## Study plan

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

Faculty/Institute/Others: Department: Branch of study guaranteed by the department: Welcome page Garantor of the study branch: Program of study: Technology in Transportation and Telecommunications Type of study: Bachelor full-time Required credits: 178 Elective courses credits: 2 Sum of credits in the plan: 180 Note on the plan:

Name of the block: Compulsory courses Minimal number of credits of the block: 166 The role of the block: Z

Code of the group: 1S-BP-TET-20/21 Name of the group: 1st Sem. Bachelor Full-Time TET from 2020/21 Requirement credits in the group: In this group you have to gain 30 credits Requirement courses in the group: In this group you have to complete 11 courses Credits in the group: 30 Note on the group:

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

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

 11CAL1
 Calculus 1
 Z,ZK
 7

 Sequence of real 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	Z,ZK	2
	n land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of road	s, public mass tra	nsport. Negative
impacts of transportation	on to environment and safety.		
18MTY	Materials Science and Engineering	Z,ZK	3
Basic course of materia	is science and engineering explains mechanical properties of structural materials based on their bonding forces and microstru	icture. However th	ne main attention
is paid to metals as the	most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and	composites. Atter	tion 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 partic	e moving on a curved path.		
14ASD	Algorithm and Data Structures	KZ	3
Students will analyze p	oblems, 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	raster foundaments).		
18TED	Technical Documentation	KZ	2
Technical standards, in	ternational standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimension	al and geometric	al accuracy,
arrangement of drawing	g 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 c	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 equ	ipment and conveyors. Legislation.		
TV-1	Physical Education	Z	1
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## Code of the group: 2S-BP-TET-20/21

Name of the group: 2nd Sem. Bachelor Full-Time TET from 2020/21 Requirement credits in the group: In this group you have to gain 30 credits Requirement courses in the group: In this group you have to complete 9 courses Credits in the group: 30

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11CAL2	Calculus 2 Olga Vraštilová, Tomáš Tasák, Magdalena Hykšová, Ond ej Navrátil, Old ich Hykš Magdalena Hykšová Ond ej Navrátil (Gar.)	Z,ZK	5	2P+3C+20E	3 L	Z
11STAT	<b>Statistics</b> Pavel Provinský, Evženie Uglickich, Pavla Pecherková, Michal Matowicki, Natálie Blahitka, Ivan Nagy, Jana Kuklová <b>Pavla Pecherková</b> Evženie Uglickich (Gar.)	Z,ZK	4	2P+2C+12E	B L	Z
12ZTS	Railway Lines and Stations Lukáš Týfa, Martin Jacura, Petr Šatra, Tomáš Javo ík, Ond ej Trešl Lukáš Týfa (Gar.)	Z,ZK	4	2P+2C+10E	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+14E	B L	Z
20SYSA	Systems Analysis Petr Bureš, Zuzana B linová, Ji í R ži ka, Patrik Horaž ovský Zuzana B linová (Gar.)	Z,ZK	5	2P+2C+14E	B L	Z
14PRG	<b>Programming</b> Alena Kubá ová, Jan Procházka, Martin Fiala, Jana Kaliková, Jan Kr ál, Lukáš Svoboda <b>Jana Kaliková</b> Jana Kaliková (Gar.)	KZ	2	0P+2C+8E	B L	Z
17TEDL	Transport Technology and Logistics Vít Janoš, Michal Drábek, Zden k Michl, Rudolf Vávra, Stanislav Metelka Zden k Michl Vít Janoš (Gar.)	κz	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+8E	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	scriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Param	netric tests Nonpa	rametric 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,	echnologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication u	ising various trans	sport 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, optimiza	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 <b>Jana</b> 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 <b>Ond ej Jiroušek</b> Ond ej Jiroušek (Gar.)	Z,ZK	3	2P+1C+10B	Z	Z
20UITS	Introduction to Intelligent Transport Systems Ji í R ži ka, Patrik Horaž ovský, Kristýna Navrátilová, Viktor Beneš, Eva Haj iarová, Martin Langr, Vladimír Faltus, Pavel Hrubeš <b>Martin Langr</b>	Z,ZK	7	3P+2C+20B	z	Z
12PPOK	Designing Roads, Highways and Motorways Josef Kocourek, Tomáš Pad lek, Polina Zayats, Petr Kumpošt Josef Kocourek (Gar.)	KZ	3	1P+2C+10B	Z	Z
14DATS	Database Systems Jana Kaliková, Jan Kr ál <b>Jana Kaliková</b> Jana Kaliková (Gar.)	KZ	2	1P+1C+10B	Z	Z
15JZ1A	Foreign Language - English 1 Eva Rezlerová, Markéta Vojanová, Dana Boušová, Marie Michlová, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková,	Z	3	0P+4C+10B	z	Z

#### Characteristics of the courses of this group of Study Plan: Code=3S-BP-TET-20/21 Name=3rd Sem. Bachelor Full-Time TET from 2020/21

11FYZ	Physics	Z,ZK	5			
Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current.						
12MDE	Transport Models and Transport Excesses	Z,ZK	3			
Parameters of the traffic	flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory o	f queues, shock v	vaves. Quality of			
transport and its assess	ment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consec	quences. Improvir	ng of transport			
safety and fluency.						
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4			
Basic terms of graph the	eory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in ot	her scientific disc	iplines.			
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 cu	Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability.					

20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7			
Terminology and legislat	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.						
12PPOK	Designing Roads, Highways and Motorways	KZ	3			
Definition, types, owners	ship, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standa	ard speed. Route	in rural areas.			
Range of vision for stop	ping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. S	afety device. Cros	ssings, junctions,			
intersections.						
14DATS	Database Systems	KZ	2			
Basic concepts of datab	ase systems, conceptual model, relational data model, the principles of normal forms, relational database design, security a	nd integrity of dat	a, database			
queries, relational algeb	ra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW.					
15JZ1A	Foreign Language - English 1	Z	3			
Grammatical Structures	Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary					
stylistics forms. Oral and	l written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.					

## Code of the group: 4S-BP-LED-22/23

## Name of the group: 4th Sem. Bachelor Full-Time TET-LED from 2022/23 Requirement credits in the group: In this group you have to gain 26 credits Requirement courses in the group: In this group you have to complete 10 courses Credits in the group: 26

Note on the group:

Note on the gr	oup.					
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
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
21LEIS	Aerodromes Ladislav Capoušek, Petr Líka, Slobodan Stoji Ladislav Capoušek Slobodan Stoji (Gar.)	Z,ZK	3	2P+1C	L	Z
21RELP	Air Traffic Control Miloš Strouhal, Terézia Pilmannová Miloš Strouhal Miloš Strouhal (Gar.)	Z,ZK	4	3P+1C	L	Z
21ZT	ATM Systems Stanislav Pleninger Stanislav Pleninger (Gar.)	ZK	2	2P+0C	Z,L	Z
21ZYT1	Principles of Flight 1 Jakub Trýb, P emysl Vávra P emysl Vávra Vladimír Socha (Gar.)	Z,ZK	3	2P+1C	L	Z
16LLA1	<b>Aircraft 1</b> Vladimír Plos, Michal erný, Karel Mündel, Daniel Urban, Karel Hylmar Vladimír Plos (Gar.)	КZ	3	2P+1C	L	Z
21RIBZ	Aviation Safety Natalia Guskova, Libor Kurzweil, Libor Kurzweil, Libor Kurzweil, Libor Kurzweil Andrej Lališ	КZ	2	2P+0C	L	Z
14PGP	Program Resources Michal Je ábek, Vít Fábera Michal Je ábek Vít Fábera (Gar.)	Z	2	0P+2C	L	Z
21SBL1	Bachelor Thesis Seminar 1 Vladimír Socha, Lenka Hanáková Lenka Hanáková (Gar.)	Z	1	1P+0C	L	Z
15JL2A	Foreign language - English 2 (for LED) Eva Rezlerová, Markéta Vojanová, Marie Michlová, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, Jitka He manová,	КZ	2	0P+2C	L	Z

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

11EMO	Electromagnetic Field and Optics	Z,ZK	4			
Electric field. Electric cu	rrent. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.					
21LEIS	Aerodromes	Z,ZK	3			
Basic definitions. Applic	basic definitions. Applicability. Airport design. Reference code. Declared distances of runways (RWY). Taxiways and aprons. Clearway. Stopway. Markings of movement areas.					
Markings. Signs. Marke	rs. Visual aids for denoting obstacles. Obstacle restriction, removal. Visual aids for navigation, lights, approach lighting system	ns. Visual approac	h slope indicator			
systems. Runway lights	Taxiway lights. Visual aids for denoting obstacles.					
21RELP	Air Traffic Control	Z,ZK	4			
21ZT	ATM Systems	ZK	2			
The course introduces of	classical and modern facilities, systems and technologies designated for ATS. Student obtains knowledge of technical princip	les and solutions	as far as			
communication, navigat	ion and surveillance aviation systems are concerned.					
21ZYT1	Principles of Flight 1	Z,ZK	3			
Aerodynamic drag, rela	tion between drag and speed, streamline, boundary layer, formula of continuity, formula of Bernoulli, lift and drag, air flow and	d pressures aroun	d wing, angle of			
attack, reactions of wing	g in air flow, lift and drag of a wing and an aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, indu	ced drag, interfere	ence, devices for			
lift and drag increase.	lift and drag increase.					
16LLA1	Aircraft 1	KZ	3			
Aircraft structural and co	Aircraft structural and conceptual design types - definitions and basic knowledge of the problem. Development of requirements, aircraft definitions and categorisation. Aircraft loadings.					
Systems of primary and	secondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeroplane topics.					

21RIBZ	Aviation Safety	KZ	2			
The course contains top	he course contains topics related to the safety management and structure of the SMS. This includes a description of the SMS mechanisms and tools, used to ensure the safe operations.					
During the course, stud	ents are continuously working on the semestral assignment, which helps them to understand practical application of the SMS	6.				
14PGP	Program Resources	Z	2			
Students will be remind	ed of some aspects of Pythom programming, learn basic concepts and constructs from object-oriented programming and the	ir implementation	in Python. They			
will also try out the basi	cs of working with data libraries in Python, namely NumPy, Pandas, Matplotlib, and practice with examples of smaller and lan	ger data sizes.				
21SBL1	Bachelor Thesis Seminar 1	Z	1			
Types of thesis (review,	applied research, basic research, thesis dealing with design proposals). Working with citation sources (citation sources, citati	on databases, cit	ation styles, how			
to cite). Analyzing the s	tate of the art (standards of research writing). Defining the limitations of the state of the art. Introduction to the thesis methodo	ology.				
15JL2A	Foreign language - English 2 (for LED)	KZ	2			
Grammar and technical	vocabulary. Selection of conversation topics and professional topics based on students' level and their focus at Faculty of Trans	sportation Scienc	es. Development			
of perceptive and comm	nunication skills, ability to give feedback, summarization of a technical text, presentation structure, technical style and its usage	ge, language of m	anagement.			

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

## Name of the group: 5th Sem. Bachelor Full-Time TET-LED from 2023/24 Requirement credits in the group: In this group you have to gain 26 credits

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

Credits in the group: 26

## Note on the group:

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Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
16LLA2	Aircraft 2 Jan Slezá ek, Karel Mündel, Daniel Urban, Karel Hylmar	Z,ZK	2	2P+1C	Z	Z
21LGCE	Air Navigation Radoslav Zozu ák Radoslav Zozu ák	Z,ZK	3	2P+0C	Z	Z
21LGVP	Legislation and Operational Regulations Radoslav Zozu ák Radoslav Zozu ák	ZK	4	3P+0C	Z	Z
21ZYT2	Principles of Flight 2 Jakub Trýb, P emysl Vávra Jakub Trýb	Z,ZK	3	2P+1C	Z	Z
22SELN	Air Accident Investigation Karel Mündel, Michal Frydrýn Michal Frydrýn Karel Mündel (Gar.)	ZK	2	2P+0C	Z	Z
14ZDAL	Data processing in air transport Martin Šrotý Martin Šrotý Martin Šrotý (Gar.)	KZ	2	0P+2C	Z	Z
21MEOL	Meteorology Iveta Kameníková Iveta Kameníková	KZ	3	2P+1C	Z	Z
23SYLP	Airport Security	KZ	2	2P+0C	Z	Z
21LGL1	Aviation English 1 Jitka He manová Jitka He manová	Z	2	0P+2C	Z	Z
21SBL2	Bachelor Thesis Seminar 2 Vladimír Socha, Lenka Hanáková, Marta Urbanová Marta Urbanová	Z	1	1P+0C	Z	Z
15JL3A	Foreign language - English 3 (for LED) Eva Rezlerová, Markéta Vojanová, Dana Boušová, Marie Michlová, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková,	КZ	2	0P+2C	Z	Z

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

2023/24			
16LLA2	Aircraft 2	Z,ZK	2
Manufacturers responsi	pility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national s	tandards. Static s	olidity of aircraft
structures. Aeroelasticity	/. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presumption.		
21LGCE	Air Navigation	Z,ZK	3
Earth - its shape, param	eters and properties. Aeronautical charts and their use. Measuring time. Dead reckoning. Radionavigation aids. Global naviga	ation satellite syst	ems. Air traffic
services routes and the	r design.		
21LGVP	Legislation and Operational Regulations	ZK	4
Introduction into aviation	n regulations. The scope of international and national organizations in civil aviation. Analysis and interpretation of the ICAO A	nnexes 1-19, ICA	O Docs. 4444,
7030, 8168. Introduction	to the European Parliament and Council Regulation (EC), Commission Regulation (EU) and the Decisions of the Executive	Director of EASA	
21ZYT2	Principles of Flight 2	Z,ZK	3
Static & amp; dynamic lo	ngitudinal stability, neutral point, location of centre of gravity, static directional & amp; lateral stability, dynamic directional & am	np; lateral stability	, control pitch
(longitudinal), yaw (dired	tional) & amp; roll (lateral), roll/yaw interaction, trimming, speed of sound, Mach number, compressibility, shock waves, critica	l Mach number, a	erodynamic
heating, operating limita	tions, manoeuvring envelope, gust-load diagram.		
22SELN	Air Accident Investigation	ZK	2
Introduction and legislat	on (ICAO, EU, Czechia) related to air accident investigation. Obligations arising from legislative requirements for individual Sta	tes in the event of	an air accident,
investigation process. A	r accident site (inspector's equipment, site security, personal protection, initial activities at the site, sketch, evidence, etc.). Air	rcraft and crew do	ocumentation.
Final report (formalities,	substantive content, contribution).		
14ZDAL	Data processing in air transport	KZ	2
Introduction to data prod	essing and analysis tools. Practical part of the training - introduction to the working environment, applied examples of data pro	ocessing from pra	ctice, advanced
methods of presentation	of the results. Seminar papers on open data. Consultation hours for seminar papers. Seminar paper submission and present	tation.	

21MEOL	Meteorology	KZ	3
Structure of atmosphere	e. Vertical stratification. Pressures QNH, QFE, QFF, QME. Instability. Atmospherical fronts. Atmospherical rainfall, origin fissio	n. Turbulence. Po	wers causing
wind. Cyclone and antic	yclone. Gradient wind. Geostrofical and geocyklostrofical wind. Visibilities in air transport. Dangerous meteorological aspects. I	Meteorological ma	aps. Climatology.
Circulation. Intertropical	front. Meteorological informations.		
23SYLP	Airport Security	KZ	2
Definition of aviation see	curity and unlawful acts against the civil aviation. Description of threats, risks, causes and goals of Security. Overview of natio	onal and internation	onal regulations
and their relevance to a	rport security. Security control devices. Operational efficiency factors and related variables. Basic use of queueing theory and	d optimization tas	ks.
21LGL1	Aviation English 1	Z	2
Familiarity with the term	inology used in civil aviation in the general context and emphasizing the ability to receive information only in English.		
21SBL2	Bachelor Thesis Seminar 2	Z	1
Methodology of thesis w	rriting (introduction, analysis of the current state, specification of the problem, objectives and hypotheses). Definition of mater	rials and methods	, approach to
obtaining results, preser	ntation and discussion of results, formulation of thesis conclusions. Basics of LaTeX, working with LaTeX and Word template.		
15JL3A	Foreign language - English 3 (for LED)	KZ	2
Grammar and technical	vocabulary. Selection of conversation topics and professional topics based on students' level and their focus at Faculty of Trans	sportation Scienc	es. Development
of perceptive and comm	unication skills, ability to give feedback, summarization of a technical text, presentation structure, technical style and its usage	ge, language of m	anagement.

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

## Name of the group: 6th Sem. Bachelor Full-Time TET-LED from 2023/24 Requirement credits in the group: In this group you have to gain 24 credits Requirement courses in the group: In this group you have to complete 8 courses Credits in the group: 24

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11MSP	Modeling of Systems and Processes Bohumil Ková , Lucie Kárná Bohumil Ková Bohumil Ková (Gar.)	Z,ZK	4	2P+2C+12B	L	Z
21EMIL	Air Transport Economy Eva Endrizalová Peter Vittek Peter Vittek (Gar.)	Z,ZK	5	3P+1C	L	Z
21LMR1	Aircraft Engines 1 Daniel Hanus Daniel Hanus (Gar.)	ZK	3	2P+0C	L	Z
21LVYO	Human Performance and Limitations Lenka Hanáková, Boris Oniš enko Vladimír Socha (Gar.)	ZK	3	2P+0C	L	Z
21PAP	Flight Planning and Performance Ladislav Capoušek Ladislav Capoušek Anna Polánecká (Gar.)	Z,ZK	4	2P+2C+14B	L	Z
21LGL2	Aviation English 2 Jitka He manová	KZ	2	0P+2C	L	Z
21SBL3	Bachelor Thesis Seminar 3 Lenka Hanáková Lenka Hanáková (Gar.)	Z	1	1P+0C	L	Z
15JL4A	Foreign language - English 4 (for LED) Eva Rezlerová, Markéta Vojanová, Marie Michlová, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, Jitka He manová,	ZK	2	0P+2C	L	Z

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

11MSP	Modeling of Systems and Processes	Z,ZK	4					
System and subsystem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differential and differential equations.								
Linear and nonlinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function. Stability of LTI systems.								
Discretization of continu	Jous systems. System interconnection.							
21EMIL	Air Transport Economy	Z,ZK	5					
The course focuses on	the fundamentals of economics, providing students with an understanding of accounting principles and role of financial state	ments. In the seco	ond part, the					
course builds on the ge	neral knowledge acquired and applies it to the environment of air transport economics. The basic principle is the Holloway m	odel, which struct	ures knowledge					
about demand, price ar	nd yield on the one hand, and supply, costs and expenses on the other.							
21LMR1	Aircraft Engines 1	ZK	3					
Aircraft piston engine, the	heoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Turbine	engine, theoretica	I background,					
thermal cycles, constru-	ction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational	characteristics. En	gine control.					
21LVYO	Human Performance and Limitations	ZK	3					
Human performace &ar	n; limitations, aptibility & competence, accident statistics, flight safety, basics of flight physiology, man & environm	ent, breathing &ar	np; circulation,					
sensory system, health	& hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing,	memory & lea	arning, theory					
& model of human	error, body rhythms & amp; sleep, stress, fatigue, working methods.							
21PAP	Flight Planning and Performance	Z,ZK	4					
Mass and balance. Load	of aircraft. Determination of centre of gravity - loadsheet, trimsheet. Aircraft weighing. Overloading of aircraft. Basic characterist	ic speeds. Runwa	characteristics.					
Take off and landing pe	rformance. Drift down. ETOPS. MEL. Flight planning and monitoring. Routing. FL and speeds selection. Charts. ICAO ATC FP	L. Aerodrom operation	ation minimums.					
Fuel plan. Operational f	light plan.							
21LGL2	Aviation English 2	KZ	2					
Terminology in the sphe	ere of aircraft construction, principles of flight, aircraft engines, instruments and systems.							
21SBL3	Bachelor Thesis Seminar 3	Z	1					
Formal and graphic des	ign of the thesis. Data collection and presentation, basic statistical reasoning, validation of results and designs. Achieving the	objectives of the	thesis and					
evaluation of hypothesis	s tests. Preparation of the presentation, principles of presentation of the thesis.							

15JL4A	Foreign language - English 4 (for LED)	ZK	2
Grammar and technica	vocabulary. Selection of conversation topics and professional topics based on students' level and their focus at Faculty of Tran	sportation Scienc	es. Development
of perceptive and comr	nunication skills, ability to give feedback, summarization of a technical text, presentation structure, technical style and its usa	ge, language of m	anagement.

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-LED-22/23 Name of the group: Research Groups Bachelor Full-Time TET-LED from 2022/23 Requirement credits in the group: In this group you have to gain 6 credits Requirement courses in the group: In this group you have to complete 3 courses Credits in the group: 6 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
16X31L	Project 1 LED	Z	2	0P+1C	L	ZP
15X31L	Project 1 LED	Z	2	0P+1C	L	ZP
14X31L	Project 1 LED Tomáš Brandejský, Vít Fábera, Jana Kaliková, Jan Kr ál, Mária Jánešová	Z	2	0P+1C	L	ZP
12X31L	Project 1 LED	Z	2	0P+1C	L	ZP
11X31L	Project 1 LED Michal Matowicki Michal Matowicki Michal Matowicki (Gar.)	Z	2	0P+1C	L	ZP
23X31L	Project 1 LED	Z	2	0P+1C	L	ZP
18X31L	Project 1 LED	Z	2	0P+1C	L	ZP
20X31L	Project 1 LED	Z	2	0P+1C	L	ZP
21X31L	Project 1 LED Jakub Hospodka, Slobodan Stoji, Terézia Pilmannová, Stanislav Pleninger, Natalia Guskova, Lenka Hanáková, Peter Vittek, Jakub Steiner, Kate ina Grötschelová,	z	2	0P+1C	L	ZP
22X31L	Project 1 LED	Z	2	0P+1C	L	ZP
17X31L	Project 1 LED	Z	2	0P+1C	L	ZP
16X32L	Project 2 LED	Z	2	0P+1C	Z	ZP
15X32L	Project 2 LED	Z	2	0P+1C	Z	ZP
14X32L	Project 2 LED Tomáš Brandejský, Vít Fábera, Jana Kaliková, Jan Kr ál, Mária Jánešová	Z	2	0P+1C	Z	ZP
12X32L	Project 2 LED	Z	2	0P+1C	Z	ZP
11X32L	Project 2 LED Magdalena Hykšová, Michal Matowicki, Jana Kuklová Jana Kuklová Michal Matowicki (Gar.)	Z	2	0P+1C	Z	ZP
17X32L	Project 2 LED	Z	2	0P+1C	Z	ZP
23X32L	Project 2 LED	Z	2	0P+1C	Z	ZP
22X32L	Project 2 LED Michal Frydrýn, Zden k Svatý	Z	2	0P+1C	Z	ZP
21X32L	<b>Project 2 LED</b> Jakub Hospodka, Ladislav Capoušek, Slobodan Stoji, Terézia Pilmannová, Stanislav Pleninger, Vladimír Socha, Natalia Guskova, Lenka Hanáková, Iveta Kameníková,	z	2	0P+1C	z	ZP
20X32L	Project 2 LED	Z	2	0P+1C	Z	ZP
18X32L	Project 2 LED	Z	2	0P+1C	Z	ZP
11X33L	Project 3 LED Magdalena Hykšová, Michal Matowicki, Jana Kuklová Jana Kuklová Michal Matowicki (Gar.)	z	2	0P+3C	L	ZP
12X33L	Project 3 LED	Z	2	0P+3C	L	ZP
14X33L	Project 3 LED	Z	2	0P+3C	L	ZP
15X33L	Project 3 LED	Z	2	0P+3C	L	ZP
16X33L	Project 3 LED	Z	2	0P+3C	L	ZP
23X33L	Project 3 LED	Z	2	0P+3C	L	ZP
21X33L	Project 3 LED Jakub Hospodka, Tomáš Tlu ho, Sébastien Lán, Ladislav Capoušek, Slobodan Stoji , Terézia Pilmannová, Stanislav Pleninger, Michal erný, Natalia Guskova,	z	2	0P+3C	L	ZP

20X33L	Project 3 LED	Z	2	0P+3C	L	ZP
18X33L	Project 3 LED Nela Kr má ová	Z	2	0P+3C	L	ZP
17X33L	Project 3 LED	Z	2	0P+3C	L	ZP
22X33L	Project 3 LED Michal Frydrýn, Zden k Svatý	Z	2	0P+3C	L	ZP

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

from 2022/23			
16X31L	Project 1 LED	Z	2
15X31L	Project 1 LED	Z	2
14X31L	Project 1 LED	Z	2
12X31L	Project 1 LED	Z	2
11X31L	Project 1 LED	Z	2
23X31L	Project 1 LED	Z	2
18X31L	Project 1 LED	Z	2
20X31L	Project 1 LED	Z	2
21X31L	Project 1 LED	Z	2
22X31L	Project 1 LED	Z	2
17X31L	Project 1 LED	Z	2
16X32L	Project 2 LED	Z	2
15X32L	Project 2 LED	Z	2
14X32L	Project 2 LED	Z	2
12X32L	Project 2 LED	Z	2
11X32L	Project 2 LED	Z	2
17X32L	Project 2 LED	Z	2
23X32L	Project 2 LED	Z	2
22X32L	Project 2 LED	Z	2
21X32L	Project 2 LED	Z	2
20X32L	Project 2 LED	Z	2
18X32L	Project 2 LED	Z	2
11X33L	Project 3 LED	Z	2
12X33L	Project 3 LED	Z	2
14X33L	Project 3 LED	Z	2
15X33L	Project 3 LED	Z	2
16X33L	Project 3 LED	Z	2
23X33L	Project 3 LED	Z	2
21X33L	Project 3 LED	Z	2
20X33L	Project 3 LED	Z	2
18X33L	Project 3 LED	Z	2
17X33L	Project 3 LED	Z	2
22X33L	Project 3 LED	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-LED-22/23 Name of the group: Comp. Sel. Courses Bachelor Full-Time TET-LED from 2022/23 Requirement credits in the group: In this group you have to gain 6 credits Requirement courses in the group: In this group you have to complete 3 courses Credits in the group: 6

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
21Y1AM	Aeronautical Information Management (AIM)	KZ	2	2P+0C	Z	PV
00Y1XB	Active participation in a scientific project, workshop, short-term trip abroad Patrik Horaž ovský <b>Patrik Horaž ovský</b> Patrik Horaž ovský (Gar.)	КZ	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 , Michal erný, Jakub Kraus	KZ	2	2P+0C	L	PV
14Y1BM	Biometric Methods	KZ	2	2P+0C	Z	PV
15Y1DZ	History of Railway	KZ	2	2P+0C	L	PV
12Y1DS	Eva Rezlerová, Martin Jacura Project Documentation in Practice	KZ	2	2P+0C	Z	PV
17Y1EV	Public Sector Economy	KZ	2	2P+0C	Z	PV
23Y1EH	Electronics and hardware in security of transportation	KZ	2	2P+0C		PV
20Y1EK	Qualification in Electrical Engineering	KZ	2	2P+0C		PV
16Y1EN	Energy Requirements of Vehicles	KZ	2	2P+0C	L	PV
20Y1EA	Environmental Aspects of Transport	KZ	2	2P+0C	Z	PV
15Y1EH	European Integration within Historical Context	KZ	2	2P+0C	Z	PV
18Y1EM	Experimental Methods in Mechanics Daniel Kytý Daniel Kytý Daniel Kytý (Gar.)	KZ	2	2P+0C	Z	PV
15Y1FD	French Area Studies and Transportation	KZ	2	2P+0C	L	PV
14Y1HW	Computer Hardware	KZ	2	2P+0C	L	PV
15Y1HL	History of Civil Aviation	KZ	2	2P+0C	L	PV
15Y1HD	History of City Mass Transport Milan Dont	KZ	2	2P+0C	Z	PV
12Y1HD	Traffic Noise Dagmar Ko árková, Libor Ládyš	KZ	2	2P+0C	L	PV
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2	2P+0C	Z	PV
16Y1IS	Interactive simulators and simulations	KZ	2	2P+0C	L	PV
12Y1KN	Combined Transportation Petr Nejedlý	KZ	2	2P+0C	Z	PV
12Y1KP	Communication and Promotion of Transport Projects Dagmar Ko árková, Ond ej Kubala	KZ	2	2P+0C	L	PV
20Y1KP	Communication and presentation skills Ji í R ži ka, Patrik Horaž ovský, Kristýna Navrátilová, Eva Haj iarová <b>Ji í</b> R ži ka	KZ	2	2P+0C	Z	PV
23Y1KM	Crisis Management	KZ	2	2P+0C	Z	PV
23Y1KO	Quantum Physics and Optoelectronics	KZ	2	2P+0C	L	PV
23Y1KY	Cybernality	KZ	2	2P+0C	L	PV
23Y1KB	Cyber security in transportation	KZ	2	2P+0C	L	PV
21Y1LJ	Aeronautical Radio and Flight Instruments	KZ	2	2P+0C	L	PV
21Y1LS	Air Traffic Services	KZ	2	2P+0C	L	PV
17Y1LL	Logistics of Passenger and Freight Air Transport Petra Skolilová Petra Skolilová (Gar.)	KZ	2	2P+0C	L	PV
20Y1LN	Location and Navigation Petr Bureš	KZ	2	2P+0C	L	PV
23Y1MK	Crisis Situation Management in Critical Infrastructure	KZ	2	2P+0C	L	PV
23Y1MU	Emergency Events Management Solution in Transport Infrastructure	KZ	2	2P+0C	Z	PV
17Y1MD	Marketing in Transportation	KZ	2	2P+0C	Z	PV
18Y1MT	Engineering Materials Jaroslav Valach Jaroslav Valach (Gar.)	KZ	2	2P+0C	L	PV
21Y1MP	Matlab for project-oriented study Vladimír Socha, Lenka Hanáková Vladimír Socha	KZ	2	2P+0C	Z	PV
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2	2P+0C	Z	PV

15Y1NE	German in the Economy and Society	KZ	2	2P+0C	Z	PV
21Y1OH	Airline Business and Operations Peter Olexa, Eva Endrizalová Peter Olexa	KZ	2	2P+0C	Z	PV
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2	2P+0C	L	PV
20Y1OI	Fare Collection and Information Systems Patrik Horaž ovský, Milan Sliacky Milan Sliacky (Gar.)	KZ	2	2P+0C	L	PV
14Y1OJ	Object - oriented programming in JAVA	KZ	2	2P+0C	L	PV
14Y1OP	Operating System	KZ	2	2P+0C	Z	PV
17Y1OF	Personal Finance	KZ	2	2P+0C	Z	PV
20Y1OK	Road Lighting František Kekula	KZ	2	2P+0C	L	PV
11Y1PV	Parametrical and Multicriterial Programming Olga Vraštilová 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 Tomáš Honc	KZ	2	2P+0C	L	PV
12Y1C2	Designing Roads in Civil 3D II Tomáš Honc	KZ	2	2P+0C	Z	PV
14Y1PA	3D Modeling in AutoCAD	KZ	2	2P+0C	Z	PV
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2	2P+0C	L	PV
21Y1PL	Operational Aspects of Aerodromes	KZ	2	2P+0C	L	PV
21Y1PA	Air Traffic Control Operating Procedures Terézia Pilmannová	KZ	2	2P+0C	Z	PV
12Y1PU	Organization Disposition of Railway Stations	KZ	2	2P+0C	L	PV
12Y1RU	Railway Lines Reconstruction	KZ	2	2P+0C	Z	PV
16Y1RE	Control and Electronic Vehicle Systems Josef Mík, 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.)	KZ	2	2P+0C	L	PV
21Y1TH	Aircraft Technical Handling Peter Olexa	KZ	2	2P+0C	Z	PV
11Y1TG	Graph Theory Lucie Kárná Lucie Kárná (Gar.)	KZ	2	2P+0C	L	PV
23Y1TP	Criminal Law in IT and Transportation	KZ	2	2P+0C	Z	PV
14Y1TI	Creating Interactive Internet Applications	KZ	2	2P+0C	L	PV
21Y1UL	Aircraft Maintenance Tomáš T ma	KZ	2	2P+0C	L	PV
14Y1UP	Editing of Theses in MS Word	KZ	2	2P+0C	L	PV

18Y1UK	Introduction of Rail Vehicles Jitka ezní ková, Josef Kolá , Josef Kolá Josef Kolá (Gar.)	KZ	2	2P+0C	L	PV
12Y1VR	Public Transport in Cities and Regions Vladimír Pušman	KZ	2	2P+0C	Z	PV
23Y1VS	Negotiation and Cooperation	KZ	2	2P+0C	Z	PV
14Y1VM	Development of Applications for Mobile Devices	KZ	2	2P+0C	Z	PV
16Y1VT	Development in Railroad Vehicles	KZ	2	2P+0C	L	PV
14Y1WG	Webdesign	KZ	2	2P+0C	Z	PV
14Y1W1	Webdesign 1	KZ	2	2P+0C	Z	PV
14Y1W2	Webdesign 2	KZ	2	2P+0C	L	PV
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2	2P+0C	L	PV
14Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2	2P+0C	L	PV
11Y1ZM	Foundation of MATLAB Programming Šárka Vorá ová Šárka Vorá ová Sárka Vorá ová (Gar.)	KZ	2	2P+0C	L	PV
14Y1ZJ	Fundamentals of programming in JAVA	ΚZ	2	2P+0C	Z	PV
12Y1ZU	Principles of Urbanism Karel Hájek	KZ	2	2P+0C	Z	PV
15Y1ZV	East-West dichotomy: Prelude to the Cold War Marie Michlová	KZ	2	2P+0C	Z	PV
16Y1ZL	Vehicle Testing, Legislation and Construction Zuzana Radová, Josef Mík	KZ	2	2P+0C	Z	PV

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

21Y1AM	Aeronautical Information Management (AIM)	KZ	2
Definition and basic ove	rview of AIS and AIM. Transition from AIS to AIM. Regulatory base. Provision of AIS/AIM in the Czech Rep. AIP (Aeronautica	I Inf. Publication).	VFR Manual of
the Czech Rep. AIRAC	System. NOTAM messages.PIB (Pre-flight Informtion Bulletin). AIC (Aeoronautical Inf. Circulars). Aeronautical Charts. EAD (I	Europena AIS Da	tabase). QMS
(Quality Mng. System).	ADQ (Aeronautical Data Quality). AIXM (Aeronautical Inf. Exchnage Format).		
00Y1XB	Active participation in a scientific project, workshop, short-term trip abroad	KZ	2
20Y1AF	Alternative Forms of Transportation Project Financing	KZ	2
In will be specifed such	forms of financing in transportation and telecomunications, where the public sector body perform the final debtor, i. e. debt pa	ayments come fro	m its budget but
	lirect participant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of s	securities as an al	ternative source
of transportation and tel			
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
	mical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulat		
	iscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injure	d man and his tre	atment. Human
<i>,</i> ,	ive means and traffic safety regulations.		
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, animation	n using Inverse Ki	
12Y1AE	Applied Ecology	KZ	2
	gical concepts and principles, ecosystem, ecological factors, energy flow through the ecosystem. Application of knowledge w		
<b>3</b> , 1	logy - origin and historical development. Landscape definition and classification. Success. Traffic constructions in the country	side. Landscape	and nature
protection. Applied ecolo			
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, transis	stor as an amplifie	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	ms and transporta	ation technology.
	vill be supplemented by practical examples.		
15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
e e	, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation	. Health protection	i 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 tran	smission errors,
. ,	d error. Design and assessment of detection codes; requirements of the European standard EN 50159.		
21Y1BS	Unmanned aircraft systems 1	KZ	2
	elopment. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division.	Operational risks a	and operational
procedures. Practical flig			
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, behavior	al methods, the u	se of biometrics
	, safety and risks of biometric technologies.		
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 lin	es construction,
railway accidents, railwa	y junctions. Excursions and projections.		

12Y1DS Project Documentation in Practice	KZ	2
Project documentation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining proces	s. Budget and pri	cing. Practical
creation of some project documentation parts.		
17Y1EV Public Sector Economy	KZ	2
Economic and financial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assessment of p		
tax system of the CR, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding		-
23Y1EH   Electronics and hardware in security of transportation	KZ	2
Types and parameters of signals. Passive circuits, properties, basic measurements. Passive filters, semiconductors. Operational amplifiers, basic circuits and digital parts. Passive filters, semiconductors. Operational amplifiers, basic circuits, properties, basic circuits, propere		
Power supplies. Logic circuits. AD converters. Connection of analog and digital parts. Basic blocks of digital signal processing. Measurement processin in electronics.	g. Design and lab	ncation methods
20Y1EK Qualification in Electrical Engineering	KZ	2
Practical experience with measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock haza		_
voltage, maximum allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legisla	ation, standards a	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 others. Ways of energy change into kinetic energy	gy. Combustion e	ngine, electric
drive, steam engine, air engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW analysis.		
20Y1EA Environmental Aspects of Transport	KZ	2
State of the atmosphere, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probability and their offects atmosphere action of an arrival action of an arrival action of a particular data assimilation.		
Air quality, main pollutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp		2
15Y1EH European Integration within Historical Context Versailles system, formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism	KZ	_
goals. Europe after Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and		
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 experimental methods. Destructive and non-destructive	ve testing of mate	rials. Design of
experimental procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. F	atigue and lifetim	e prediction.
Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.		
15Y1FD French Area Studies and Transportation	KZ	2
France - geography and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tra	-	erminology.
French society and culture. Current political system. System of education, studying in France. Selected authors of French literature. French gastronoi		
14Y1HW Computer Hardware	KZ	2
Computer architecture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate arithmetic and logical units, I/O subsystem.	parts designing -	- controllers,
15Y1HL History of Civil Aviation	ΚZ	2
Beginnings of flying, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of		_
World airports. Famous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era		
aviation. Modern era of civil aviation. Airline companies. Supersonic flying.		
15Y1HD History of City Mass Transport	KZ	2
History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current transport networks in the world, current transport networks in the world and trolley-bus systems.	-	ents of tariff and
clearance systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Republic and SI		
12Y1HD Traffic Noise	KZ	2
Acoustic introduction, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulat		
area, principles 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.	of interest. Metho	bdology of
	KZ	2
15Y1HE Work Hygiene and Ergonomics in Traffic Basic knowledge of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these		_
Creation and protection of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to		
Practical examples from the field of transportation; relevant legislature.		
16Y1IS Interactive simulators and simulations	KZ	2
Simulation theory and application of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical m		
Simulation of vehicle dynamics, on-land carriage in particular. Virtual reality systems. Practical exercise with simulation software and interactive simu	lators.	
12Y1KN Combined Transportation	KZ	2
Combined transport strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping area		
12Y1KP Communication and Promotion of Transport Projects	KZ	2
Fundamentals of Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with	-	
networks and beyond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation influence of political marketing and political PR on transport projects. Lobbing.	I I OF CITISIS COMMU	unication. The
	KZ	2
20Y1KP Communication and presentation skills Motivation, priorities and their fulfillment, current communication networks, work with various sources, formal requirements of emails and final these		
teamwork, emotional intelligence, manipulation and way of working with it, coping with stressful situations, formal requirements of presentations, way		
presentation, presentation skills, presentation skills in online environment.		-
23Y1KM Crisis Management	KZ	2
Theory and legal frame of crisis management with direction to Rescue system (IZS). After introduction to safety domain, there are terms and knowledge	ge on: theory and	position of crisis
management and its targets; IZS-crisis management-crisis planning; and basic legislation. Practical part is concentrated to responsibility matrix com		
23Y1KO Quantum Physics and Optoelectronics	KZ	2
Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics components.		-
23Y1KY Cybernality	KZ	2
Juridical aspects of behavior on the computer network and computer systems. Cybernetic crime technology. Theory basis and models. Cyberterrorism.		
23Y1KB Cyber security in transportation	KZ	2 Limpacto social
Basic concepts of security and cyber security, legal status in the field of cyber security, virtual cyberspace and communities, taxonomy of crimes in c		i impacis, sucial
engineering, cyber attack technology, information security, cyber attacks on telematics systems, security of systems with artificial intelligence, norms		

	KZ	2
Basic definitions, history of aircraft instrumentation, aerometric instrumentation, Earth magnetism, aircraft electric equipment, gyroscopic instrument other aircraft equipment, engine instrumentation, warning and recording systems, instrumentation operational requirements, radiocommunication a		
21Y1LS Air Traffic Services	KZ	2
Airspace structure in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, at USA and Czechoslovakia. ATS - Model of financing. Training System of Air Traffic Controllers. Future development of ATS.	APP a ACC contro	I. History of ATS
17Y1LL Logistics of Passenger and Freight Air Transport	KZ	2
Logistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial	1 1	bassengers and
air cargo. Information systems in air transport. Global distribution systems.		
20Y1LN Location and Navigation Description and examples of road networks, localization on the network. Routing algorithms, their properties and implementation. Description and examples of road networks, localization on the network.	KZ KZ	2 to for finding
transport connections, routing algorithms, their properties and implementation.	examples of datase	
23Y1MK Crisis Situation Management in Critical Infrastructure	KZ	2
Determination of critical infrastructute elements on all levels, their protection systems, responsibilities of particular agencies of the state administrat	-	vernment, and
their responsibilities to anounce particular safety provisions. Physical and cyber protection of critical infrastructure with special attention to the soft to 23Y1MU Emergency Events Management Solution in Transport Infrastructure	argets.	2
23Y1MU Emergency Events Management Solution in Transport Infrastructure Basic solutions of emergency events with emphasis of the transport infrastructure events and their solution management. Knowledge in the emergency	1 1	_
in liquidation work within the transport infrastructure.	31 31 1	
17Y1MD Marketing in Transportation	KZ	2
General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport the application of marketing.	ort and the resulting	g differences in
18Y1MT Engineering Materials	KZ	2
Systematic overview of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers	1 1	
to biological materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's selection	on charts.	
21Y1MP Matlab for project-oriented study	KZ	2
The subject's syllabus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercite particular examples, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improver		-
14Y1MP Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2
Assemblies programming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pip		
Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.		
15Y1MK Modern History in Context: Every Day Life and Transport Historical overview of modern history of every day life, science, technology and transport in a wider context.	KZ	2
15Y1NE German in the Economy and Society	KZ	2
Recent economic and social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic	1 1	
selected topics.		
21Y10H   Airline Business and Operations The course provides a comprehensive view of the commercial, operational and transportation activities of air transport companies. It focuses on the org	KZ KZ	2
various aspects of their strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of tr	-	
a basic view of the economic aspects of air transport.		occontrpromace
23Y1OK Protection of Critical Objects and Infrastructures	KZ	2
23Y1OK Protection of Critical Objects and Infrastructures Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection,	1 1	2
23Y1OK Protection of Critical Objects and Infrastructures Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.	safety of critical ob	2 jects and critical
23Y1OK Protection of Critical Objects and Infrastructures Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection,	safety of critical ob	2 jects and critical 2
23Y10K         Protection of Critical Objects and Infrastructures           Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.           20Y10I         Fare Collection and Information Systems           Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their component panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parking the component) in the systems.	safety of critical ob KZ nts for users (timeta g).	2 jects and critical 2 ables, maps,
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23Y10K         Protection of Critical Objects and Infrastructures           Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.           20Y10I         Fare Collection and Information Systems           Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their component panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parkin 14Y10J           Object - oriented programming in JAVA           Objective thinking. Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters data types. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda of 14Y10P           Operating System           Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Prograr runlevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, gracomunication. Services management. Safe and secure configuration of OS. Remote administration.           17Y10F         Personal Finance           Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of the consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insura	safety of critical ob         KZ         Ints for users (timetag).         KZ         Safety of critical object metages         KZ         Ints for users (timetage).         KZ         Safety of critical object metages         KZ         Ints and processes         Applied editors, source         KZ         Inousing (rent, mortgand adequacy), see         KZ         Iuminaires (lifetime	2 jects and critical 2 ables, maps, 2 hods. Reference mous functions. 2 s. OS boot, d, video and 2 gage, savings, curing the future 2 of light sources,
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23Y10K       Protection of Critical Objects and Infrastructures         Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.         20Y10I       Fare Collection and Information Systems         Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their component panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parkin 14Y10J)         Object - oriented programming in JAVA         Objective thinking. Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters data types. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda of 14Y10P         Operating System         Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Progra runlevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, gra communication. Services management. Safe and secure configuration of OS. Remote administration.         17Y10F       Personal Finance         Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of f consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suita	safety of critical ob         KZ         Ints for users (timetag).         KZ         Safety of critical ob         KZ         Nousing (rent, mortg and adequacy), see         KZ         Iuminaires (lifetime hting calculations in         KZ	2 jects and critical 2 ables, maps, 2 hods. Reference mous functions. 2 s. OS boot, d, video and 2 gage, savings, curing the future 2 of light sources, b DIALux and 2
23Y10K         Protection of Critical Objects and Infrastructures           Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.           20Y10I         Fare Collection and Information Systems           Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their component panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parkin           Objective thinking. Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters data types. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, neum, packages, exceptions, collections, generics, lambda of 14Y10P           Operating System           Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Program runlevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, gracommunication. Services management. Safe and secure configuration of OS. Remote administration.           17Y10F         Personal Finance           Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of h consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability (retirement savings and insurance).	safety of critical ob         KZ         Ints for users (timeta         g).         KZ         .). Basic object meta         expressions, anony         KZ         ms and processess         aphic editors, sound         KZ         nousing (rent, mortg         and adequacy), see         KZ         luminaires (lifetime         hting calculations ir         KZ         s. Computation of e	2 jects and critical 2 ables, maps, 2 hods. Reference mous functions. 2 s. OS boot, d, video and 2 gage, savings, curing the future 2 of light sources, n DIALux and 2 gather a contractions.
23Y10K       Protection of Critical Objects and Infrastructures         Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.         20Y10I       Fare Collection and Information Systems         Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their component panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parkin 14Y10J)         Object - oriented programming in JAVA         Objective thinking. Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters data types. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda of 14Y10P         Operating System         Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Progra runlevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, gra communication. Services management. Safe and secure configuration of OS. Remote administration.         17Y10F       Personal Finance         Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of f consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suita	safety of critical ob         KZ         Ints for users (timeta         g).         KZ         .). Basic object meta         expressions, anony         KZ         ms and processess         aphic editors, sound         KZ         nousing (rent, mortg         and adequacy), see         KZ         luminaires (lifetime         hting calculations ir         KZ         s. Computation of e         KZ	2 jects and critical 2 ables, maps, 2 hods. Reference mous functions. 2 s. OS boot, d, video and 2 gage, savings, curing the future 2 of light sources, n DIALux and 2 efficient solution. 2
23Y10K       Protection of Critical Objects and Infrastructures         Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.         20Y10I       Fare Collection and Information Systems         Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components (protects,). The issue of tariff systems. Other examples of clearance systems (parkin         14Y10J       Object - oriented programming in JAVA         Objective thinking. Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters data types. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda e 14Y10P         Operating System       Operating System         Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Progra runlevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, gre communication. Services management. Safe and secure configuration of OS. Remote administration.         17Y10F       Personal Finance         Personal Finance       Personal finance (houdget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of h consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insura	safety of critical ob         KZ         Ints for users (timeta         g).         KZ         .). Basic object meta         expressions, anony         KZ         ms and processess         aphic editors, sound         KZ         nousing (rent, mortg         and adequacy), see         KZ         luminaires (lifetime         hting calculations ir         KZ         s. Computation of e         KZ	2 jects and critical 2 ables, maps, 2 hods. Reference mous functions. 2 s. OS boot, d, video and 2 gage, savings, curing the future 2 of light sources, n DIALux and 2 efficient solution. 2
23Y1OK         Protection of Critical Objects and Infrastructures           Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.           20Y1OI         Fare Collection and Information Systems           Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parkin 14Y1OJ           Objective thinking. Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters data types. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda a 14Y1OP           Operating System         Operating System           Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Program rulevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, gre communication. Services management. Sale and secure configuration of OS. Remote administration.           17Y1OF         Personal Finance           Personal finance (budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of f consumer loans, refinancing), savings and investments (luminaires, control cabinets for street lighting cables), characteristics of light distribution), standards, measurement of il	Safety of critical object         KZ         Ints for users (timetag).         KZ         J. Basic object metages         axpressions, anony         KZ         ms and processess         aphic editors, sound         KZ         nousing (rent, mortgand adequacy), see         Luminaires (lifetime         hting calculations in         KZ         Iuminaires (lifetime         KZ         Luminaires (lifetime         KZ         Itural communicati         KZ         route layout and de	2 jects and critical 2 ables, maps, 2 hods. Reference mous functions. 2 s. OS boot, d, video and 2 gage, savings, curing the future 2 of light sources, n DIALux and 2 efficient solution. 2 on. 2 sign parameters
23Y1OK         Protection of Critical Objects and Infrastructures           Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.           20Y101         Fare Collection and Information Systems           Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components (lay of validators, turnstiles,). Information systems and their components (lay of validators, turnstiles,). Information systems and their components (lay of validators, turnstiles,).           141OD         Opera	Safety of critical object         KZ         Ints for users (timetag).         KZ         J. Basic object metages         axpressions, anony         KZ         ms and processess         aphic editors, sound         KZ         nousing (rent, mortgand adequacy), see         Luminaires (lifetime         hting calculations in         KZ         Iuminaires (lifetime         KZ         Luminaires (lifetime         KZ         Itural communicati         KZ         route layout and de	2 jects and critical 2 ables, maps, 2 hods. Reference mous functions. 2 s. OS boot, d, video and 2 gage, savings, curing the future 2 of light sources, n DIALux and 2 efficient solution. 2 on. 2 sign parameters
23Y1OK         Protection of Critical Objects and Infrastructures           Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.           20Y1OI         Fare Collection and Information Systems           Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their componer panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parkin 14Y1OJ           Objective thinking. Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters data types. Inheritance. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda of 14Y1OP           Operating System         Distributions. Installation GNU/LINX OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Progra romunication. Services management. Safe and secure configuration of OS. Remote administration.           17Y1OF         Personal Finance           Personal finance (budget, financing) of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of the consumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability (retirement savings and insurance).           20Y1OK         Road Lighting           Basic lighting qountities and terms, street lighting components (lumi	safety of critical ob         KZ         Ints for users (timetag).         KZ         Safety of critical ob         Ms for users (timetagy).         Safety of critical ob         Ims for users (timetagy).         KZ         ms and processess         aphic editors, sound         KZ         nousing (rent, mortg         and adequacy), see         KZ         luminaires (lifetime         hting calculations in         KZ         Itural communicati         KZ         route layout and de         ings with other transition	2 jects and critical 2 ables, maps, 2 hods. Reference mous functions. 2 s. OS boot, d, video and 2 gage, savings, curing the future 2 of light sources, n DIALux and 2 efficient solution. 2 on. 2 sign parameters sport modes,
23Y1OK         Protection of Critical Objects and Infrastructures           Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, infrastructures.           20Y101         Fare Collection and Information Systems           Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components (on-board units, validators, turnstiles,). Information systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components (lay of validators, turnstiles,). Information systems and their components (lay of validators, turnstiles,). Information systems and their components (lay of validators, turnstiles,).           141OD         Opera	safety of critical ob         KZ         Ints for users (timeta         g).         KZ         .). Basic object meta         expressions, anony         KZ         ms and processes         aphic editors, sound         KZ         nousing (rent, mortg         and adequacy), see         Iuminaires (lifetime         hting calculations ir         KZ         Iuminaires (lifetime         KZ         Iuminaires (lifetime         KZ         Iuminaires (lifetime         KZ         Iuminaires (lifetime         KZ         Intural communicati         KZ         route layout and de         ings with other trans         KZ	2 jects and critical 2 ables, maps, 2 hods. Reference mous functions. 2 s. OS boot, d, video and 2 gage, savings, curing the future 2 of light sources, n DIALux and 2 efficient solution. 2 on. 2 sign parameters sport modes, 2

14Y1P2 Computer Aid of Transportation Projecting 2	KZ	2
Overview of CAx application for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting and the projecting areas and the projecting areas and the projecting areas and the projecting areas are an antiparticle projecting areas are an areas and the projecting areas are an areas areas and the projecting areas areas are an areas areas areas are an areas ar		
modification (attributes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic tra section). Basics of 3D modelling.	Insition curve, cross-	-and longitudinal
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 devel	1	
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.		
14Y1PI Corporate Information System	KZ	2
Data-information-knowledge, components of information system, syntatic and semantic sense of data, structure of corporate information system,	•	
(personalistic, production, storage, etc.), corporate information politic and information control, risks of information system operation, legal environm state information system, information system security, data protection, safety politics.	ent of information s	stern operation,
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 fo		
addressing, error detection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional format		-
data analysis. Examples and questions from various companies and training.		
21Y1PC ATC Procedures and Activities	KZ	2
Air traffic control procedures, basics of communication and phraseology, aircraft identification, spacing and traffic coordination. In addition, the course tage is a structure and law visibility apparent applications. Students will during the approximate part of the procedures of the procedure		affic control at
the airports and low visibility operational procedures. Students will during the course learn basic safety management applications applied across t 12Y1PD Assessment of Transport Structures	KZ	2
12Y1PD Assessment of Transport Structures Assessment of transport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibil		
transport structures on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples	-	
the environment.		-
20Y1PK Product Quality Management Processes	KZ	2
General principles of organization management. Management systems and international standards; quality management systems. Quality product		
of standards for systems management, management principles. Principles of process management, monitoring and measurement systems management for a systems management. Proceeding and testing and testi	ent. Uniform framew	ork of standards
for systems management. Process management principles. Metrology and testing. Product certification.           14Y1PJ         C Programming Language	KZ	2
14Y1PJ C Programming Language C programming language. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocatio	1 1	
Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.	n, ounig, moo, ou dou	
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 thr	ough the complete d	lesign of this
particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation.	The course also inc	ludes 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 thr	KZ	2 locian of this
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.		
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, of	pject data creation, v	vork with data
connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.	1/7	0
16Y1PV Operation, Construction and Maintenance of Vehicles Methods of vehicle production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measurements	KZ	2 on mechanism
General principles of engine diagnostics.	arement. nanomioor	on meenanism.
21Y1PL Operational Aspects of Aerodromes	KZ	2
Operational aspects of aerodromes. Location of aerodrome and orientation of runways. Requirements for apron. Capacity of airports runways and	terminals. Operatio	n under winter
conditions. Firefighting units. Protection against unlawful interference. Local transport connection. Environmental protection.		
21Y1PA Air Traffic Control Operating Procedures	KZ	2
Practical exercises on the ATC simulator with the following focus - getting familiar with the simulation environment, acquiring basic habits, aircraft i	-	-
level changes, ATC clearance, use of RNAV points. Practical exercises focused on the basis of vectoring, timely application of vertical spacing, ES Exercises in the APPROACH airspace, arrivals, departures and conflict solutions.	T and REV messag	e transmission.
12Y1PU Organization Disposition of Railway Stations	KZ	2
Connecting station. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas.		
Reserve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic railway		
12Y1RU Railway Lines Reconstruction	KZ	2
Keeping railway line operational, maintaining lines and stations, geometrical alignment of railway line, vehicles for railway superstructure and subs	tructure maintenance	e, scheduling
and organising possesions, preparation of railway lines reconstruction and maintenance, process of raiway line reconstruction.	V7	0
16Y1RE Control and Electronic Vehicle Systems Elementary concepts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, di	KZ	2 Conventional
and hybrid drive control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control	-	
comfort systems.		
21Y1RZ Human Resources Management	KZ	2
The position of human resources in the organization and related disciplines file. Substance, importance and challenges of human resources mana	igement. Internal an	
environment of human resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation a		staff. Positioning.
dismissal and redundancies of employees. Education of employees. Planning career management.	nd remuneration of s	
47V/4CT Titon Cimulation		_
17Y1ST   Titan Simulation Titan is a management game simulating the business decisions Lets 2-8 student groups to produce and compete in the market with the same pro-	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 pro	KZ bduct. Students set a	2 a price and
	KZ bduct. Students set a	2 a price and
Titan is a management game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same productermine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequence of the con	KZ bduct. Students set a	2 a price and
Titan is a management game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same productermine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequence of financial corporate reports and they use this information for other business decisions.         21Y1SI       ATC Simulator         Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearance,	KZ oduct. Students set a uences of their decis KZ use of RNAV points	2 a price and ions by the form 2 . Practical
Titan is a management game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same productermine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequence of financial corporate reports and they use this information for other business decisions.         21Y1SI       ATC Simulator	KZ oduct. Students set a uences of their decis KZ use of RNAV points	2 a price and ions by the form 2 . Practical

20Y1SC	Sensors and Actuators	KZ	2
-	actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Senso	ors of mechanical, e	electro-magnetic,
	idity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.		
17Y1SL	Sociology of Human Resources	KZ	2
Human resources and th	eir importance, work group as a special kind of social group, communication, personal management, modern management,	human resources	planning, culture
of the organization.			
11Y1SI	Transportation Software Engineering	KZ	2
	re engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and imple	1	ormal techniques
and practical usuage.			
16Y1KS	Quality and Reliability of Vehicles	KZ	2
	eory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability.	1	1
	sis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other method		
	ms of quality and reliability, data collection.		
		V7	2
	Road Management and Maintenance	KZ	2
-	hership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented develo	-	
-	trategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and re	apair methods are	discussed in the
	estment activity in highway engineering.	7	
	Strategy and innovation in mobility	KZ	2
Introduction to innovatio	n, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful in	novation project,	KPIs, budget;
co-financing, evaluation.	Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlo	ok (business plan	and possibilities
of use). Creating an inno	ovation strategy. Customer and value map, design and testing.		
17Y1SK	Urban and Regional Rail Transport Systems	KZ	2
	ort demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management,	1	
	le. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transp	-	-
marketing.		sont preferences.	
-		1/7	-
	Aircraft Technical Handling	KZ	2
	ing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and unic		oment for
	and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and technical progress	3.	
11Y1TG	Graph Theory	KZ	2
	ninology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees,	1	ng tree, shortest
	ath, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existen	-	-
	ational complexity, dealing with NP-complete problems, heuristic approach.		
23Y1TP	Criminal Law in IT and Transportation	KZ	2
	•	1	
	aw into legal order, conception of culpability and criminal delict, consequency of other legal standards. international treaty a	na chminai iaw, in	vestigation of
	criminal court cases, practical examples.		
	Creating Interactive Internet Applications	KZ	2
Possibilities of scripting	anguage PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions.	. Your own applicat	tion programmed
in PHP language.			
21Y1UL	Aircraft Maintenance	KZ	2
	echnical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and	1	1
	maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft ma	•	·
	nance. Seminars will be focused on practical application.	internation. Regule	
		1/7	
	Editing of Theses in MS Word	KZ	2
	ed to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, cre		
	tc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamles	s editing dissertat	ions and theses,
so that they are able to o	concentrate mainly on writing a thesis.		
18Y1UK	Introduction of Rail Vehicles	KZ	2
Basic characteristics and	d parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion	train and unit trai	ns. Rolling and
track resistance. Total ru	nning resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehic	le - hydromechan	ic, hydrodynamic
and electric drive. Desig	n concept rail vehicles and drive of wheel set.		
-	Public Transport in Cities and Regions	KZ	2
	I pillars of public transport. Accessibility of public transport. Transport demand management and directional coordination of	1	1
	ters and transport variations. Types of lines according to their routing and basic operating parameters. Time coordination of l	-	-
	eration in Prague. Tram safety.	inco. operational	danie control.
	Negotiation and Cooperation	KZ	2
-	otiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Info		
Principles of negotiation	, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", spe	ecifications and bi	dding, the role of
trust.			
14Y1VM	Development of Applications for Mobile Devices	KZ	2
Object oriented program	ming, Java programming language, development environment, operating system Android, development application - widget	ts, containers, thre	ads, menu,
permissions, services, G	GUI.		
16Y1VT	Development in Railroad Vehicles	KZ	2
	n. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal tra	1	1
	als in design. International standardization.	anoportation. Only	
		1/7	-
14Y1WG	Webdesign	KZ	2
	asics of HTTP communication, URL and addressing, HTML5 markup language, advanced CSS3 techniques, accessible an	d usable web rule	s, responsive
webdesign, content mar	agement systems, web server installation + configuration directives. The subject matter will be trained on examples.		
14Y1W1	Webdesign 1	KZ	2
	asics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web access	1	
	of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practiced		
	Webdesign 2	KZ	2
	nced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web	1	
		, server mataliatio	r Fooringulation
I UNECLIVES. IUDICS WIII DE	practiced on practical examples.		

16Y1ZG Int	roduction into Applied Computer Graphics	KZ	2
Computer graphics, division	and applications with emphasis on transport, including development and research. Colours, colour perception, colour sc	chemes, models,	principles of 2D
and 3D generation, element	ary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basic	cs. Introduction to	2D and 3D
graphics software.			
14Y1ZM Fu	indamentals of parametric and adaptive modeling	KZ	2
Basics of work at products a	and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models fro	m 2D sketches. Ir	nport and export
from and to another systems	s. Fundamentals of assemblies creation.		
11Y1ZM Fo	undation of MATLAB Programming	KZ	2
To explain the principle of alg	gorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, r	natrices and elem	ients operations,
control flow, inputs and outp	uts, graphics, optimization and program code debugging.		
14Y1ZJ Fu	indamentals 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 Mathematical Me	ethods. Terms. Relational Operators and Switches. Cycles for, while, foreach. Field - declaration, initialization, methods for	r field work. ASCI	I. Functions,
parameters, return value, re	cursion. Program creation.		
12Y1ZU Pr	inciples of Urbanism	KZ	2
Survey on history of city and	d settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spac	ial arrangement c	of settlements.
Types of towns or cities with	a certain prevailing function, forms of their development. Brief overview of land-use planning.		
15Y1ZV Ea	st-West dichotomy: Prelude to the Cold War	KZ	2
Historical prologue, evolution	n 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 interr	national relations
in the end of 19th century ar	nd the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, t	the causes and co	onsequences.
Economic and financial histo	ory. Social changes. Discussions on texts, sources.		
16Y1ZL Ve	hicle Testing, Legislation and Construction	KZ	2
Vehicle, bus and motorbike c	ostruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of persor	hal cars, trucks, bu	ises, motorbikes,
legislation in the EU and in t	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 <b>Zuzana Malá</b> Zuzana Malá (Gar.)	Z	0	0P+2C	z	V
21SLD	Seminar of Air Transport Vladimír Plos, Natalia Guskova, Jakub Kraus 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 ichl	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	inology, basic rules. VFR / IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio na	vigation. Weight, I	balance,
performance. Flight plan	nning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic n	nanagement, grou	und handling,

security. Air crew. Airlines and economics. Space technologies.

18SPP	Seminary from Elasticity and Strength	Z	0
Excersise for prac	ctice. Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of be	am. Analysis of a	deflection curve
of beam. Torsion	of circle cross section. Combined loading. Stability of compressed bar and buckling.		
18STD	Seminary from Technical Documentation	Z	0
Technical standar	rds, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimension	al and geometric	al accuracy,
arrangement of d	rawing sheets.		
18SS	Seminary from Structural Analysis	Z	0
Examples for pract	ctise. General 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 virt	ual works for calculation of reactions of staticaly determinate systems. Determination of axial forces in truss construction - method (	of joints and meth	nod of sections.
Geometry of cros	s sections. Plane fiber polygons.		
11SSF	Secondary School Physics Course	Z	0
Basics of kinemat	tics, dynamics, 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-LED

Name of the group: Bachelor Full-Time TET-LED 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 <b>Zuzana Malá</b> Zuzana Malá (Gar.)	Z	0	0P+2C	L	V

#### Characteristics of the courses of this group of Study Plan: Code=VP-BP-TET-LED Name=Bachelor Full-Time TET-LED 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.		

## List of courses of this pass:

Code	Name of the course	Completion	Credits
00Y1XB	Active participation in a scientific project, workshop, short-term trip abroad	KZ	2
11CAL1	Calculus 1	Z,ZK	7
Sequence of real	numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Indefinite integral, Newton integral	ral, Riemann integr	al, improper
	Riemann integral. First-order differential equations, linear differential equations.		
11CAL2	Calculus 2	Z,ZK	5
Line	ar differential equations and their systems, differential calculus of functions of several real variables. Riemann integral in Rn. Line and	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
	Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electrostatics	tric current.	
11GIE	Geometry	KZ	3
Differential geom	etry of curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory	of the motion, the v	elocity, and
	acceleration of a particle moving on a curved path.		
11LA	Linear Algebra	Z,ZK	3
Vector spaces (lin	ear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and the		minants and
	their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classifica		1
11MSP	Modeling of Systems and Processes	Z,ZK	4
	stem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differ		-
Linear and no	nlinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function	on. Stability of LTI s	systems.
	Discretization of continuous systems. System interconnection.		1
11SCFZ	Seminar of Physics	Z	0
	Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermos	lynamics.	
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 probabi	lity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametr	ic tests Nonpara	metric tests
443/041	Regression and correlation analysis		
11X31L	Project 1 LED	Z	2
11X32L	Project 2 LED	Z	2
11X33L	Project 3 LED	Z	2
11Y1BK	Error Detection Codes for Interlocking Systems	KZ	2
afe communicatio	n and methods for its assuring. Safety codes linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission channels, de	tection of transmi	ssion errors
	probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN 5015	9.	
11Y1PV	Parametrical and Multicriterial Programming	KZ	2
olution to the prol	lem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Co		ient solutior
11Y1SI	Transportation Software Engineering	KZ	2
	oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implemen and practical usuage.		-
11Y1TG	Graph Theory	KZ	2
	ا d terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, min		
-	rian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence ar for their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.		
11Y1ZM	Foundation of MATLAB Programming	KZ	2
	iple of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, matricontrol flow, inputs and outputs, graphics, optimization and program code debugging.		
12MDE	Transport Models and Transport Excesses	Z,ZK	3
	Transport Models and Transport Excesses [] traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of qui	•	-
	assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences		-
100001	safety and fluency.	KZ	<u> </u>
12PPOK	Designing Roads, Highways and Motorways		3
	ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard		
ange of vision for	stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety	/ device. Crossing	js, junction
	intersections.		
12X31L	Project 1 LED	Z	2
12X32L	Project 2 LED	Z	2
12X33L	Project 3 LED	Z	2
12Y1AE	Applied Ecology	KZ	2
	ecological concepts and principles, ecosystem, ecological factors, energy flow through the ecosystem. Application of knowledge within		tion. Specia
	ape ecology - origin and historical development. Landscape definition and classification. Success. Traffic constructions in the countrys		
	protection. Applied ecology.		
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
	voted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The p	-	-
particular intear b	improved and developed. Students learn to design intersections.		u shiis are
10/400		V7	0
12Y1DS	Project Documentation in Practice	KZ	2
-ioject document	ation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining process.	budget and pricin	iy. Practica
40)///	creation of some project documentation parts.		-
12Y1HD	Traffic Noise	KZ	2
	on, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulations		
area, principles	of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area	of interest. Metho	dology of
	computing and measurement of transport noise. Acoustic studies, measuring protocol.		
12Y1KN	Combined Transportation	KZ	2
			in nontron
	ort strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas.	Multimodal logist	ic centres.
	ort strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas. Communication and Promotion of Transport Projects	Multimodal logist KZ	2
Combined transp 12Y1KP		KZ	2
Combined transp 12Y1KP Fundamentals of	Communication and Promotion of Transport Projects	KZ e media, the publ	2 2 2 2
Combined transp 12Y1KP Fundamentals of	Communication and Promotion of Transport Projects Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the	KZ e media, the publ	2 ic on social
Combined transp 12Y1KP Fundamentals of	Communication and Promotion of Transport Projects Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for	KZ e media, the publ	2 2 2 2
Combined transp 12Y1KP Fundamentals of networks and bey 12Y1PC	Communication and Promotion of Transport Projects Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the rond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for influence of political marketing and political PR on transport projects. Lobbing.	KZ e media, the publ pr crisis communi KZ	2 ic on social cation. The
Combined transp 12Y1KP Fundamentals of networks and bey 12Y1PC outes for pedestr	Communication and Promotion of Transport Projects Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for influence of political marketing and political PR on transport projects. Lobbing. Pedestrian and Cycling Transport	KZ e media, the publ or crisis communi KZ layout and desigr	2 ic on social cation. The 2 parameter
Combined transp 12Y1KP Fundamentals of networks and bey 12Y1PC coutes for pedestr	Communication and Promotion of Transport Projects           Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for influence of political marketing and political PR on transport projects. Lobbing.           Pedestrian and Cycling Transport           ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route	KZ e media, the publ or crisis communi KZ layout and desigr	2 ic on social cation. The 2 parameter
Combined transp 12Y1KP Fundamentals of networks and bey 12Y1PC outes for pedestr for cyclists. Separ	Communication and Promotion of Transport Projects           Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for influence of political marketing and political PR on transport projects. Lobbing.           Pedestrian and Cycling Transport           ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings crossroads. Traffic signs and road marking for cyclists.	KZ e media, the publ or crisis communi KZ layout and desigr	2 ic on social cation. The 2 parameter
Combined transp 12Y1KP Fundamentals of networks and bey 12Y1PC outes for pedestr for cyclists. Separ 12Y1PD	Communication and Promotion of Transport Projects           Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for influence of political marketing and political PR on transport projects. Lobbing.           Pedestrian and Cycling Transport           ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings	KZ e media, the publ or crisis communi KZ layout and desigr with other transp	2 ic on social cation. The parameter port modes, 2
Combined transp 12Y1KP Fundamentals of networks and bey 12Y1PC outes for pedestr for cyclists. Separ 12Y1PD ssessment of transp	Communication and Promotion of Transport Projects           Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for influence of political marketing and political PR on transport projects. Lobbing.           Pedestrian and Cycling Transport           ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings crossroads. Traffic signs and road marking for cyclists.           Assessment of Transport Structures	KZ e media, the publ or crisis communi KZ layout and desigr with other transp KZ its protection and	2 ic on social cation. The parameter port modes, 2 assessmen
Combined transp 12Y1KP Fundamentals of networks and bey 12Y1PC outes for pedestr for cyclists. Separ 12Y1PD ssessment of transp	Communication and Promotion of Transport Projects           Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for influence of political marketing and political PR on transport projects. Lobbing.           Pedestrian and Cycling Transport           ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings crossroads. Traffic signs and road marking for cyclists.           Assessment of Transport Structures           sport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of	KZ e media, the publ or crisis communi KZ layout and desigr with other transp KZ its protection and	2 ic on social cation. The parameter port modes, 2 assessme
Combined transp 12Y1KP Fundamentals of networks and bey 12Y1PC toutes for pedestr for cyclists. Separ 12Y1PD assessment of transport structure	Communication and Promotion of Transport Projects           Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for influence of political marketing and political PR on transport projects. Lobbing.           Pedestrian and Cycling Transport           ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings crossroads. Traffic signs and road marking for cyclists.           Assessment of Transport Structures           sport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of s on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of assessment.	KZ e media, the publ or crisis communi KZ layout and desigr with other transp KZ its protection and essment of traffic	2 ic on social cation. The parameter port modes, 2 assessmer buildings o
Combined transp 12Y1KP Fundamentals of networks and bey 12Y1PC outes for pedestr for cyclists. Separ 12Y1PD ssessment of trar ansport structure 12Y1PU	Communication and Promotion of Transport Projects           Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for influence of political marketing and political PR on transport projects. Lobbing.           Pedestrian and Cycling Transport           ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings crossroads. Traffic signs and road marking for cyclists.           Assessment of Transport Structures           sport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of s on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of assessment.           Organization Disposition of Railway Stations	KZ e media, the publ or crisis communi KZ layout and desigr with other transp KZ its protection and essment of traffic KZ	2 ic on social cation. The parameter port modes, 2 assessmer buildings o
Combined transp 12Y1KP Fundamentals of networks and bey 12Y1PC outes for pedestr or cyclists. Separ 12Y1PD ssessment of trar ansport structure 12Y1PU Connecting stati	Communication and Promotion of Transport Projects           Public Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the ond. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation for influence of political marketing and political PR on transport projects. Lobbing.           Pedestrian and Cycling Transport           ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings crossroads. Traffic signs and road marking for cyclists.           Assessment of Transport Structures           sport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of s on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of assessment.	KZ e media, the publ or crisis communi KZ layout and desigr with other transp KZ its protection and essment of traffic KZ e stations. Forma	2 ic on socia cation. The paramete port modes assessme buildings of 2

12Y1RU	Railway Lines Reconstruction	KZ	2
Keeping railway li	ne operational, maintaining lines and stations, geometrical alignment of railway line, vehicles for railway superstructure and substructu		
	and organising possesions, preparation of railway lines reconstruction and maintenance, process of ralway line reconstructio	on.	-
12Y1SU	Road Management and Maintenance	KZ	2
Getting familiar v	ith ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented develop	ment of road netwo	ork, short,
medium and long-t	erm strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and repair	methods are discu	ussed in the
	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 arameters and transport variations. Types of lines according to their routing and basic operating parameters. Time coordination of line		
	Organization of tram operation in Prague. Tram safety.		
12Y1ZU	Principles of Urbanism	KZ	2
	of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial		
	Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.		
12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Ra	illway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. Sp		way lines.
	Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail tr	-	
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2
Role of transportat	on in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, pu impacts of transportation to environment and safety.	ublic mass transpo	ort. Negative
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 algorithm using flowchart		-
-	ean algebra to construct constraints in algorithms. Students will be introduced to the basics of the Python programming language - va	-	
	will learn to work with variables of basic data types (integer, floating point and string) and the list data structure in their program	-	
14DATS	Database Systems	KZ	2
Basic concepts of	f database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and	d integrity of data,	database
	queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via t		
14DPK	Digital Support for Designing of Roads and Highways	Z	0
	Seminars possibilities of technical processing problems focused on designing of roads and highways.		
14DZT	Digital Support for Railway Lines	Z	0
44/00	Seminars possibilities of technical processing problems solved in the field of railway lines.	1/7	0
14KSP	Constructing with Computer Aid m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common work	KZ	2
-	Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possibility of the systems of		
	profiles, drawings with raster foundaments).		
14PGP	Program Resources	Z	2
Students will be re	ninded of some aspects of Pythom programming, learn basic concepts and constructs from object-oriented programming and their in	nplementation in P	ython. They
	ry out the basics of working with data libraries in Python, namely NumPy, Pandas, Matplotlib, and practice with examples of smaller and	nd larger data size	es.
14PRG	Programming	KZ	2
-	ramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python program	amina languaga is	
here so that the pa	ticipant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and search		-
14X31L			-
140016	working with date and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).	hing, tuples, sets, o	dictionaries,
	Project 1 LED	hing, tuples, sets, o	dictionaries,
14X32L	Project 1 LED Project 2 LED	hing, tuples, sets, o Z Z	dictionaries,
14X32L 14X33L	Project 1 LED Project 2 LED Project 3 LED	hing, tuples, sets, o Z Z Z	dictionaries, 2 2 2
14X32L 14X33L 14Y1AV	Project 1 LED Project 2 LED Project 3 LED Animation and Visualization	hing, tuples, sets, o Z Z KZ	2 2 2 2 2 2 2
14X32L 14X33L 14Y1AV Advanced modifica	Project 1 LED Project 2 LED Project 3 LED Animation and Visualization tions and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Spa	hing, tuples, sets, o Z Z KZ ace Warp objects. A	2 2 2 2 2 xtmospheric
14X32L 14X33L 14Y1AV Advanced modifica and other effect	Project 1 LED Project 2 LED Project 3 LED Animation and Visualization tions and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Spa s, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation	hing, tuples, sets, o Z Z KZ ace Warp objects. A n using Inverse Kin	2 2 2 2 2 xtmospheric ematics.
14X32L 14X33L 14Y1AV Advanced modifica and other effect 14Y1BE	Project 1 LED Project 2 LED Project 3 LED Animation and Visualization tions and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Spa s, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation Barrierless Transport	Ling, tuples, sets, or Z Z KZ ace Warp objects. A n using Inverse Kin KZ	2 2 2 2 Atmospheric ematics. 2
14X32L 14X33L 14Y1AV Advanced modifica and other effect 14Y1BE The issue of barrie	Project 1 LED Project 2 LED Project 3 LED Animation and Visualization tions and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Spa s, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation	Ling, tuples, sets, or Z Z KZ ace Warp objects. A n using Inverse Kin KZ will gain theoretica	dictionaries, 2 2 2 Atmospheric ematics. 2 I knowledge
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14Y1P2			1
	Computer Aid of Transportation Projecting 2	KZ	2
Overview of CAx a	pplication for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, data	a exchange). Adv	anced blocks
modification (attrib	utes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic transition	n curve, cross-an	d longitudina
	section). Basics of 3D modelling.		
14Y1PA	3D Modeling in AutoCAD	KZ	2
Work in 3D non-p	parametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object	data creation, wo	ork with data
	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 editin		hin the user
	level scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics		
14Y1PI	Corporate Information System	KZ	2
Data-information	on-knowledge, components of information system, syntatic and semantic sense of data, structure of corporate information system, pai	rticular informatio	on system
personalistic, proc	luction, storage, etc.), corporate information politic and information control, risks of information system operation, legal environment of	information syst	em operation
	state information system, information system security, data protection, safety politics.		
14Y1PJ	C Programming Language	KZ	2
C programming lar	nguage. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation, strin	-	s and unions
	Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise op		
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		-
addressing, error d	letection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatting, s	olution finding, s	olver, macros
	data analysis. Examples and questions from various companies and training.		
14Y1TI	Creating Interactive Internet Applications	KZ	2
ossibilities of scri	pting language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions. You	own application	programme
	in PHP language.		
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, creat		
igures, tables, gra	phs, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless ed	iting dissertation	s and theses
4 41/41/114	so that they are able to concentrate mainly on writing a thesis.	1/7	0
14Y1VM	Development of Applications for Mobile Devices	KZ	2
Object oriented	programming, Java programming language, development environment, operating system Android, development application - widgets,	containers, thre	ads, menu,
4 41/414/4	permissions, services, GUI.	1/7	2
14Y1W1	Webdesign 1 the basics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web accessibility	KZ	
	s, the issue of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practice	-	
and selectors		u un placical ex	ampies.
14/11//2	Webdesign 2		
14Y1W2 Students will learn	Webdesign 2	KZ	2
	advanced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web ser	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.	KZ ver installation +	2 configuration
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. Webdesign	KZ ver installation + KZ	2 configuration
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15Y1DZ	History of Railway	KZ	2
	ways, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Repi		
vvar II raliways, rali	way 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.	ons, railway lines c	onstruction,
15Y1EH	European Integration within Historical Context	KZ	2
	formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism. Li		
goals. Europe aft	er Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and i	ts consequences for	or Europe.
	New quality of French-German relationship - a driving power of starting European integration.		
_15Y1FD	French Area Studies and Transportation	KZ	2
	ohy and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air trai	•	minology.
15Y1HD	nch society and culture. Current political system. System of education, studying in France. Selected authors of French literature. French	KZ	2
	History of City Mass Transport s transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current trends a		
	ance systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Repul		
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
Basic knowledge	of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these	factors on health o	f workers.
Creation and prote	ection of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to po	ossibilities and skill	s of a man.
	Practical examples from the field of transportation; relevant legislature.		
15Y1HL	History of Civil Aviation	KZ	2
	g, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of a amous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era o	-	-
	aviation. Modern era of civil aviation. Airline companies. Supersonic flying.	aviation. Colden e	
15Y1MK	Modern History in Context: Every Day Life and Transport	KZ	2
	Historical overview of modern history of every day life, science, technology and transport in a wider context.		-
15Y1NE	German in the Economy and Society	KZ	2
Recent economic	and social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic ar	alysis of texts. Dis	cussion on
	selected topics.		
15Y1ZV	East-West dichotomy: Prelude to the Cold War	KZ	2
	, evolution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and continu		
In the end of 19th	century and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, the Economic and financial history. Social changes. Discussions on texts, sources.	e causes and cons	equences.
16LLA1	Aircraft 1	KZ	3
	ind conceptual design types - definitions and basic knowledge of the problem. Development of requirements, aircraft definitions and ca		-
	Systems of primary and secondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeroplane topic		Ū
16LLA2	Aircraft 2	Z,ZK	2
Manufacturers resp	oonsibility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national star		ty of aircraft
40115.05	structures. Aeroelasticity. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presu		
16UDOP	Introduction into Vehicles	Z	2
	portation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and wate of transport. Lifting equipment and conveyors. Legislation.	r transport. Alterna	live means
16X31L	Project 1 LED	Z	2
16X32L	Project 2 LED	Z	2
16X33L	Project 3 LED	Z	2
16Y1EN	Energy Requirements of Vehicles	KZ	2
	e driving inertial of the vehicles. Types of energy - kinetic, static, heat, chemical and others. Ways of energy change into kinetic energy		
	drive, steam engine, air engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW anal	ysis.	
16Y1IS	Interactive simulators and simulations	KZ	2
	ry and application of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical m		nethods.
	lation of vehicle dynamics, on-land carriage in particular. Virtual reality systems. Practical exercise with simulation software and intera		
16Y1KS	Quality and Reliability of Vehicles	KZ	2 A (Epiluro
-	pility theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. Ke Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other methods u		-
	Knowledge-based systems of quality and reliability, data collection.		-piloulion3.
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2
	production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measureme		
	General principles of engine diagnostics.		
16Y1RE	Control and Electronic Vehicle Systems	KZ	2
	ots of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disadva	-	
and hybrid drive	e control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control,	satety, communica	ation and
16Y1SO	comfort systems		
	comfort systems. Strategy and innovation in mobility	K7	2
	Strategy and innovation in mobility	KZ vation project, KPI	2 s, budget;
Introduction to in		vation project, KPI	s, budget;
Introduction to in co-financing, evalu	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innov	vation project, KPI pusiness plan and	s, budget;
Introduction to in co-financing, evalu	Strategy and innovation in mobility novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook ( of use). Creating an innovation strategy. Customer and value map, design and testing. Development in Railroad Vehicles	vation project, KPI pusiness plan and KZ	s, budget; possibilities 2
Introduction to in co-financing, evalu	Strategy and innovation in mobility           novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.           Development in Railroad Vehicles           s traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trar	vation project, KPI pusiness plan and KZ	s, budget; possibilities 2
Introduction to in co-financing, evalu 16Y1VT Railroad vehicle	Strategy and innovation in mobility           novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.           Development in Railroad Vehicles           s traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trar assesment. New materials in design. International standardization.	wation project, KP pusiness plan and KZ sportation. Critical	s, budget; possibilities 2 situation
Introduction to in co-financing, evalu 16Y1VT Railroad vehicle 16Y1ZG	Strategy and innovation in mobility           novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.           Development in Railroad Vehicles           s traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trar assesment. New materials in design. International standardization.           Introduction into Applied Computer Graphics	vation project, KP pusiness plan and KZ nsportation. Critical KZ	s, budget; possibilities 2 situation 2
Introduction to in co-financing, evalu 16Y1VT Railroad vehicle 16Y1ZG Computer graphic	Strategy and innovation in mobility           novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.           Development in Railroad Vehicles           s traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trar assesment. New materials in design. International standardization.           Introduction into Applied Computer Graphics           s, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour sche	wation project, KP pusiness plan and KZ nsportation. Critical KZ mes, models, princ	s, budget; possibilities 2 situation 2 ciples of 2D
Introduction to in co-financing, evalu 16Y1VT Railroad vehicle 16Y1ZG Computer graphic	Strategy and innovation in mobility           novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful innovation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (I of use). Creating an innovation strategy. Customer and value map, design and testing.           Development in Railroad Vehicles           s traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trar assesment. New materials in design. International standardization.           Introduction into Applied Computer Graphics	wation project, KP pusiness plan and KZ nsportation. Critical KZ mes, models, princ	s, budget; possibilities 2 situation 2 ciples of 2D

16Y1ZL	Vehicle Testing, Legislation and Construction		
	ptorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal car	KZ s, trucks, buse	2 s, motorbike
	slation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical modellin		
17TEDL	Transport Technology and Logistics	KZ	3
	sport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight transp	-	
	odus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication using		
17TGA Basic torms of	Graph Theory and its Applications in Transport   f graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in othe	Z,ZK	
17X31L	Project 1 LED	Z	2
17X31L 17X32L		 Z	_
17X32L 17X33L	Project 2 LED Project 3 LED	 Z	2
17X33L 17Y1EV	Public Sector Economy	KZ	2
	ncial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of public		1
	R, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding from		
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
	ssenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transport air cargo. Information systems in air transport. Global distribution systems.		
17Y1MD	Marketing in Transportation	ΚZ	2
General principles	of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport and the application of marketing.	the resulting of	differences
17Y10F	Personal Finance	KZ	2
1	budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of housing		
	financing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and ad (retirement savings and insurance).		
17Y1PM	Personnel Management	KZ	2
	ces, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, intercu		ication.
17Y1SK	Urban and Regional Rail Transport Systems	KZ	2
	transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, line		
evaluation of the	e timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transport	preferences.	The role of
	marketing.		
		1/7	
17Y1SL	Sociology of Human Resources	KZ	2
	and their importance, work group as a special kind of social group, communication, personal management, modern management, human		
luman resources a	and their importance, work group as a special kind of social group, communication, personal management, modern management, human of the organization.	resources pla	nning, cultu
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INTERPORT	and their importance, work group as a special kind of social group, communication, personal management, modern management, human of the organization. Titan Simulation gement game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same product. htty and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequences o of financial corporate reports and they use this information for other business decisions. Materials Science and Engineering terials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructure. Is the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and compt to degradation processes in materials, to defectoscopy and to main mechanical tests. Elasticity and Strength ession. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability. Structural Analysis of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate b work. Kinematic method for calculation of reactions of bodies and structures. Assessment of axial forces in truss constructions. Cro of planar shapes. Fiber polygons and chains. Seminary from Elasticity and Strength tice. Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. A of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Seminary from Structural Analysis ise. General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate beam and sin ial works for calculation of reactions of statically determinate systems. Determination of axia	resources pla KZ Students set a f their decision Z,ZK However the r posites. Attentio Z,ZK welded joints Z,ZK reams and sim poss-sectional c Z Analysis of def Z mple framewor nts and method Z nd geometrica	nning, culture 2 a price and s by the for 3 nain attention is also particular attention is also particular attention is also particular attention of structure 4 ple girders tharacterist 1 0 lection curre 0 k. Application of section 1 0 al accuracy 2
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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	becedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fa Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.	tigue and lifetime p	rediction.
18Y1MT	Engineering Materials	KZ	2
	ew of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and		
	logical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's	-	
18Y1PS	Computer Simulations in Mechanics	KZ	2
	erview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model development		
from other CAE sy	stems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions and tasks of structural and modal analysis. Introduction to complex nonlinear problems.	application of the	load. Basic
18Y1UK	Introduction of Rail Vehicles	KZ	2
	tics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion tra		
	otal 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.		
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 tasks. Soft and hard systems, methods for soft system analysis.	les, algorithms for	structural
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
	egislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of infor		-
	rinciples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples		
	principles of ITS.		
20X31L	Project 1 LED	Z	2
20X32L	Project 2 LED	Z	2
20X33L	Project 3 LED	Z	2
20Y1AE	Applied Electronics	KZ	2
	semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, tran		
amplifiers, basic	logic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transisto amplifier as an inverting and noninverting amplifier).	r as an amplifier, c	perational
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 paym		
the final debtor is r	not a direct participant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of sect	urities as an alterna	ative source
	of transportation and telecomunication projects.		
20Y1EA	Environmental Aspects of Transport	KZ	2
	phere, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabilistic		
20Y1EK	n pollutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp Qualification in Electrical Engineering	KZ	2
-	ce with measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock hazard, s		
	n allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legislatic	-	-
	in relation to health and safety and electrical engineering.		
20Y1KP	Communication and presentation skills	KZ	2
	es and their fulfillment, current communication networks, work with various sources, formal requirements of emails and final theses, b		
teamwork, emo	tional intelligence, manipulation and way of working with it, coping with stressful situations, formal requirements of presentations, way presentation, presentation skills, presentation skills in online environment.	s of communicatio	n during
20Y1LN	Location and Navigation	KZ	2
	examples of road networks, localization on the network. Routing algorithms, their properties and implementation. Description and exa	1	
	transport connections, routing algorithms, their properties and implementation.	•	Ū
20Y1OI	Fare Collection and Information Systems	KZ	2
	ystems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components		es, maps,
	anels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systemine and the systemic contract of the systemicont of th	ems (parking)	
20Y1OK			2
	Road Lighting	KZ	
	tities and terms, street lighting components (luminaires, control cabinets for street lighting, street lighting cables), characteristics of lumin	KZ naires (lifetime of lig	ht sources,
		KZ naires (lifetime of lig	ht sources,
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light distribution), 20Y1PK General principles of standards for sys 20Y1SC Principles of senso 21EMIL The course focu course builds on the 21LEIS Basic definition	tities and terms, street lighting components (luminaires, control cabinets for street lighting, street lighting cables), characteristics of lumin standards, measurement of illuminance and luminance in road lighting, tunnels, conceptual approach to street lighting design, lightin Relux, street lighting control systems. Product Quality Management Processes of organization management. Management systems and international standards; quality management systems. Quality products, pro stems management, management principles. Principles of process management, monitoring and measurement systems management. U for systems management. Process management principles. Metrology and testing. Product certification. 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 electrical Air Transport Economy ses on the fundamentals of economics, providing students with an understanding of accounting principles and role of financial statem he general knowledge acquired and applies it to the environment of air transport economics. The basic principle is the Holloway mode about demand, price and yield on the one hand, and supply, costs and expenses on the other.	KZ naires (lifetime of lig g calculations in D KZ cesses, systems. A niform framework of KZ mechanical, electro ements. Z,ZK ents. In the second I, which structures Z,ZK kings of movemen	ht sources, ALux and 2 framework of standards 2 o-magnetic, 5 part, the knowledge 3 t areas.

			r
21LGCE	Air Navigation parameters and properties. Aeronautical charts and their use. Measuring time. Dead reckoning. Radionavigation aids. Global navigati	Z,ZK	3
Lartin - its shape,	services and properties. Aeronautical charts and their use, measuring time, Dead recoming. Radionavigation and, Giobal havigation services routes and their design.	on salenne systen	is. All traffic
21LGL1	Aviation English 1	Z	2
21LGL2	Familiarity with the terminology used in civil aviation in the general context and emphasizing the ability to receive information only in Aviation English 2	KZ	2
ZILGLZ	Terminology in the sphere of aircraft construction, principles of flight, aircraft engines, instruments and systems.	۲۸Z	2
21LGVP	Legislation and Operational Regulations	ZK	4
	viation regulations. The scope of international and national organizations in civil aviation. Analysis and interpretation of the ICAO Anr . Introduction to the European Parliament and Council Regulation (EC), Commission Regulation (EU) and the Decisions of the Exect		
21LMR1	Aircraft Engines 1	ZK	3
	jine, theoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Turbine en onstruction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational ch		•
21LVYO	Human Performance and Limitations		3
Human performation	e & limitations, aptibility & competence, accident statistics, flight safety, basics of flight physiology, man & environment nealth & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, me & model of human error, body rhythms & sleep, stress, fatigue, working methods.	, breathing &	circulation,
21MEOL	Meteorology	KZ	3
	sphere. Vertical stratification. Pressures QNH, QFE, QFF, QME. Instability. Atmospherical fronts. Atmospherical rainfall, origin fission.		-
vind. Cyclone and	anticyclone. Gradient wind. Geostrofical and geocyklostrofical wind. Visibilities in air transport. Dangerous meteorological aspects. Met	eorological maps.	Climatology
04545	Circulation. Intertropical front. Meteorological informations.	7 71/	
21PAP	Flight Planning and Performance Load of aircraft. Determination of centre of gravity - loadsheet, trimsheet. Aircraft weighing. Overloading of aircraft. Basic characteristic s	Z,ZK	4 aracteristics
	g performance. Drift down. ETOPS. MEL. Flight planning and monitoring. Routing. FL and speeds selection. Charts. ICAO ATC FPL. A	-	
	Fuel plan. Operational flight plan.		
21RELP	Air Traffic Control	Z,ZK	4
21RIBZ	Aviation Safety	KZ	2
	s topics related to the safety management and structure of the SMS. This includes a description of the SMS mechanisms and tools, used ring the course, students are continuously working on the semestral assignment, which helps them to understand practical application of the semiconders of the semiconders of the semestral assignment.		e operations
21SBL1	Bachelor Thesis Seminar 1	Z	1
	view, applied research, basic research, thesis dealing with design proposals). Working with citation sources (citation sources, citation	_	
to ci	e). Analyzing the state of the art (standards of research writing). Defining the limitations of the state of the art. Introduction to the the	is methodology.	
21SBL2	Bachelor Thesis Seminar 2	Z	1
	nesis writing (introduction, analysis of the current state, specification of the problem, objectives and hypotheses). Definition of materia naining results, presentation and discussion of results, formulation of thesis conclusions. Basics of LaTeX, working with LaTeX and W		pproach to
21SBL3	Bachelor Thesis Seminar 3	Z	1
Formal and grap	hic design of the thesis. Data collection and presentation, basic statistical reasoning, validation of results and designs. Achieving the evaluation of hypothesis tests. Preparation of the presentation, principles of presentation of the thesis.	objectives of the t	hesis and
21SLD	Seminar of Air Transport	Z	0
	ons, terminology, basic rules. VFR / IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio na	vigation. Weight, I	balance,
performance. Flig	ht planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic ma	nagement, ground	d handling,
04 2041	security. Air crew. Airlines and economics. Space technologies.	7	
21X31L 21X32L	Project 1 LED Project 2 LED	Z	2
21X32L 21X33L	Project 2 LED Project 3 LED	Z	2
21Y1AM	Aeronautical Information Management (AIM)	KZ	2
	c overview of AIS and AIM. Transition from AIS to AIM. Regulatory base. Provision of AIS/AIM in the Czech Rep. AIP (Aeronautical Ir		1
the Czech Rep. A	IRAC System. NOTAM messages.PIB (Pre-flight Information Bulletin). AIC (Aeoronautical Inf. Circulars). Aeronautical Charts. EAD (Eu	ropena AIS Datab	oase). QMS
	(Quality Mng. System). ADQ (Aeronautical Data Quality). AIXM (Aeronautical Inf. Exchnage Format).		
21Y1BS	Unmanned aircraft systems 1 n Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division. Op	KZ	2
	procedures. Practical flights.		operational
21Y1LJ	Aeronautical Radio and Flight Instruments	KZ	2
Basic definitions, h	istory of aircraft instrumentation, aerometric instrumentation, Earth magnetism, aircraft electric equipment, gyroscopic instrumentation	, airframe instrum	
	If equipment, engine instrumentation, warning and recording systems, instrumentation operational requirements, radiocommunication	-	1
21Y1LS	Air Traffic Services	KZ	2
Anspace structure	in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, APP at USA and Czechoslovakia. ATS - Model of financing. Training System of Air Traffic Controllers. Future development of ATS		SIOLA OF ALS
21Y1MP	Matlab for project-oriented study	KZ	2
	bus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises		
	les, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvement		1
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 their strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of transp		-
arious aspects of	a basic view of the economic aspects of air transport.		
arious aspects of			
various aspects of 21Y1PA	Air Traffic Control Operating Procedures	KZ	2
21Y1PA Practical exercises	Air Traffic Control Operating Procedures on the ATC simulator with the following focus - getting familiar with the simulation environment, acquiring basic habits, aircraft identit	ication procedures	s, vectoring,
21Y1PA Practical exercises	Air Traffic Control Operating Procedures	ication procedures	s, vectoring,

21Y1PC	ATC Procedures and Activities	KZ	2
	procedures, basics of communication and phraseology, aircraft identification, spacing and traffic coordination. In addition, the course of	discusses air traffic	control at
the airpo	rts and low visibility operational procedures. Students will during the course learn basic safety management applications applied acro	ss the infrastructur	e.
21Y1PL	Operational Aspects of Aerodromes	KZ	2
Operational aspe	cts of aerodromes. Location of aerodrome and orientation of runways. Requirements for apron. Capacity of airports runways and term		nder winter
04)/467	conditions. Firefighting units. Protection against unlawful interference. Local transport connection. Environmental protection		
21Y1RZ	Human Resources Management	KZ	2
-	human resources in the organization and related disciplines file. Substance, importance and challenges of human resources manage 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.		rositioning,
21Y1SI	ATC Simulator	KZ	2
	with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearance, us		
	ng on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPROACH		
	departure management procedures, conflict resolution.		
21Y1TH	Aircraft Technical Handling	KZ	2
Aircraft towing	and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and unit	ading units. Equipr	ment for
	assangers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and techn	ical progress.	
21Y1UL	Aircraft Maintenance	KZ	2
	and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and qua		•
Basic documenta	tion for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft maintenance	nance. Regulation	of director
04741 D	EASA for aircraft maintenance. Seminars will be focused on practical application.		
21ZALD	Basics of Air Transport terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation.	KZ	2
-	timization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, grou		
	Airlines and economics. Space technologies.	na nanaing, securi	ity. 7 th orew.
21ZT	ATM Systems	ZK	2
	roduces classical and modern facilities, systems and technologies designated for ATS. Student obtains knowledge of technical princip	I I	
	communication, navigation and surveillance aviation systems are concerned.		
21ZYT1	Principles of Flight 1	Z,ZK	3
Aerodynamic drag	, relation between drag and speed, streamline, boundary layer, formula of continuity, formula of Bernoulli, lift and drag, air flow and pr	essures around wir	ng, angle of
attack, reactions o	f wing in air flow, lift and drag of a wing and an aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, induced	drag, interference,	devices for
	lift and drag increase.		
21ZYT2	Principles of Flight 2	Z,ZK	3
	amic longitudinal stability, neutral point, location of centre of gravity, static directional & amp; lateral stability, dynamic directional & amp	-	
(longitudinal), ya	w (directional) & amp; roll (lateral), roll/yaw interaction, trimming, speed of sound, Mach number, compressibility, shock waves, critical	Mach number, aer	odynamic
22SELN	heating, operating limitations, manoeuvring envelope, gust-load diagram. Air Accident Investigation	ZK	2
-	gislation (ICAO, EU, Czechia) related to air accident investigation. Obligations arising from legislative requirements for individual States		
	ess. Air accident site (inspector's equipment, site security, personal protection, initial activities at the site, sketch, evidence, etc.). Airc		
	Final report (formalities, substantive content, contribution).		
22X31L	Project 1 LED	Z	2
22X32L	Project 2 LED	Z	2
22X33L	Project 3 LED	Z	2
23SYLP	Airport Security	KZ	2
	on security and unlawful acts against the civil aviation. Description of threats, risks, causes and goals of Security. Overview of nationa	I I	
and their re	levance to airport security. Security control devices. Operational efficiency factors and related variables. Basic use of queueing theory	and optimization ta	asks.
23X31L	Project 1 LED	Z	2
23X32L	Project 2 LED	Z	2
23X33L	Project 3 LED	Z	2
23Y1EH	Electronics and hardware in security of transportation	KZ	2
	eters of signals. Passive circuits, properties, basic measurements. Passive filters, semiconductors. Operational amplifiers, basic circu		
	gic circuits. AD converters. Connection of analog and digital parts. Basic blocks of digital signal processing. Measurement processing. D	-	
	in electronics.		
23Y1KB	Cyber security in transportation	KZ	2
	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		
23Y1KM	Crisis Management	KZ	2
	rame of crisis management with direction to Rescue system (IZS). After introduction to safety domain, there are terms and knowledge of a second to the second		tion of crisis
	gement and its targets; IZS-crisis management-crisis planning; and basic legislation. Practical part is concentrated to responsibility m		
23Y1KO	Quantum Physics and Optoelectronics	KZ	2
22/11/1/	Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics compon	KZ	2
23Y1KY	Cybernality f behavior on the computer network and computer systems. Cybernetic crime technology. Theory basis and models. Cyberterrorism. Inf		2 ed aspects
23Y1MK	i benavior on the computer network and computer systems. Cybernetic crime technology. Theory basis and models. Cybertetrolism. In	sware and connect	
	Crisis Situation Management in Critical Infractructure	k7	2
Determination of	Crisis Situation Management in Critical Infrastructure	KZ and the self-govern	2 ment and
	critical infrastructute elements on all levels, their protection systems, responsibilities of particular agencies of the state administration	and the self-goverr	
their	critical infrastructute elements on all levels, their protection systems, responsibilities of particular agencies of the state administration responsibilities to anounce particular safety provisions. Physical and cyber protection of critical infrastructure with special attention to	and the self-goverr the soft targets.	nment, and
their 23Y1MU	critical infrastructute elements on all levels, their protection systems, responsibilities of particular agencies of the state administration	and the self-goverr the soft targets. KZ	nment, and

23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2
Types of technolog	ical systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, safe	ty of critical object	s and critical
	infrastructures.		
23Y1TP	Criminal Law in IT and Transportation	KZ	2
Introduction of cr	iminal law into legal order, conception of culpability and criminal delict, consequency of other legal standards. international treaty and	criminal law, inve	stigation of
	crime, specific indicia of criminal court cases, practical examples.		
23Y1VS	Negotiation and Cooperation	KZ	2
Code of conduct for	or negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Inform	al and formal role	in the team.
Principles of negot	iation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", specifi	cations and biddin	g, the role of
	trust.		
TV-1	Physical Education	Z	1
TV-2	Physical Education	Z	1
TVKLV	Physical Education Course	Z	0
TVKZV	Physical Education Course	Z	0

For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 2025-08-01, time 08:41.