the	load. Basic
	tasks of structural and modal analysis. Introduction to complex nonlinear problems.		0
18Y1UK Basic characterist	Introduction of Rail Vehicles tics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion tra	KZ	2 Rolling and
	tal running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle - I		-
	and electric drive. Design concept rail vehicles and drive of wheel set.	.,	
20APEL	Applied Electronics	KZ	2
	semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes. Trans	•	•
amplifiers, basic l	ogic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transisto	or as an amplifier, c	operational
	amplifier as an inverting and noninverting amplifier).	774	7
20ATEL	Applied Telematics cs - definition, benefits, ITS legislation, ITS organizations, ITS architecture and its practical use, data structures and data, geographic info	Z,ZK	7 roll systems
nanoporticiematic	e-call, fleet management, check-in and information systems, ITS connection to Smart City, ITS applications on specific examp	-	on systems,
20ELKA	Qualification in Electrical Engineering	KZ	2
	ce with measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock hazard,	I I	
voltage, maximum	n allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legislation	on, standards and	regulations
000101	in relation to health and safety and electrical engineering.		_
20RISI	Road Traffic Control	Z,ZK	7 microscopic
manie noue manag	gement - basic concepts, SSZ design criteria, SSZ production project, dynamic SSZ management, public transport preferences, traffic a traffic models, macroscopic traffic models, traffic management on motorways, tunnel systems.	isa manayemeni, i	meroscopic
20RIZE	Railway Traffic Management	Z,ZK	7
	nent of security technology, external elements (switches, signals, detection means), station, track and crossing security equipment, ex	I ' I	
	ic control structure, traffic control technology, automation and traffic control optimization, power supply systems, energy calculations a		
20SYSA	Systems Analysis	Z,ZK	5
	tem sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks		
and its analysis,	strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tak	ples, algorithms for	structural
	tasks. Soft and hard systems, methods for soft system analysis.		

20UITS		/	-
	Introduction to Intelligent Transport Systems	Z,ZK	7
	inciples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples of principles of ITS.		
20X31S	Project 1 ITS	Z	2
20X32S	Project 2 ITS	 Z	2
20X33S	Project 3 ITS	 Z	2
20Y1AE	Applied Electronics	KZ	2
Basic electronic s	semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, trans	sistors, thyristor, o	operational
amplifiers, basic lo	ogic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transistor amplifier as an inverting and noninverting amplifier).	as an amplifier,	operationa
20Y1AF	Alternative Forms of Transportation Project Financing	KZ	2
•	such forms of financing in transportation and telecomunications, where the public sector body perform the final debtor, i. e. debt payme		•
le linal deblor is n	ot a direct participant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of secu of transportation and telecomunication projects.	nues as an alterr	lative sour
20Y1EA	Environmental Aspects of Transport	KZ	2
	here, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabilistic f		-
Air quality, mair	pollutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transpo	rtation in climate	e change.
20Y1EK	Qualification in Electrical Engineering	KZ	2
-	with measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock hazard, s	-	-
oltage, maximum	allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legislation	n, standards and	l regulation
20Y1KP	in relation to health and safety and electrical engineering. Communication and presentation skills	KZ	2
	and their fulfillment, current communication networks, work with various sources, formal requirements of emails and final theses, ba		
7 I	tional intelligence, manipulation and way of working with it, coping with stressful situations, formal requirements of presentations, ways	<i>y</i> 1 0 <i>y</i> 1	
	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 exan transport connections, routing algorithms, their properties and implementation.	nples of datasets	s for finding
20Y1OI	Fare Collection and Information Systems	KZ	2
	rstems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components f		oles, maps
	nels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance syste		-
20Y1OK	Road Lighting titles and terms, street lighting components (luminaires, control cabinets for street lighting, street lighting cables), characteristics of lumin	KZ	2
	standards, measurement of illuminance and luminance in road lighting, tunnels, conceptual approach to street lighting design, lighting Relux, street lighting control systems.		-
20Y1PK	Product Quality Management Processes	KZ	2
-	of organization management. Management systems and international standards; quality management systems. Quality products, proc		
f standards for sys	tems management, management principles. Principles of process management, monitoring and measurement systems management. Ur	niform framework	of standar
	for systems management. Process management principles. Metrology and testing. Product certification.		UI Stanuai
20Y1SC	Sensors and Actuators	KZ	2
	Sensors and Actuators s and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of a	KZ mechanical, elect	2
rinciples of senso	Sensors and Actuators s and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase ele	KZ mechanical, elect ments.	2 tro-magnet
rinciples of sensor	Sensors and Actuators rs and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase electronal principles of Electrical Engineering	KZ mechanical, elect ments. Z,ZK	2 tro-magnet
rinciples of sensor 20ZEKT faxwell equations	Sensors and Actuators s and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase ele	KZ mechanical, elect ments. Z,ZK chhoff laws, elect	2 tro-magnet 4 trical circu
rinciples of sensor 20ZEKT faxwell equations	Sensors and Actuators s and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of a state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase electronal measuring theory and actuating influence, the respective technologies and construction principles. Sensors of a state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase electronal measurements of Electrical Engineering, electrotechnical quantities (electrical current, voltage, resistance, conductivity, resistivity, conductivity, power, energy), Ohm's law, Kirr	KZ mechanical, elect ments. Z,ZK chhoff laws, elect	2 tro-magnet 4 trical circu
Principles of sensor 20ZEKT Aaxwell equations (elements, met 21SLD History, definiti	Sensors and Actuators s and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of is state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase electrotechnical quantities (electrical current, voltage, resistance, conductivity, resistivity, conductivity, power, energy), Ohm's law, Kin hods, DC and AC circuits, accumulators, photovoltaics), electric machines, transmission lines, reflections on transmission lines, basic Seminar of Air Transport ons, terminology, basic rules. VFR / IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navi	KZ mechanical, elect ments. Z,ZK chhoff laws, elec electrical measu Z rigation. Weight,	2 tro-magnet 4 trical circui rements. 0 balance,
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21Y1OH			
	Airline Business and Operations	KZ	2
	s a comprehensive view of the commercial, operational and transportation activities of air transport companies. It focuses on the organiz		
various aspects of t	heir strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of transp	ortation processe	s. It provide
041/450	a basic view of the economic aspects of air transport.	1/7	
21Y1PC	ATC Procedures and Activities	KZ	2
	procedures, basics of communication and phraseology, aircraft identification, spacing and traffic coordination. In addition, the course of ts and low visibility operational procedures. Students will during the course learn basic safety management applications applied acro		
21Y1RZ	Human Resources Management	KZ	2
	numan resources in the organization and related disciplines file. Substance, importance and challenges of human resources manage		1
•	nan resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and ren		
	dismissal and redundancies of employees. Education of employees. Planning career management.		
21Y1SI	ATC Simulator	KZ	2
Familiarization v	vith the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearance, us	e of RNAV points.	Practical
exercises focusin	ng on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPROACH	area, practicing a	arrival and
	departure management procedures, conflict resolution.		
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		-
Dasic documentali	EASA for aircraft maintenance. Seminars will be focused on practical application.	marice. Regulation	I OI UIIECIOI
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.		
	imization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, grou	•	
	Airlines and economics. Space technologies.		
22X31S	Project 1 ITS	Z	2
22X32S	Project 2 ITS	Z	2
22X33S	Project 3 ITS	Z	2
23X31S	Project 1 ITS	Z	2
23X32S	Project 2 ITS	Z	2
23X33S	Project 3 ITS	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 circu	ts, parameters. A	ctive filters.
Power supplies. Log	gic circuits. AD converters. Connection of analog and digital parts. Basic blocks of digital signal processing. Measurement processing. D in electronics.	esign and fabricat	ion methods
	in electronics.	esign and fabricat	ion methods
23Y1KB		KZ	2
23Y1KB Basic concepts of s	in electronics. Cyber security in transportation	KZ erspace, social im	2 pacts, socia
23Y1KB Basic concepts of s engineerin 23Y1KM	in electronics. Cyber security in transportation security and cyber security, legal status in the field of cyber security, virtual cyberspace and communities, taxonomy of crimes in cyber ng, cyber attack technology, information security, cyber attacks on telematics systems, security of systems with artificial intelligence, r Crisis Management	KZ erspace, social imporms and standa	2 pacts, socia rds. 2
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