#### Study plan

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

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Technology in Transportation and Telecommunications

Type of study: Bachelor full-time

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

Note on the plan:

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

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:

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

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

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

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

	Introduction to Transportation Engineering	Z,ZK	2
Role of transportati	ion in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roa	ads, public mass tra	nsport. Negative
impacts of transpor	rtation to environment and safety.		
18MTY	Materials Science and Engineering	Z,ZK	3
Basic course of ma	iterials science and engineering explains mechanical properties of structural materials based on their bonding forces and microst	tructure. However th	ne main attention
is paid to metals as	s the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers an	d composites. Atter	ntion is also paid
to degradation prod	cesses in materials, to defectoscopy and to main mechanical tests.		
11GIE	Geometry	KZ	3
Differential geomet	ry of curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajecto	ory of the motion, the	ne velocity, and
acceleration of a pa	article moving on a curved path.		
14ASD	Algorithm and Data Structures	KZ	3
Students will analy:	ze problems, design a theoretical solution to a given problem and write the resulting algorithm using flowcharts, practice reading	algorithms written	using flowcharts,
and use basic Bool	lean algebra to construct constraints in algorithms. Students will be introduced to the basics of the Python programming langua	ge - variable, branc	hing, loops, they
will learn to work w	rith variables of basic data types (integer, floating point and string) and the list data structure in their programs.		
4.41400	1		
14KSP	Constructing with Computer Aid	KZ	2
_	Constructing with Computer Aid m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic commor		_
"CAD systems" terr		n work rules in grap	hic applications
"CAD systems" terms and CA systems. C	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic commor	n work rules in grap	hic applications
"CAD systems" terms and CA systems. C	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic commor co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting post	n work rules in grap	hic applications
"CAD systems" terrand CA systems. Coprofiles, drawings volume 18TED	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic commor co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting poswith raster foundaments).	n work rules in grap ssibilites, AutoCAD	phic applications environment
"CAD systems" terrand CA systems. Coprofiles, drawings volume 18TED	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic commor co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting poswith raster foundaments).    Technical Documentation   Technical Standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensions.	n work rules in grap ssibilites, AutoCAD	phic applications environment
"CAD systems" terr and CA systems. C profiles, drawings v 18TED Technical standard	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic commor co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting poswith raster foundaments).    Technical Documentation   Technical Standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensions.	n work rules in grap ssibilites, AutoCAD	phic applications environment
"CAD systems" terr and CA systems. C profiles, drawings v 18TED Technical standard: arrangement of dra 15DPLG	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic commor co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting poswith raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional sheets.	n work rules in grapssibilites, AutoCAD  KZ onal and geometric	hic applications environment  2 al accuracy,
"CAD systems" terr and CA systems. C profiles, drawings v 18TED Technical standard: arrangement of dra 15DPLG Subject of psychology	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization.     Transportation Psychology	n work rules in graps ssibilites, AutoCAD  KZ onal and geometric  Z construction. Psycl	hic applications environment  2 al accuracy,
"CAD systems" terr and CA systems. C profiles, drawings v 18TED Technical standard: arrangement of dra 15DPLG Subject of psychology	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization   Transportation   Psychology	n work rules in graps ssibilites, AutoCAD  KZ onal and geometric  Z construction. Psycl	hic applications environment  2 al accuracy,
"CAD systems" terriand CA systems. Coprofiles, drawings of 18TED Technical standard arrangement of dra 15DPLG Subject of psycholo of travel route and 16UDOP	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional sheets.    Transportation Psychology   Transportation Psychology   Transportation Psychology and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport	work rules in grapssibilites, AutoCAD  KZ onal and geometric  Z construction. Psycht operation.  Z	al accuracy,  2 al occuracy,  2 nological aspects
"CAD systems" terriand CA systems. Coprofiles, drawings of 18TED Technical standard arrangement of dra 15DPLG Subject of psycholo of travel route and transport 16UDOP Vehicles and transport.	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional sheets.    Transportation Psychology   Transportation Psychology	work rules in grapssibilites, AutoCAD  KZ onal and geometric  Z construction. Psycht operation.  Z	al accuracy,  2 al occuracy,  2 nological aspects
"CAD systems" terriand CA systems. Coprofiles, drawings of 18TED Technical standard arrangement of dra 15DPLG Subject of psycholo of travel route and transport 16UDOP Vehicles and transport.	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional sheets.    Transportation Psychology   Transportation Psychology   Transportation psychology and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport   Introduction into Vehicles   Introduction into Selection and drive principles. Engines and their characteristics. Rail, road, air and contains a systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and contains a systems.	work rules in grapssibilites, AutoCAD  KZ onal and geometric  Z construction. Psycht operation.  Z	al accuracy,  2 al occuracy,  2 nological aspects

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

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

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

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

Credits in the group: 30

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

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

11CAL2	Calculus 2	Z,ZK	5			
Linear differential 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 Paran	netric tests Nonpa	rametric tests
Regression and correla	tion analysis		
12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Railway	rack geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure.	Spatial layout of ra	ailway lines.
Railway control systems	s in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport.		
18SAT	Structural Analysis	Z,ZK	4
General system of force	s in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determina	ate beams and sin	nple girders.
Principle of virtual work.	Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction	ons. Cross-section	al characteristics
of planar shapes. Fiber	polygons and chains.		
20SYSA	Systems Analysis	Z,ZK	5
Introduction to system s	ciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface ta	sks, processes, sy	stem behaviour
and its analysis, strong	functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision t	ables, algorithms t	for structural
tasks. Soft and hard sys	stems, methods for soft system analysis.		
14PRG	Programming	KZ	2
The Course Programmi	ng builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python progr	amming language	is expanded
here so that the particip	ant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and se	earching, tuples, se	ets, dictionaries,
working with date and t	me, regular expressions, functions and procedures, working with files (CSV, JSON, XML).		
17TEDL	Transport Technology and Logistics	KZ	3
Basic terms in transpor	t technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight t	ransport, organisa	ation of traffic in
each transport modus,	technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication u	sing various trans	port modus.
21ZALD	Basics of Air Transport	KZ	2
History, definitions, term	inology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigat	ion. Weight, baland	ce, performance.
Flight planning, optimiza	ation of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ç	round handling, s	ecurity. Air crew.
Airlines and economics	Space technologies.		
TV-2	Physical Education	Z	1

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

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

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

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

Credits in the group: 30

Note on the group	ρ.					
Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11FYZ	Physics Old ich Hykš, Jana Kuklová, Pavel Demo, Zuzana Malá, Tomáš Vít Jana Kuklová Pavel Demo (Gar.)	Z,ZK	5	2P+2C+18B	Z	Z
12MDE	Transport Models and Transport Excesses  Josef Kocourek, Tomáš Pad lek	Z,ZK	3	2P+1C+8B	Z	Z
17TGA	Graph Theory and its Applications in Transport  Alena Rybi ková, Denisa Mocková, Dušan Teichmann	Z,ZK	4	2P+2C+12B	Z	Z
18PZP	Elasticity and Strength  Jitka ezni ková, Daniel Kytý, Jan Vy ichl, Tomáš Doktor, Jan Šleichrt, Josef  Jíra, Ond ej Jiroušek Ond ej Jiroušek Ond ej Jiroušek (Gar.)	Z,ZK	3	2P+1C+10B	Z	Z
20UITS	Introduction to Intelligent Transport Systems Ji í R ži ka, Patrik Horaž ovský, Kristýna Navrátilová, Viktor Beneš, Eva Haj iarová, Martin Langr, Vladimír Faltus, Pavel Hrubeš <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

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

safety and fluency.

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

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

8PZP Elasticity and Strength Z,ZK 3

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

20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7				
Terminology and legislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of information and telecommunication							
systems for ITS. Principles and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples of possible applications of the							
principles of ITS.							
12PPOK	Designing Roads, Highways and Motorways	KZ	3				
Definition, types, owner	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 database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrity of data, database							
queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW.							
15JZ1A	Foreign Language - English 1	Z	3				
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary							

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

Name of the group: 4th Sem. Bachelor Full-Time TET-DOS from 2022/23 Requirement credits in the group: In this group you have to gain 16 credits

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

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

Credits in the group: 16 Note on the group:

riote 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
16DOKY	Vehicle Technology Josef Mík, P emysl Toman, Josef Svoboda Josef Mík (Gar.)	Z,ZK	5	2P+2C	L	Z
18KIDY	Kinematics and Dynamics Jitka ezní ková, Tomáš Fíla, Petr Zlámal Tomáš Fíla (Gar.)	Z,ZK	4	2P+2C	L	Z
15JZ2A	Foreign Language - English 2  Eva Rezlerová, Markéta Vojanová, Marie Michlová, Marek Tome ek, Jan Feit,  Markéta Musilová, Peter Morrouss, Lenka Monková, Jitka He manová	Z,ZK	3	0P+4C+10B	L	Z

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

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 s	ystem, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer functic	n. Stability of LTI:	systems.			
Discretization of contin	nuous systems. System interconnection.					
16DOKY	Vehicle Technology	Z,ZK	5			
Technical nomenclatu	e in transportation technology. Vehicle in legislation. Design. Operation. Influence on environment. Vehicle and ecology. Tractic	n engine characte	eristics -			
combustion engines, e	electric engines, change of energy principles. Powertrain construction. Power transmission. Brake systems.					
18KIDY	Kinematics and Dynamics	Z,ZK	4			
Friction. Motion along	a line and a curve. Kinematics of rigid body. Kinematics of the point mass and the system of mass points. Dynamics of a mass	point and a systen	n of mass points			
equation of motion. Me	ethod of Newton. D'Alembert principle. Free and forced vibration with one degree of freedom. Viscous damping. Impact theory.	Introduction to th	e solution of			
vibration with two degrees of freedom.						
15JZ2A	Foreign Language - English 2	Z,ZK	3			
Grammatical structure	s and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and	d communicative s	kills. Elementary			
stylistics forms Oral a	nd written presentation of original research. Academic text principles and reading comprehension. Principles of thetoric					

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

Name of the group: 4th Sem. Bachelor Full-Time TET-DOS 1st alternative subject from 2022/23

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

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

Credits in the group: 4 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11EMOP	Electromagnetic Field and Optics Old ich Hykš, Jana Kuklová, Zuzana Malá, Tomáš Vít Tomáš Vít Pavel Demo (Gar.)	Z,ZK	4	2P+2C	L	Z
12SDK	Highways, Motorways and Intersections Josef Kocourek, Tomáš Pad lek, Petr Kumpošt Tomáš Pad lek (Gar.)	Z,ZK	4	2P+2C	L	Z

#### Characteristics of the courses of this group of Study Plan: Code=4S-BP-DOS-V1-22/23 Name=4th Sem. Bachelor Full-Time TET-DOS 1st alternative subject from 2022/23

	.,,					
11EMOP	Electromagnetic Field and Optics	Z,ZK	4			
Electric field. Electric co	urrent. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.					
12SDK	Highways, Motorways and Intersections	Z,ZK	4			
Roads and motorways i	Roads and motorways network, transport output. Types of direction curves. Hairpin bend. Stopping sight distance and overtaking sight distance. Levels of traffic service. Design elements					
of crossroads and intersections. Crossroads. Roundabouts. Intersections. Special types of junctions. Capacity of crossroads and intersections. Structure of pavement of roads and						
motorways. Road engineering structures. Assessment of route alternatives.						

Code of the group: 4S-BP-DOS-V2-22/23

Name of the group: 4th Sem. Bachelor Full-Time TET-DOS 2nd alternative subject from 2022/23

Requirement credits in the group: In this group you have to gain 3 credits

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

Credits in the group: 3 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
11MDSD	Collecting and Processing of Traffic Data  Michal Matowicki, Ond ej P ibyl Ond ej P ibyl Ond ej P ibyl (Gar.)	KZ	3	2P+0C	L	Z
12PUSS	Organization Disposition of Railway Stations Martin Jacura Martin Jacura (Gar.)	KZ	3	2P+0C	L	Z

### Characteristics of the courses of this group of Study Plan: Code=4S-BP-DOS-V2-22/23 Name=4th Sem. Bachelor Full-Time TET-DOS 2nd alternative subject from 2022/23

11MDSD	Collecting and Processing of Traffic Data	KZ	3		
Basic principles of traffi	asic principles of traffic detection and data collection, specific problems of the field of traffic data. Data preprocessing and analysis for use in addition				
12PUSS	12PUSS Organization Disposition of Railway Stations				
Connecting station. Pas	senger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zo	one stations. Form	ation yards.		
Reserve stations. Techn	ology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic railway r	network.			

Code of the group: 4S-BP-DOS-V3-22/23

Name of the group: 4th Sem. Bachelor Full-Time TET-DOS 3rd alternative subject from 2022/23

Requirement credits in the group: In this group you have to gain 3 credits

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

Credits in the group: 3 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	
14PODP	Computer Aid of Transportation Projecting Drahomír Schmidt Drahomír Schmidt Drahomír Schmidt (Gar.)	KZ	3	0P+2C	L	Z	
18MECK	Mechanics of Constructions Petr Koudelka Petr Koudelka (Gar.)	KZ	3	2P+0C	L	Z	

### Characteristics of the courses of this group of Study Plan: Code=4S-BP-DOS-V3-22/23 Name=4th Sem. Bachelor Full-Time TET-DOS 3rd alternative subject from 2022/23

ord alternative Su	bject from 2022/23		
14PODP	Computer Aid of Transportation Projecting	KZ	3
Overview of CAx applic	ation for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting,	data exchange).	Advanced blocks
modification (attributes,	relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic trans	sition curve, cross	-and longitudinal
section). Basics of 3D r	nodelling.		
18MECK	Mechanics of Constructions	KZ	3
Energetic solution of ela	stic beam. Solution of statically indeterminate systems - force and deformation method. Stiffness and compliance matrix of a	system. Finite di	ference method.
History and fundamenta	als of structural design. Characteristics of steel, design of steel structures. Introduction to mathematical theory of elasticity in	3D.	

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

Name of the group: 5th Sem. Bachelor Full-Time TET-DOS from 2023/24 Requirement credits in the group: In this group you have to gain 10 credits

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

Credits in the group: 10 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
12ZELP	Railway Operation Jan Kruntorád, Martin Jacura, Tomáš Javo ík	Z,ZK	4	2P+2C	Z	Z
22DON	Traffic Accidents Tomáš Blodek, Tomáš Kohout, Michal Frydrýn, Tomáš Mi unek Tomáš Mi unek Tomáš Mi unek (Gar.)	Z,ZK	6	3P+2C	Z	Z

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

'	12ZELP	Railway Operation	Z,ZK	4
l	egislation in railway tra	nsport. Railway vehicles. Railway signals and signal devices. Railway traffic organisation and operation. Simplified railway tra	affic operation. Ra	ilway vehicles

Legislation in railway transport. Railway venicles. Railway signais and signal devices. Railway traffic organisation and operation. Simplified railway traffic operation. Railway venicles brakes. Railway vehicles marking. Operation intervals. Theoretical graph of train running.

22DON Traffic Accidents

Introduction to Road Accidents and Forensic Expertise; Rail, Water and Air Accidents; Road Accident Documentation and Documentation Technology; Accident Data Recorders - EDR Systems; Road Accident Trace Analysis and Fake Accidents; Simulation Programmes for Road Accident Analysis; Pedestrian and Cyclist Accidents; Vehicle technologies and systems and autonomous vehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety; Accidents at level crossings; Prevention (traffic education, awareness, repression)

Code of the group: 5S-BP-DOS-V1-23/24

Name of the group: 5th Sem. Bachelor Full-Time TET-DOS 1st alternative subject from 2023/24

Requirement credits in the group: In this group you have to gain 3 credits

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

Credits in the group: 3 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
12DOSI	Traffic Surveys and Simulations Petr Kumpošt	Z,ZK	3	1P+2C	Z	Z
18DYKS	Dynamics of Structures and Systems Ond ej Jiroušek, Tomáš Fíla, Stanislav Hra ov Stanislav Hra ov (Gar.)  Hra ov (Gar.)	Z,ZK	3	2P+1C	Z	Z

### Characteristics of the courses of this group of Study Plan: Code=5S-BP-DOS-V1-23/24 Name=5th Sem. Bachelor Full-Time TET-DOS 1st alternative subject from 2023/24

12DOSI	Traffic Surveys and Simulations	Z,ZK	3
Ways of data collection	in road transport. Traffic surveys. Automatic traffic counting. Preparation and implementation of traffic survey. Description of ir	ndividual approac	hes focused on
practical examples from	real measurements. Methods of data processing and evaluation. Principles of simulation, SW environment for creating traffic	c models. Traffic n	nodel design
procedure, calibration. F	Processing of a simple transport model based on real data.		

18DYKS Dynamics of Structures and Systems Z,ZK 3

Vibration of systems with multiple degrees of freedom. Natural modes and natural frequencies. Method of stiffness constants, method of elastic constants, other numerical methods. Systems with continuously distributed mass. Matrix form of equations of vibration. Finite element method in dynamics of structures. Solving vibrations by superposition of natural modes Subspace iteration methods. Introduction to nonlinear vibrations.

Code of the group: 5S-BP-DOS-V2-23/24

Name of the group: 5th Sem. Bachelor Full-Time TET-DOS 2nd alternative subject from 2023/24

Requirement credits in the group: In this group you have to gain 5 credits

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

Credits in the group: 5

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
12MKOD	City Rail Transport Ond ej Trešl	Z,ZK	5	2P+1C	Z	Z
16DYJV	Vehicle Dynamics Josef Mík, P emysl Toman, Josef Svoboda	Z,ZK	5	2P+1C	Z	Z

# Characteristics of the courses of this group of Study Plan: Code=5S-BP-DOS-V2-23/24 Name=5th Sem. Bachelor Full-Time TET-DOS 2nd alternative subject from 2023/24

12MKOD	City Rail Transport	Z,ZK	5	
City and suburban rail t	ansport. Tram lines layout and city roads. Tram track geometry parameters. Tram track superstructure. Turnouts and other co	nstruction of tram	lines. Tram	
stops and turn space. Ur	nderground and its basic characteristics. Underground nets in the world and undeground history in Prague. Underground track g	eometry paramet	ers. Underground	
trook ouporatruotura an	A substructure. Underground stations. Suburban rail transport			

16DYJV Vehicle Dynamics

Application of mechanics. Wheel and axle suspension mechanism. Wheel to road positioning characteristics. Wheel - road contact. Skid and its characteristics. Longitudinal dynamics, acceleration and deceleration. Vertical dynamics, spring suspension, driving characteristics. Directional dynamics, gyroscopical characteristics. Driving stability conditions. Aerodynamic forces. Driving and feedback. ABS, ESP.

Code of the group: 5S-BP-DOS-V3-23/24

Name of the group: 5th Sem. Bachelor Full-Time TET-DOS 3rd alternative subject from 2023/24

Requirement credits in the group: In this group you have to gain 3 credits

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

Credits in the group: 3 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
12POSD	Assessment of Transport Structures Martin Höfler, Kristýna Neubergová Martin Höfler (Gar.)	KZ	3	2P+0C	Z	Z
18NUMM	Numerical Methods in Mechanics Ond ej Jiroušek, Radek Kolman Radek Kolman Radek Kolman (Gar.)	KZ	3	2P+0C	Z	Z

#### Characteristics of the courses of this group of Study Plan: Code=5S-BP-DOS-V3-23/24 Name=5th Sem. Bachelor Full-Time TET-DOS 3rd alternative subject from 2023/24

12POSD Assessment of Transport Structures ΚZ

EIA process - historical context, impact and variants, analysis of individual phases of EIA process, SEA, legislative framework in the Czech Republic, EU directives, implementation of EU directives, public participation, process in practice. Methods of assessing the effects of transport structures on the environment. SWOT analysis. Multicriteria methods for assessment of transport structures, TUKP method. Risk analysis. Landscape

18NUMM Numerical Methods in Mechanics

Basics of the most used numerical methods in structural mechanics. Central difference method, finite element method, boundary element method. Time and spatial discretization schemes. Finite element method - derivation of the basic equations. Stiffness matrix, mass matrix, damping matrix at element level and structural level. Methods for solving systems of algebraic equations. Numerical integration.

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

Name of the group: 6th Sem. Bachelor Full-Time TET-DOS from 2023/24

Requirement credits in the group: In this group you have to gain 14 credits

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

Credits in the group: 14

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
12PRMK	Urban Road Traffic and Design Josef Kocourek, Tomáš Pad lek, Petr Kumpošt Josef Kocourek (Gar.)	Z,ZK	5	2P+2C	L	Z
12VHD	Public Transport Jan Kruntorád, Martin Jareš, Petr Chmela Martin Jareš (Gar.)	Z,ZK	5	3P+2C	L	Z
22METD	Measurement Methods and Technology in Transportation Drahomír Schmidt, Michal Frydrýn, Luboš Nouzovský, Zden k Svatý Luboš Nouzovský Drahomír Schmidt (Gar.)	ZK	4	2P+2C	L	Z

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

12PRMK	Urban Road Traffic and Design	Z,ZK	5		
Composition of urban	road, elements and routes for traffic, pedestrian and cycling transport, projection of intersections, traffic lights and its traffic safe	ety proposal, round	dabouts, calming		
of traffic, precaution f	or blind & amp; partially-sighted, parking, traffic area, induction of traffic, organization and regulation of transport.				
12VHD	Public Transport	Z,ZK	5		
Importance of public transport, transport research, evaluation, planning of lines routes and territory operation, planning of operation parameters, preparation of operation, network conceptions, operation-technology and operation-economically conditions of planning of operation conceptions, planning of operation conception, planning and realisation of timetables, prepare of infrastrukture (route, stops), preference of public transport, financing.					
22METD	Measurement Methods and Technology in Transportation	ZK	4		
Moscuroment method	do in transport, their magning and use Coodetic hasins in Czachia, Angular, length and height magnuraments. Dringiples of ma	nning coources	nd arrara of		

geodetic measurements. Surveying and setting out. Challenges of localization, navigation and Global Navigation Satellite Systems. Laser scanning (terrestrial, mobile, UAV). Technical

Code of the group: 6S-BP-DOS-V1-23/24

photography and photogrammetry. Dynamic measurements of vehicles. High-speed cameras.

Name of the group: 6th Sem. Bachelor Full-Time TET-DOS 1st alternative subject from 2023/24

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

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

Credits in the group: 4 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
16PAV	Passive Safety Zuzana Radová, Josef Mík Josef Mík (Gar.)	Z,ZK	4	2P+1C	L	Z
17FID	Financing and Investment in Transport Olga Mertlová, Alexandra Dvo á ková Olga Mertlová (Gar.)	Z,ZK	4	2P+1C+12B	L	Z

Characteristics of the courses of this group of Study Plan: Code=6S-BP-DOS-V1-23/24 Name=6th Sem. Bachelor Full-Time TET-DOS 1st alternative subject from 2023/24

| 16PAV | Passive Safety | Z,ZK | 4 | Road accident evaluation. Testing and legislation. Crash tests. Carbody properties. Injury mechanics. Restrain systems. Airbags. Road user safety. Mathematic modelling. Post collision safety systems.

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

Code of the group: 6S-BP-DOS-V2-23/24

Name of the group: 6th Sem. Bachelor Full-Time TET-DOS 2nd alternative subject from 2023/24

Requirement credits in the group: In this group you have to gain 3 credits

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

Credits in the group: 3 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
12ZAR	Introduction to Architectural Design Karel Hájek	Z	3	2P+0C+8B	L	Z
14ZDA	Data Processing  Martin Šrotý, Miroslav Vaniš <b>Martin Šrotý</b> Martin Šrotý (Gar.)	Z	3	0P+2C	L	Z

Characteristics of the courses of this group of Study Plan: Code=6S-BP-DOS-V2-23/24 Name=6th Sem. Bachelor Full-Time TET-DOS 2nd alternative subject from 2023/24

12ZAR	Introduction to Architectural Design	Z	3		
Urbanism and architect	ure of traffic systems. Bus and trolley-bus transport. Tramway and town tracks. Design of vehicles. Subway. Railway transport	. Railway stations	. Local		
communications. International airports.					
14ZDA	Data Processing	Z	3		
	Data Processing cessing and analysis tools. Practical part of the training - introduction to the working environment, applied examples of data processing and analysis tools.	Z rocessing from pra	3 actice, advanced		

Name of the block: Semestrální projekt Minimal number of credits of the block: 8

The role of the block: ZP

Code of the group: X1-BP-DOS-22/23

Name of the group: Research Groups Bachelor Full-Time TET-DOS from 2022/23

Requirement credits in the group: In this group you have to gain 8 credits

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

Credits in the group: 8 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
11X31D	Project 1 DOS Jan Pikryl Jan Pikryl Jan Pikryl (Gar.)	Z	2	0P+2C	L	ZP
12X31D	Project 1 DOS  Zuzana arská, Dagmar Ko árková, Jan Kruntorád, Lukáš Týfa, Martin Jacura, Tomáš Javo ík, Ond ej Trešl, Pavel Purkart, Josef Kocourek,	Z	2	0P+2C	L	ZP
14X31D	Project 1 DOS	Z	2	0P+2C	L	ZP
15X31D	Project 1 DOS	Z	2	0P+2C	L	ZP

16X31D	Project 1 DOS Josef Mík, Michal Cenkner	Z	2	0P+2C	L	ZP
17X31D	Project 1 DOS Michal Drábek, Zden k Michl, Martin Chýle	Z	2	0P+2C	L	ZP
18X31D	Project 1 DOS Daniel Kytý	Z	2	0P+2C	L	ZP
20X31D	Project 1 DOS	Z	2	0P+2C	L	ZP
21X31D	Project 1 DOS	Z	2	0P+2C	L	ZP
22X31D	Project 1 DOS Tomáš Kohout, Michal Frydrýn, Tomáš Mi unek, Luboš Nouzovský, Zden k Svatý, Karel Kocián, Jakub Nová ek, Pavel Vrtal	Z	2	0P+2C	L	ZP
23X31D	Project 1 DOS	Z	2	0P+2C	L	ZP
11X32D	Project 2 DOS Pavla Pecherková, Michal Matowicki, Jana Kuklová, Ond ej P ibyl, Jan P ikryl Jana Kuklová Jana Kuklová (Gar.)	Z	2	0P+3C	Z	ZP
12X32D	Project 2 DOS  Zuzana arská, Dagmar Ko árková, Jan Kruntorád, Lukáš Týfa, Martin Jacura, Tomáš Javo ík, Ond ej Trešl, Pavel Purkart, Josef Kocourek,	Z	2	0P+3C	Z	ZP
14X32D	Project 2 DOS	Z	2	0P+3C	Z	ZP
15X32D	Project 2 DOS	Z	2	0P+3C	Z	ZP
16X32D	Project 2 DOS Josef Mík, Michal Cenkner	Z	2	0P+3C	Z	ZP
17X32D	Project 21 DOS	Z	2	0P+3C	Z	ZP
18X32D	Project 2 DOS Daniel Kytý, Tomáš Fíla	Z	2	0P+3C	Z	ZP
20X32D	Project 2 DOS Ji í R ži ka, Milan Sliacky, Pavel Hrubeš	Z	2	0P+3C	Z	ZP
21X32D	Project 2 DOS	Z	2	0P+3C	Z	ZP
22X32D	Project 2 DOS Tomáš Kohout, Michal Frydrýn, Luboš Nouzovský, Karel Kocián, Jakub Nová ek, Pavel Vrtal	Z	2	0P+3C	Z	ZP
23X32D	Project 2 DOS	Z	2	0P+3C	Z	ZP
11X33D	Project 3 DOS	Z	4	0P+4C	L	ZP
12X33D	Project 3 DOS  Zuzana arská, Dagmar Ko árková, Jan Kruntorád, Lukáš Týfa, Martin Jacura, Tomáš Javo ík, Ond ej Trešl, Pavel Purkart, Josef Kocourek,	Z	4	0P+4C	L	ZP
14X33D	Project 3 DOS	Z	4	0P+4C	L	ZP
15X33D	Project 3 DOS	Z	4	0P+4C	L	ZP
16X33D	Project 3 DOS Josef Mik, Michal Cenkner	Z	4	0P+4C	L	ZP
17X33D	Project 3 DOS	Z	4	0P+4C	L	ZP
18X33D	Project 3 DOS Nela Kr má ová, Daniel Kytý	Z	4	0P+4C	L	ZP
20X33D	Project 3 DOS Milan Sliacky, Martin Langr, Pavel Hrubeš	Z	4	0P+4C	L	ZP
21X33D	Project 3 DOS	Z	4	0P+4C	L	ZP
22X33D	Project 3 DOS Tomáš Kohout, Michal Frydrýn, Tomáš Mi unek, Luboš Nouzovský, Zden k Svatý, Karel Kocián, Jakub Nová ek, Pavel Vrtal	Z	4	0P+4C	L	ZP
23X33D	Project 3 DOS	Z	4	0P+4C	L	ZP

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

I E I DOO IIOII	11 2022/20		
11X31D	Project 1 DOS	Z	2
12X31D	Project 1 DOS	Z	2
14X31D	Project 1 DOS	Z	2
15X31D	Project 1 DOS	Z	2
16X31D	Project 1 DOS	Z	2
17X31D	Project 1 DOS	Z	2
18X31D	Project 1 DOS	Z	2
20X31D	Project 1 DOS	Z	2
21X31D	Project 1 DOS	Z	2
22X31D	Project 1 DOS	Z	2
23X31D	Project 1 DOS	Z	2
11X32D	Project 2 DOS	Z	2
12X32D	Project 2 DOS	Z	2
14X32D	Project 2 DOS	Z	2
15X32D	Project 2 DOS	Z	2
16X32D	Project 2 DOS	Z	2

17X32D	Project 21 DOS	Z	2
18X32D	Project 2 DOS	Z	2
20X32D	Project 2 DOS	Z	2
21X32D	Project 2 DOS	Z	2
22X32D	Project 2 DOS	Z	2
23X32D	Project 2 DOS	Z	2
11X33D	Project 3 DOS	Z	4
12X33D	Project 3 DOS	Z	4
14X33D	Project 3 DOS	Z	4
15X33D	Project 3 DOS	Z	4
16X33D	Project 3 DOS	Z	4
17X33D	Project 3 DOS	Z	4
18X33D	Project 3 DOS	Z	4
20X33D	Project 3 DOS	Z	4
21X33D	Project 3 DOS	Z	4
22X33D	Project 3 DOS	Z	4
23X33D	Project 3 DOS	Z	4

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 8

The role of the block: PV

Code of the group: Y1-BP-DOS-23/24

Name of the group: Comp. Sel. Courses Bachelor Full-Time TET-DOS from 2023/24

Requirement credits in the group: In this group you have to gain 8 credits

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

Credits in the group: 8 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members)  Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
21Y1AM	Aeronautical Information Management (AIM)	KZ	2	2P+0C	Z	PV
00Y1XB	Active participation in a scientific project, workshop, short-term trip abroad  Patrik Horaž ovský Patrik Horaž ovský Patrik Horaž ovský (Gar.)	KZ	2	2P+0C		PV
20Y1AF	Alternative Forms of Transportation Project Financing Mária Jánešová Mária Jánešová	KZ	2	2P+0C	Z	PV
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2	2P+0C	Z	PV
14Y1AV	Animation and Visualization	KZ	2	2P+0C	L	PV
12Y1AE	Applied Ecology Martin Jacura, Kristýna Neubergová	KZ	2	2P+0C	Z	PV
20Y1AE	Applied Electronics	KZ	2	2P+0C	Z	PV
14Y1BE	Barrierless Transport Jan Kr ál	KZ	2	2P+0C	L	PV
15Y1BO	Work Safety and Health Protection in Transportation Petr Musil	KZ	2	2P+0C	L	PV
11Y1BK	Error Detection Codes for Interlocking Systems Lucie Kárná Lucie Kárná (Gar.)	KZ	2	2P+0C	Z	PV
21Y1BS	Unmanned aircraft systems 1 Tomáš Tlu ho , Jakub Kraus, Michal erný	KZ	2	2P+0C	L	PV
14Y1BM	Biometric Methods	KZ	2	2P+0C	Z	PV
15Y1DZ	History of Railway Eva Rezlerová, Martin Jacura	KZ	2	2P+0C	L	PV
12Y1DS	Project Documentation in Practice	KZ	2	2P+0C	Z	PV
17Y1EV	Public Sector Economy	KZ	2	2P+0C	Z	PV
23Y1EH	Electronics and hardware in security of transportation	KZ	2	2P+0C	L	PV
20Y1EK	Qualification in Electrical Engineering	KZ	2	2P+0C	L	PV
16Y1EN	Energy Requirements of Vehicles	KZ	2	2P+0C	L	PV
20Y1EA	Environmental Aspects of Transport	KZ	2	2P+0C	Z	PV
15Y1EH	European Integration within Historical Context	KZ	2	2P+0C	Z	PV

18Y1EM	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 Vladimir Plos	KZ	2	2P+0C	L	PV
15Y1HD	History of City Mass Transport	KZ	2	2P+0C	Z	PV
12Y1HD	Milan Dont Traffic Noise	KZ	2	2P+0C	L	PV
15Y1HE	Dagmar Ko árková, Libor Ládyš  Work Hygiene and Ergonomics in Traffic	KZ	2	2P+0C	Z	PV
16Y1IS	Petr Musil	KZ	2	2P+0C	L	PV
	Interactive simulators and simulations					
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 Bures	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	KZ	2	2P+0C	Z	PV
14Y1MP	Lenka Hanáková, Vladimír Socha Lenka Hanáková  Modeling Complex Assemblies and Models in Parametric	KZ	2	2P+0C	Z	PV
15Y1MK	Modeller  Modern History in Context: Every Day Life and Transport	KZ	2	2P+0C		PV
15Y1NE	Marie Michlová  German in the Economy and Society	KZ	2	2P+0C	 	PV
21Y1OH	Eva Rezlerová  Airline Business and Operations	KZ	2	2P+0C	 	PV
	Peter Olexa, Eva Endrizalová Peter Olexa					
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2	2P+0C	L	PV
20Y1OI	Fare Collection and Information Systems Patrik Horaž ovský, Milan Sliacky Milan Sliacky (Gar.)	KZ	2	2P+0C	L	PV
14Y1OJ	Object - oriented programming in JAVA	KZ	2	2P+0C	L	PV
14Y1OP	Operating System	KZ	2	2P+0C	Z	PV
17Y1OF	Personal Finance	KZ	2	2P+0C	Z	PV
20Y1OK	Road Lighting František Kekula	KZ	2	2P+0C	L	PV
11Y1PV	Parametrical and Multicriterial Programming Olga Vraštilová Olga Vraštilová (Gar.)	KZ	2	2P+0C	Z	PV
17Y1PM	Personnel Management	KZ	2	2P+0C	L	PV
12Y1PC	Pedestrian and Cycling Transport  Denis Liutov	KZ	2	2P+0C	L	PV
14Y1PG	Computer Graphics	KZ	2	2P+0C	L	PV
14Y1P2	Computer Aid of Transportation Projecting 2	KZ	2	2P+0C	Z	PV
18Y1PS	Computer Simulations in Mechanics Petr Zlámal Petr Zlámal (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	KZ	2	2P+0C	Z	PV

12Y1PD /	Assessment of Transport Structures	KZ	2	2P+0C	Z	PV
,	Product Quality Management Processes	KZ	2	2P+0C	 Z	
Δ Λ	Martin Leso Martin Leso	KZ KZ				PV
	C Programming Language Designing Roads in Civil 3D I		2	2P+0C	Z .	PV
121101	Tomáš Honc	KZ	2	2P+0C	L	PV
	Designing Roads in Civil 3D II Tomáš Honc	KZ	2	2P+0C	Z	PV
14Y1PA 3	3D Modeling in AutoCAD	KZ	2	2P+0C	Z	PV
16Y1PV (	Operation, Construction and Maintenance of Vehicles	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 F	Railway Lines Reconstruction	KZ	2	2P+0C	Z	PV
	Control and Electronic Vehicle Systems  Josef Mik, Pemysl Toman	KZ	2	2P+0C	Z	PV
	Human Resources Management	KZ	2	2P+0C	L	PV
17Y1ST 1	Titan Simulation	KZ	2	2P+0C	L	PV
	ATC Simulator Terézia Pilmannová	KZ	2	2P+0C	L	PV
	Sensors and Actuators	KZ	2	2P+0C	L	PV
17Y1SL 5	Sociology of Human Resources	KZ	2	2P+0C	Z	PV
11Y1SI 7	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
12Y1SH F	Road Management and Maintenance Dagmar Ko árková, Otakar Vacín	KZ	2	2P+0C	L	PV
	Strategy and innovation in mobility	KZ	2	2P+0C	Z	PV
	Urban and Regional Rail Transport Systems  Ji í Pospíšil Ji í Pospíšil (Gar.)	KZ	2	2P+0C	L	PV
21V1TH /	Aircraft Technical Handling Peter Olexa	KZ	2	2P+0C	Z	PV
	Graph Theory Lucie Kárná <b>Lucie Kárná</b> Lucie Kárná (Gar.)	KZ	2	2P+0C	L	PV
	Criminal Law in IT and Transportation	KZ	2	2P+0C	Z	PV
14Y1TI (	Creating Interactive Internet Applications	KZ	2	2P+0C	L	PV
	Aircraft Maintenance Tomáš T ma	KZ	2	2P+0C	L	PV
14Y1UP E	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 F	Public Transport in Cities and Regions Vladimír Pušman	KZ	2	2P+0C	Z	PV
	Negotiation and Cooperation	KZ	2	2P+0C	Z	PV
	Development of Applications for Mobile Devices	KZ	2	2P+0C	Z	PV
	Development in Railroad Vehicles	KZ	2	2P+0C	L	PV
14Y1WG <b>V</b>	Webdesign	KZ	2	2P+0C	Z	PV
14Y1W1 V	Webdesign 1	KZ	2	2P+0C	Z	PV
14Y1W2 <b>V</b>	Webdesign 2	KZ	2	2P+0C	L	PV
16Y1ZG I	Introduction into Applied Computer Graphics	KZ	2	2P+0C	L	PV
	Fundamentals of parametric and adaptive modeling	KZ	2	2P+0C	L	PV
11Y1ZM F	Foundation of MATLAB Programming Šárka Vorá ová <b>Šárka Vorá ová</b> Šárka Vorá ová (Gar.)	KZ	2	2P+0C	L	PV
	Fundamentals of programming in JAVA	KZ	2	2P+0C	Z	PV
	Principles of Urbanism Karel Hájek	KZ	2	2P+0C	Z	PV
15Y1ZV <b>E</b>	East-West dichotomy: Prelude to the Cold War  Marie Michlová	KZ	2	2P+0C	Z	PV
	Vehicle Testing, Legislation and Construction	KZ	2	2P+0C	Z	

Characteristics of the courses of this group of Study Plan: Code=Y1-BP-DOS-23/24 Name=Comp. Sel. Courses Bachelor Full-Time TET-DOS from 2023/24

21Y1AM Aeronautical Information Management (AIM) Definition and basic overview of AIS and AIM. Transition from AIS to AIM. Regulatory base. Provision of AIS/AIM in the Czech Rep. AIP (Aeronautical Information AIS) and AIM.	KZ	2 VER Manual of
the Czech Rep. AIRAC System. NOTAM messages.PIB (Pre-flight Information Bulletin). AIC (Aeoronautical Inf. Circulars). Aeronautical Charts. EAD (		
(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 p the final debtor is not a direct participant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of	•	•
of transportation and telecomunication projects.		
18Y1AM Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues. Anatomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circular		•
and biomechanics of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injure joint prostheses. Protective means and traffic safety regulations.	ed man and his tre	eatment. Human
14Y1AV Animation and Visualization	KZ	2
Advanced modifications and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and	l	I
and other effects, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation		
12Y1AE Applied Ecology  Constraint and principles, applied in a principles, applied in a principle applied in a function of knowledge version and principles, applied in a function of knowledge version and principles, applied in a function of knowledge version and principles, applied in a function of knowledge version and principles, applied in a function of knowledge version and principles, applied in a function of knowledge version and principles, applied in a function of knowledge version and principles, applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and principles applied in a function of knowledge version and a fun	KZ	2
General ecology - ecological concepts and principles, ecosystem, ecological factors, energy flow through the ecosystem. Application of knowledge veclogy. Landscape ecology - origin and historical development. Landscape definition and classification. Success. Traffic constructions in the country		· · · · · · · · · · · · · · · · · · ·
protection. Applied ecology.	,	
20Y1AE Applied Electronics	KZ	2
Basic electronic semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, tra		
amplifiers, basic logic gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transi amplifier as an inverting and noninverting amplifier).	stor as an amplifi	er, operational
14Y1BE Barrierless Transport	KZ	2
The issue of barrierless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Stude	1	I
of barrierless environment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems.	ems and transport	ation technology.
Theoretical knowledge will be supplemented by practical examples.		
15Y1BO Work Safety and Health Protection in Transportation	KZ	2
Fundamental legislative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation health insurance of home and foreign business trips, statistics, working practice.	i. nealth protectio	n programmes,
11Y1BK Error Detection Codes for Interlocking Systems	KZ	2
Safe communication and methods for its assuring. Safety codes linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission channels	1	1
probability of undetected error. Design and assessment of detection codes; requirements of the European standard EN 50159.		
21Y1BS Unmanned aircraft systems 1	KZ	2
Unmanned Aviation Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division. procedures. Practical flights.	Operational risks	and operational
14Y1BM Biometric Methods	KZ	2
Basic biometric terms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies,		_
retina recognition method, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavior	ral methods, the u	use of biometrics
in transport applications, safety and risks of biometric technologies.		
15Y1DZ History of Railway	KZ	2
Horse-drawn railways, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Re War II railways, railway development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train conn	•	
railway accidents, railway junctions. Excursions and projections.	oonone, ramay m	
12Y1DS Project Documentation in Practice	KZ	2
Project documentation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining process	ss. Budget and pr	icing. 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		
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 cir	· ·	
Power supplies. Logic circuits. AD converters. Connection of analog and digital parts. Basic blocks of digital signal processing. Measurement processing in electronics.	g. Design and fab	rication methods
in electronics.  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	I	I
voltage, maximum allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legisl	-	_
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 ene drive, steam engine, air engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW analysis.	rgy. Combustion 6	engine, electric
20Y1EA Environmental Aspects of Transport	KZ	2
State of the atmosphere, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabil	1	I
Air quality, main pollutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transp		
15Y1EH European Integration within Historical Context	KZ	2
Versailles system, formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism 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.	a na consequence	o ioi Europe.
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	ive testing of mate	- 1
experimental procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Figure 1997 the strain measurement and bending tests and sample preparation.	-atigue and lifetim	ne prediction.
Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.		

	French Area Studies and Transportation	KZ	2
	regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tra	· · · · · · · · · · · · · · · · · · ·	erminology.
-	e. Current political system. System of education, studying in France. Selected authors of French literature. French gastronol	my. KZ	2
	Computer Hardware asics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate		
arithmetic and logical unit		pante accigning	,
15Y1HL I	History of Civil Aviation	KZ	2
	elopment of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of	-	
· ·	viators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era vil aviation. Airline companies. Supersonic flying.	of aviation. Golde	n era of civil
	History of City Mass Transport	KZ	2
.	port in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current tren		
clearance systems. Histor	ry of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Republic and Sl	lovakia.	
l l	Traffic Noise	KZ	2
	sic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulat acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area		
	nent of transport noise. Acoustic studies, measuring protocol.	of interest. Wetho	dology of
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
	pational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these		
•	of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to	o possibilities and	skills of a man.
	the field of transportation; relevant legislature.  Interactive simulators and simulations	KZ	2
	plication of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical m		
	amics, on-land carriage in particular. Virtual reality systems. Practical exercise with simulation software and interactive simu		
	Combined Transportation	KZ	2
	egy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping area		
	Communication and Promotion of Transport Projects  Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with	the media, the nu	2 blic on social
	remaining and the power of public opinion. Work and tasks of FR department and press spokesperson. Communication with		
-	seting and political PR on transport projects. Lobbing.		
	Communication and presentation skills	KZ	2
•	their fulfillment, current communication networks, work with various sources, formal requirements of emails and final theses		•
	lligence, manipulation and way of working with it, coping with stressful situations, formal requirements of presentations, way n skills, presentation skills in online environment.	ys or communicati	on during
	Crisis Management	KZ	2
	f crisis management with direction to Rescue system (IZS). After introduction to safety domain, there are terms and knowled		position of crisis
	ets; IZS-crisis management-crisis planning; and basic legislation. Practical part is concentrated to responsibility matrix com	pilation.	
23Y1KO (	Output une Districe and Onte de stranice		
Ground of quantum physi	Quantum Physics and Optoelectronics ics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics components.	KZ	2
	ics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics components.	KZ	2
23Y1KY (	,	KZ KZ	2
23Y1KY ( Juridical aspects of behave	ics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics components.  Cybernality	KZ KZ	2
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23Y1KY (Juridical aspects of behave 23Y1KB (Basic concepts of security engineering, cyber attack	ics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics components.  Cybernality  vior on the computer network and computer systems. Cybernetic crime technology. Theory basis and models. Cyberterrorism.  Cyber security in transportation  y and cyber security, legal status in the field of cyber security, virtual cyberspace and communities, taxonomy of crimes in contect technology, information security, cyber attacks on telematics systems, security of systems with artificial intelligence, norms	KZ Infoware and con KZ cyberspace, socials and standards.	2 nected aspects. 2 impacts, social
23Y1KY (Juridical aspects of behave 23Y1KB (Basic concepts of security engineering, cyber attack 21Y1LJ (Juridical aspects of security engineering)	ics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics components.  Cybernality  vior on the computer network and computer systems. Cybernetic crime technology. Theory basis and models. Cyberterrorism  Cyber security in transportation  y and cyber security, legal status in the field of cyber security, virtual cyberspace and communities, taxonomy of crimes in content technology, information security, cyber attacks on telematics systems, security of systems with artificial intelligence, norms  Aeronautical Radio and Flight Instruments	KZ Infoware and con KZ cyberspace, socials and standards. KZ	2 nected aspects. 2 impacts, social
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14Y1MP	Mandalian Occasion Assemblies and Mandala in Demonstria Mandalian	1/7	
	Modeling Complex Assemblies and Models in Parametric Modeller ing - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipe	KZ	tion lines
	endering - physical and material properties, lighting sources. MKP - visual example.	simoo, and distrib	311011 111100.
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
	social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic	analysis of texts.	Discussion on
selected topics.	Airling Rusiness and Operations	KZ	2
_	Airline Business and Operations comprehensive view of the commercial, operational and transportation activities of air transport companies. It focuses on the organical companies.	l	1
•	r strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of tra		•
a basic view of the ec	onomic aspects of air transport.		
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2
	systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, s	safety of critical ol	ejects and critica
infrastructures.	Fore Callestian and Information Customs	1/7	
20Y10I	Fare Collection and Information Systems s in public transport and their components (on-board units, validators, turnstiles,). Information systems and their componen	KZ	ahles mans
=	ors (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parking	•	ables, maps,
14Y1OJ	Object - oriented programming in JAVA	KZ	2
	capsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters)		
data types. Inheritance	e. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda ex	xpressions, anon	ymous functions
14Y1OP	Operating System	KZ	2
	on GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Program	•	
	le programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, grap ses management. Safe and secure configuration of OS. Remote administration.	phic editors, sour	d, video and
17Y1OF	Personal Finance	KZ	2
_	get, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of he		_
	ancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability a		
(retirement savings ar	d insurance).		_
20Y1OK	Road Lighting	KZ	2
	s and terms, street lighting components (luminaires, control cabinets for street lighting, street lighting cables), characteristics of lighting cables and terms, street lighting cables are calculated as a street lighting cables.	-	-
-	dards, measurement of illuminance and luminance in road lighting, tunnels, conceptual approach to street lighting design, ligh	iting calculations	n DIALux and
Relux, street lighting of	Parametrical and Multicriterial Programming	KZ	2
	n of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints	1	Į.
17Y1PM	Personnel Management	KZ	2
	group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, intercul		1
12Y1PC	Pedestrian and Cycling Transport	KZ	2
-	. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle routes	-	
	of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing	ngs with other tra	nsport modes,
crossroads Traffic sid	ns and road marking for cyclists.		
	, ·	V7	
14Y1PG	Computer Graphics	KZ	2
14Y1PG Basic formats of graph	Computer Graphics iic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with ed	1	1
14Y1PG Basic formats of graph	Computer Graphics	1	1
14Y1PG Basic formats of graph level scope) using layer 14Y1P2	Computer Graphics ic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with eders, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.	diting programs (v	vithin the user
14Y1PG Basic formats of graph level scope) using layer 14Y1P2 Overview of CAx applimodification (attribute:	Computer Graphics  icia and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with eders, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.  Computer Aid of Transportation Projecting 2  cation for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, s, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic trans	diting programs (v	rithin the user  2  Advanced blocks
14Y1PG Basic formats of graph level scope) using layer 14Y1P2 Overview of CAx applimodification (attributesection). Basics of 3D	Computer Graphics  lic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with eders, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.  Computer Aid of Transportation Projecting 2  cation for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, s, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic transmodelling.	diting programs (v	vithin the user  2 Advanced blocks -and longitudina
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14Y1PJ C Programming Language	KZ	2
C programming language. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation,	string, files, structo	ures and unions.
Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.	147	
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 through particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. T	-	-
explanation of the traffic building design in the real-life profession.	ne course also me	ducs a basic
12Y1C2 Designing Roads in Civil 3D II	KZ	2
The course is devoted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through	1	<del>-</del>
particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. T	he previously acqu	ired skills are
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, objects, user se	ect data creation, w	ork with data
connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.	1/7	
16Y1PV Operation, Construction and Maintenance of Vehicles  Methods of vehicle production, Vehicle projection Meintenance and repair place. Engine projection project	KZ	2
Methods of vehicle production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measur General principles of engine diagnostics.	ement. Iransmissi	on mechanism.
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 ide	1	
level changes, ATC clearance, use of RNAV points. Practical exercises focused on the basis of vectoring, timely application of vertical spacing, EST		_
Exercises in the APPROACH airspace, arrivals, departures and conflict solutions.		
12Y1PU Organization Disposition of Railway Stations	KZ	2
Connecting station. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Z		ation yards.
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 substructure a	ucture maintenand	e, scheduling
and organising possesions, preparation of railway lines reconstruction and maintenance, process of railway line reconstruction.  16Y1RE Control and Electronic Vehicle Systems	KZ	2
16Y1RE   Control and Electronic Vehicle Systems Elementary concepts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disa	1	
and hybrid drive control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control	-	
comfort systems.		
21Y1RZ Human Resources Management	KZ	2
The position of human resources in the organization and related disciplines file. Substance, importance and challenges of human resources manag	ement. Internal an	d external
environment of human resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and	d remuneration of s	taff. Positioning,
dismissal and redundancies of employees. Education of employees. Planning career management.	1	
17Y1ST Titan Simulation	KZ	. 2
Titan is a management game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same prod determine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the conseque		•
of financial corporate reports and they use this information for other business decisions.	rices of their decis	ons by the form
21Y1SI ATC Simulator	KZ	2
Familiarization with the simulation environment, acquiring basic habits, aircraft identification procedures, vectoring, level changes, ATC clearance, u	1 1	
exercises focusing on basic vectoring, early application of vertical separation, EST and REV message passing. Practical exercises in the APPROAC	CH area, practicing	arrival and
departure management procedures, conflict resolution.		
20Y1SC Sensors and Actuators	KZ	2
Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor	rs of mechanical, e	lectro-magnetic,
state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.		
477/40L	1/7	
17Y1SL Sociology of Human Resources	KZ	2
Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management,	1	
Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management, of the organization.	human resources p	planning, culture
Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management, of the organization.  11Y1SI Transportation Software Engineering	human resources r	planning, culture
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Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management, of the organization.  11Y1SI Transportation Software Engineering Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and impleated and practical usuage.  16Y1KS Quality and Reliability of Vehicles Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. Mode and Effects Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other method Knowledge-based systems of quality and reliability, data collection.  12Y1SU Road Management and Maintenance Getting familiar with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented development and long-term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and reclassroom as well as investment activity in highway engineering.  16Y1SO Strategy and innovation in mobility Introduction to innovation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful in co-financing, evaluation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlo of use). Creating an innovation strategy. Customer and value map, design and testing.  17Y1SK Urban and Regional Rail Transport Systems Factors affecting transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, evaluation of the timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transport.	KZ ementation using for KZ Key legislation. FN is used in industrial KZ expense of road net epair methods are KZ innovation project, Nok (business plan KZ line networking. C	planning, culture  2 rmal techniques  2 MEA (Failure I applications.  2 work, short, discussed in the  2 KPIs, budget; and possibilities  2 reating and
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Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management, of the organization.  11Y1SI Transportation Software Engineering Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and imple and practical usuage.  16Y1KS Quality and Reliability of Vehicles Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. Mode and Effects Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other method Knowledge-based systems of quality and reliability, data collection.  12Y1SU Road Management and Maintenance Getting familiar with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented develor medium and long-term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and reclassroom as well as investment activity in highway engineering.  16Y1SO Strategy and innovation in mobility Introduction to innovation, definition. Innovation strategy. Innovative business model - main patterns and examples, design, strategy, processes and outloof use). Creating an innovation strategy. Customer and value map, design and testing.  17Y1SK Urban and Regional Rail Transport Systems Factors affecting transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, evaluation of the timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transportal demand.  21Y1TH Aircraft Technical Handling	KZ ementation using for KZ Key legislation. FN is used in industrial KZ expense of road net experiment of the control of	planning, culture  2 rmal techniques  2 MEA (Failure I applications.  2 work, short, discussed in the  2 KPIs, budget; and possibilities  2 reating and he role of
Human resources and their importance, work group as a special kind of social group, communication, personal management, modern management, of the organization.  11Y1SI Transportation Software Engineering Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and impleated practical usuage.  16Y1KS Quality and Reliability of Vehicles Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. Mode and Effects Analysis), OFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other method Knowledge-based systems of quality and reliability, data collection.  12Y1SU Road Management and Maintenance Getting familiar with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented development and long-term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and reclassroom as well as investment activity in highway engineering.  16Y1SO Strategy and innovation in mobility Introduction to innovation, definition. Innovation strategy. Innovative business model - main patterns and examples, design, strategy, processes and outloof use). Creating an innovation strategy. Customer and value map, design and testing.  17Y1SK Urban and Regional Rail Transport Systems Factors affecting transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, evaluation of the timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transparketing.	KZ Ementation using for KZ Key legislation. FN is used in industrial KZ Expensive for road net experiment of road	planning, culture  2 rmal techniques  2 MEA (Failure I applications.  2 work, short, discussed in the  2 KPIs, budget; and possibilities  2 reating and he role of

11Y1TG	Graph Theory	KZ	2
	minology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees,		-
1	path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existen utational complexity, dealing with NP-complete problems, heuristic approach.	ce and optimization	n and algorithms
23Y1TP	Criminal Law in IT and Transportation	KZ	2
_	law into legal order, conception of culpability and criminal delict, consequency of other legal standards. international treaty as	1	
	f criminal court cases, practical examples.	·	Ū
14Y1TI	Creating Interactive Internet Applications	KZ	2
, ,	language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions.	Your own applicat	ion programmed
in PHP language.	Aircraft Maintenance	KZ	2
	Allician Maintenance technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and	1	
	or maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft ma	•	
EASA for aircraft maint	enance. Seminars will be focused on practical application.		
14Y1UP	Editing of Theses in MS Word	KZ	2
	iced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, cre etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamles		
-	concentrate mainly on writing a thesis.	s editing dissertati	ions and meses,
18Y1UK	Introduction of Rail Vehicles	KZ	2
Basic characteristics ar	nd parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion	train and unit train	ns. Rolling and
	unning resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehic	le - hydromechani	c, hydrodynamic
	gn concept rail vehicles and drive of wheel set.	1/7	
12Y1VR	Public Transport in Cities and Regions  al pillars of public transport. Accessibility of public transport. Transport demand management and directional coordination of l	KZ	2 line tracing
	at plifats of public transport. Accessionity of public transport, framsport demand management and directional coordination of leters and transport variations. Types of lines according to their routing and basic operating parameters. Time coordination of I	· ·	- 1
	peration in Prague. Tram safety.		
23Y1VS	Negotiation and Cooperation	KZ	2
	gotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Info		
I	n, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", spe	ecifications and bid	dding, the role of
trust. 14Y1VM	Development of Applications for Mobile Devices	KZ	2
	nming, Java programming language, development environment, operating system Android, development application - widget		
permissions, services,		,	
16Y1VT	Development in Railroad Vehicles	KZ	2
	on. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal tra	ansportation. Critic	cal situation
14Y1WG	ials in design. International standardization.	KZ	2
_	Webdesign basics of HTTP communication, URL and addressing, HTML5 markup language, advanced CSS3 techniques, accessible an	1	
	nagement systems, web server installation + configuration directives. The subject matter will be trained on examples.		s, .cop cc.vc
14Y1W1	Webdesign 1	KZ	2
	pasics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web accessing		
	e of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practiced	1	
14Y1W2	Webdesign 2 anced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web	KZ	2
	e practiced on practical examples.	server iristaliation	1 + comiguration
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2
	ision and applications with emphasis on transport, including development and research. Colours, colour perception, colour so	1 1	orinciples of 2D
	mentary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basi	cs. Introduction to	2D and 3D
graphics software.	For demonstrate of a consection and a death of an election	1/7	0
14Y1ZM	Fundamentals of parametric and adaptive modeling lcts and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models fro	KZ	2
· ·	stems. Fundamentals of assemblies creation.	ATT ZD SKCtories. III	inport and export
11Y1ZM	Foundation of MATLAB Programming	KZ	2
To explain the principle	of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, i	matrices and elem	ents operations,
	outputs, graphics, optimization and program code debugging.		
14Y1ZJ	Fundamentals of programming in JAVA	KZ	2
	SE Platform. IDE Installation and First Project. Comments. Variables and Type System. Operators. User Input and Parsing. Coal Methods. Terms. Relational Operators and Switches. Cycles for, while, foreach. Field - declaration, initialization, methods fo		
	e, recursion. Program creation.		
12Y1ZU	Principles of Urbanism	KZ	2
1	y and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Space	cial arrangement o	f settlements.
	with a certain prevailing function, forms of their development. Brief overview of land-use planning.	1	_
15Y1ZV	East-West dichotomy: Prelude to the Cold War	KZ	2
	lution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and con Iry and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress,	•	
	In history. Social changes. Discussions on texts, sources.	and dauges and CC	mooquemoes.
16Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2
	ike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of person		

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

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

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:

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

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

	in the courses of this group of olddy Flan. Code-VI-DI-TET-20/21 Name-Dachelof Full-Till	10 1 = 1 TOTALIT	
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
Seminars possibilities	of technical processing problems solved in the field of railway lines.	<u>'</u>	'
11SCFZ	Seminar of Physics	Z	0
Solving problems on	kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.		'
21SLD	Seminar of Air Transport	Z	0
History, definitions, te	rminology, basic rules. VFR / IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio n	avigation. Weight, I	balance,
performance. Flight p	anning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic	management, grou	und handling,
security. Air crew. Airl	nes and economics. Space technologies.		
18SPP	Seminary from Elasticity and Strength	Z	0
Excersise for practice	. Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of b	eam. Analysis of o	leflection curve
of beam. Torsion of ci	rcle cross section. Combined loading. Stability of compressed bar and buckling.		
18STD	Seminary from Technical Documentation	Z	0
Technical standards,	nternational standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensic	nal and geometric	al accuracy,
arrangement of drawi	ng sheets.		
18SS	Seminary from Structural Analysis	Z	0
Examples for practise	General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate beam	and simple frame	work. Application
of principle of virtual	vorks 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 cross se	ctions. Plane fiber polygons.		
11SSF	Secondary School Physics Course	Z	0
Basics of kinematics,	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-DOS

Name of the group: Bachelor Full-Time TET-DOS voluntary

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

Credits in the group: 0 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
11SEMO	Seminar of Electromagnetic Field and Optics Old ich Hykš, Zuzana Malá, Tomáš Vít Zuzana Malá Zuzana Malá (Gar.)	Z	0	0P+2C	L	V

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

11SEMO Seminar of Electromagnetic Field and Optics Z O Solving problems on electric and magnetic field, electromagnetic field, optics and basics of solid-state physics.

Name of the block: Jazyky

Minimal number of credits of the block: 6

The role of the block: J

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

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

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

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

Credits in the group: 6 Note on the group:

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

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

15JZ3F	Foreign Language - French 3	Z	3
Grammar and stylistics.	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and com	ımunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Woı	rk with (profession	nal) text and its
features. Practice of ora	I and written presentation.		
15JZ3I	Foreign Language - Italian 3	Z	3
Grammar and stylistics.	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and com	ımunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Woı	rk with (profession	nal) text and its
features. Practice of ora	I and written presentation.		
15JZ3N	Foreign Language - German 3	Z	3
Grammar and stylistics.	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and com	ımunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Woı	rk with (profession	nal) text and its
features. Practice of ora	I and written presentation.		
15JZ3R	Foreign Language - Russian 3	Ζ	3
Grammar and stylistics.	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and com	ımunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	rk with (profession	nal) text and its
features. Practice of ora	I and written presentation.		
15JZ3S	Foreign Language - Spanish 3	Z	3
Grammar and stylistics.	Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of	of language struct	ure knowledge
and perceptive and com	ımunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	rk with (profession	nal) text and its
features. Practice of ora	I and written presentation.		

15JZ4F	Foreign Language - French 4	Z,ZK	3
Grammar and stylisti	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	of language struct	ure knowledge
and perceptive and o	ommunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	ork with (profession	al) text and its
features. Practice of	oral and written presentation.		
15JZ4I	Foreign Language - Italian 4	Z,ZK	3
Grammar and stylisti	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	of language struct	ure knowledge
and perceptive and o	ommunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	ork with (profession	al) text and its
features. Practice of	oral and written presentation.		
15JZ4N	Foreign Language - German 4	Z.ZK	3
1002411	Foreign Language - German 4	<u>_</u> ,_r\	U
	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	1 ' 1	_
Grammar and stylisti		of language struct	ure knowledge
Grammar and stylisti and perceptive and c	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	of language struct	ure knowledge
Grammar and stylisti and perceptive and c	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wo	of language struct	ure knowledge
Grammar and stylisti and perceptive and of features. Practice of 15JZ4R	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement ommunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Wooral and written presentation.	of language structork with (profession	ure knowledge all) text and its
Grammar and stylisti and perceptive and of features. Practice of 15JZ4R Grammar and stylisti	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We bral and written presentation.  Foreign Language - Russian 4	of language structork with (profession	ure knowledge all) text and its  3 ure knowledge
Grammar and stylisticand perceptive and offeatures. Practice of 15JZ4R Grammar and stylisticand perceptive and offeature and offeatures.	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We brail and written presentation.  Foreign Language - Russian 4 cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement	of language structork with (profession	ure knowledge all) text and its  3 ure knowledge
Grammar and stylisticand perceptive and offeatures. Practice of 15JZ4R Grammar and stylisticand perceptive and offeature and offeatures.	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We coral and written presentation.  Foreign Language - Russian 4 cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We	of language structork with (profession	ure knowledge all) text and its  3 ure knowledge
Grammar and stylistic and perceptive and of features. Practice of 15JZ4R Grammar and stylistic and perceptive and of features. Practice of 15JZ4S	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We brail and written presentation.    Foreign Language - Russian 4	of language structork with (profession Z,ZK of language structork with (profession Z,ZK of Language structork with (profession Z,ZK	ure knowledge all) text and its  3 ure knowledge all) text and its
Grammar and stylistic and perceptive and of features. Practice of 15JZ4R Grammar and stylistic and perceptive and of features. Practice of 15JZ4S Grammar and stylistic an	cs. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. We oral and written presentation.    Foreign Language - Russian 4	of language structork with (profession Z,ZK of language structork with (profession Z,ZK of language structork with (profession Z,ZK of language struct	ure knowledge all) text and its  3 ure knowledge all) text and its  3 ure knowledge tall) text and its

#### List of courses of this pass:

	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	gral, Riemann integr	al, impropei
	Riemann integral. First-order differential equations, linear differential equations.		
11CAL2	Calculus 2	Z,ZK	5
	ar differential equations and their systems, differential calculus of functions of several real variables. Riemann integral in Rn. Line and	d surface integrals.	
11EMOP	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 ele		
11GIE	Geometry	KZ	3
Differential geon	netry 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 (lir	near 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 classifications.		_
11MDSD	Collecting and Processing of Traffic Data	KZ	3
	nciples of traffic detection and data collection, specific problems of the field of traffic data. Data preprocessing and analysis for use in		
11MSP	Modeling of Systems and Processes	Z,ZK	4
System and subs	stem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differ	rantial and differentic	
Linear and no		rential and differentia	ai equations
Linear and no	onlinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer funct		
	Discretization of continuous systems. System interconnection.	ion. Stability of LTI s	ystems.
11SCFZ			
11SCFZ	Discretization of continuous systems. System interconnection.	ion. Stability of LTI s	ystems.
	Discretization of continuous systems. System interconnection.  Seminar of Physics Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermost Seminar of Electromagnetic Field and Optics	ion. Stability of LTI s	ystems.
11SCFZ 11SEMO	Discretization of continuous systems. System interconnection.  Seminar of Physics Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermost Seminar of Electromagnetic Field and Optics Solving problems on electric and magnetic field, electromagnetic field, optics and basics of solid-state physics.	ion. Stability of LTI s	ystems.
11SCFZ	Discretization of continuous systems. System interconnection.  Seminar of Physics Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermost Seminar of Electromagnetic Field and Optics	ion. Stability of LTI s	ystems.
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11SCFZ 11SEMO 11SSF 11STAT Basics of probal 11X31D 11X32D 11X33D 11Y1BK	Discretization of continuous systems. System interconnection.  Seminar of Physics Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics of particle systems and rigid body. Continuum mechanics, thermodynamics of particle systems and rigid body. Continuum mechanics, thermodynamics of particle systems and rigid body. Continuum mechanics, thermodynamics of particle systems and basics of solid-state physics.  Secondary School Physics Course Basics of kinematics, dynamics, thermodynamics, electric field and magnetic field.  Statistics Statistics Statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parame Regression and correlation analysis  Project 1 DOS Project 2 DOS Project 3 DOS	Z dynamics.  Z Z Z Z Z Z Z Z Z Z Z KZ detection of transmis	0 0 0 4 netric tests 2 2 4 2
11SCFZ 11SEMO 11SSF 11STAT Basics of probal 11X31D 11X32D 11X33D 11Y1BK	Discretization of continuous systems. System interconnection.  Seminar of Physics Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics of particle systems and rigid body. Continuum mechanics, thermodynamics of particle systems and rigid body. Continuum mechanics, thermodynamics of particle systems and rigid body. Continuum mechanics, thermodynamics of particle systems of solid-state physics.  Secondary School Physics Course Basics of kinematics, dynamics, thermodynamics, electric field and magnetic field.  Statistics Statistics Solitity Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parame Regression and correlation analysis  Project 1 DOS Project 2 DOS Project 2 DOS Project 3 DOS  Error Detection Codes for Interlocking Systems Ion and methods for its assuring. Safety codes linear codes, cyclic codes, BCH codes, Reed-Solomon codes. Transmission channels, or service of the particle systems of th	Z dynamics.  Z Z Z Z Z Z Z Z Z Z Z KZ detection of transmis	0 0 0 4 netric tests 2 2 4 2

11Y1SI Basic concents of	Transportation Software Engineering software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implemen	KZ	2 al techniques
Basic concepts of	and practical usuage.	autori doirig torrii	ai teeririiques
11Y1TG	Graph Theory	KZ	2
	nd terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, min		
path problem, Eule	erian 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.	nd optimization a	nd algorithms
11Y1ZM	Foundation of MATLAB Programming	KZ	2
	nciple of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, matri		1
	control flow, inputs and outputs, graphics, optimization and program code debugging.		
12DOSI	Traffic Surveys and Simulations	Z,ZK	3
•	ection in road transport. Traffic surveys. Automatic traffic counting. Preparation and implementation of traffic survey. Description of indiv		
practical examp	les from real measurements. Methods of data processing and evaluation. Principles of simulation, SW environment for creating traffic n procedure, calibration. Processing of a simple transport model based on real data.	nodels. Iranic mo	odei design
12MDE	Transport Models and Transport Excesses	Z,ZK	3
	e traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of que	•	-
transport and its	assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences.	nces. Improving	of transport
	safety and fluency.		
12MKOD	City Rail Transport	Z,ZK	5
	oan rail transport. Tram lines layout and city roads. Tram track geometry parameters. Tram track superstructure. Turnouts and other cons ace. Underground and its basic characteristics. Underground nets in the world and undeground history in Prague. Underground track geom		
stops and turn spa	track superstructure and substructure. Underground stations. Suburban rail transport.	ony paramotors.	Ondorground
12POSD	Assessment of Transport Structures	KZ	3
EIA process - histo	orical context, impact and variants, analysis of individual phases of EIA process, SEA, legislative framework in the Czech Republic, EU	directives, imple	ementation of
EU directives, pub	lic participation, process in practice. Methods of assessing the effects of transport structures on the environment. SWOT analysis. Multicri	teria methods fo	r assessment
400001/	of transport structures, TUKP method. Risk analysis. Landscape.	1/7	
12PPOK	Designing Roads, Highways and Motorways , ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard	KZ speed Route in	rural areas
	r stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety	•	
9	intersections.		g-, <b>,</b>
12PRMK	Urban Road Traffic and Design	Z,ZK	5
Composition of urb	ban road, elements and routes for traffic, pedestrian and cycling transport, projection of intersections, traffic lights and its traffic safety projection of intersections.	•	outs, calming
	of traffic, precaution for blind & partially-sighted, parking, traffic area, induction of traffic, organization and regulation of trans	sport.	
	Ourselestics Diseasities of Delivery Otations	<u></u>	
12PUSS	Organization Disposition of Railway Stations	KZ	3
Connecting stat	Organization Disposition of Railway Stations ion. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zone erve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic	KZ e stations. Forma	ation yards.
Connecting stat	ion. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zone erve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic	KZ e stations. Forma	ation yards.
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Connecting stat Rese 12SDK Roads and motory of crossroads ar	ion. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zone rive stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic Highways, Motorways and Intersections  ways network, transport output. Types of direction curves. Hairpin bend. Stopping sight distance and overtaking sight distance. Levels of tradintersections. Crossroads. Roundabouts. Intersections. Special types of junctions. Capacity of crossroads and intersections. Structures. Assessment of route alternatives.  Public Transport	KZ e stations. Forma railway network. Z,ZK affic service. Des e of pavement o	4 sign elements f roads and
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Connecting stat Rese 12SDK Roads and motorv of crossroads ar  12VHD Importance of pi	ion. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zone rive stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic Highways, Motorways and Intersections  ways network, transport output. Types of direction curves. Hairpin bend. Stopping sight distance and overtaking sight distance. Levels of tradintersections. Crossroads. Roundabouts. Intersections. Special types of junctions. Capacity of crossroads and intersections. Structures. Assessment of route alternatives.  Public Transport	KZ e stations. Forma railway network. Z,ZK affic service. Des e of pavement o  Z,ZK ration of operation	4 sign elements f roads and 5 on, network
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40)/41/D			
12Y1KP	Communication and Promotion of Transport Projects	KZ	2
	ublic Relations and the power of public opinion. Work and tasks of PR department and press spokesperson. Communication with the	· · · · · · · · · · · · · · · · · · ·	
networks and beyo	nd. Communication strategy of transport projects. Systematic goodwill building. Crisis situations in communication and preparation	for crisis commun	ication. The
	influence of political marketing and political PR on transport projects. Lobbing.		1
12Y1PC	Pedestrian and Cycling Transport	KZ	2
•	ns. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route	-	-
for cyclists. Separa	tion of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing	s with other transp	oort modes,
	crossroads. Traffic signs and road marking for cyclists.		1 -
12Y1PD	Assessment of Transport Structures	KZ	2
	port structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities o	-	
ansport structures	on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of ass	sessment of traffic	buildings of
40)/4511	the environment.	1/7	
12Y1PU	Organization Disposition of Railway Stations	KZ KZ	2
_	n. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zor		ition yards.
	e stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic		
12Y1RU	Railway Lines Reconstruction	KZ	2
keeping railway iir	e operational, maintaining lines and stations, geometrical alignment of railway line, vehicles for railway superstructure and substruct		scneauling
10)/1011	and organising possesions, preparation of railway lines reconstruction and maintenance, process of railway line reconstruction		
12Y1SU	Road Management and Maintenance	KZ	2
-	h ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented develop		
edium and long-te	rm strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and repair	r methods are disc	cussea in th
40)/4)/5	classroom as well as investment activity in highway engineering.	177	
12Y1VR	Public Transport in Cities and Regions	KZ	2
	colitical pillars of public transport. Accessibility of public transport. Transport demand management and directional coordination of lin	-	_
Basic operating pa	rameters and transport variations. Types of lines according to their routing and basic operating parameters. Time coordination of line	es. Operational tra	iffic control.
40)/4711	Organization of tram operation in Prague. Tram safety.	1/7	
12Y1ZU	Principles of Urbanism	KZ	2
survey on history	of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial	arrangement of s	settlements
40745	Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.	_	
12ZAR	Introduction to Architectural Design	Z	3
Urbanism and	architecture of traffic systems. Bus and trolley-bus transport. Tramway and town tracks. Design of vehicles. Subway. Railway transpo	rt. Railway station	s. Local
	communications. International airports.		
12ZELP	Railway Operation	Z,ZK	4
egislation in railw.	ay transport. Railway vehicles. Railway signals and signal devices. Railway traffic organisation and operation. Simplified railway traffic	c operation. Railw	ay vehicles
	brakes. Railway vehicles marking. Operation intervals. Theoretical graph of train running.		
12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Ra	way track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. S		ilway lines.
	Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail to		
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2
ole of transportation	n in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, p	ublic mass transp	ort. Negativ
11100	impacts of transportation to environment and safety.	1/7	
14ASD	Algorithm and Data Structures	KZ	3
=	e problems, design a theoretical solution to a given problem and write the resulting algorithm using flowcharts, practice reading algor		-
id use basic Book	an algebra to construct constraints in algorithms. Students will be introduced to the basics of the Python programming language - v	-	j, loops, the
	will learn to work with variables of basic data types (integer, floating point and string) and the list data structure in their progra		
14DATS	Database Systems	KZ	2
	database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security an		, database
	queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via		_
14DPK	Digital Support for Designing of Roads and Highways	Z	0
	Seminars possibilities of technical processing problems focused on designing of roads and highways.		
	Digital Support for Railway Lines	Z	0
14DZT			•
14DZT	Seminars possibilities of technical processing problems solved in the field of railway lines.		2
14DZT 14KSP	Seminars possibilities of technical processing problems solved in the field of railway lines.  Constructing with Computer Aid	KZ	
14KSP			application
14KSP CAD systems" teri	Constructing with Computer Aid	ı k rules in graphic	
14KSP CAD systems" teri	Constructing with Computer Aid a determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common wor	ı k rules in graphic	
14KSP CAD systems" terr	Constructing with Computer Aid  determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common wor co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possib profiles, drawings with raster foundaments).	ı k rules in graphic	
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14KSP CAD systems" terrand CA systems.  14PODP verview of CAx ap	Constructing with Computer Aid  n determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common wor  co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possib  profiles, drawings with raster foundaments).  Computer Aid of Transportation Projecting	k rules in graphic ilites, AutoCAD e KZ a exchange). Adv	nvironment  3 anced block
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	D : 1 T	1/7	
	Barrierless Transport	KZ	2
	less accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students v	will gain theoretical	knowledge
of barrierless enviro	onment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems	and transportation	technology.
	Theoretical knowledge will be supplemented by practical examples.	·	5,
4.4)/4.DM		1/7	
14Y1BM	Biometric Methods	KZ	2
Basic biometric te	rms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies, hai	nd geometry, iris re	ecognition,
retina recognition n	nethod, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavioral m	nethods, the use of	f biometrics
	in transport applications, safety and risks of biometric technologies.		
4.4\/4.1\/\/		KZ	
14Y1HW	Computer Hardware		2
Computer archite	cture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate p	parts designing - co	ontrollers,
	arithmetic and logical units, I/O subsystem.		
14Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2
Assemblies prog	gramming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipel	ines, and distribution	on lines.
	Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.		
14Y1OJ	Object - oriented programming in JAVA	KZ	2
	Encapsulation. Classes. Attributes. Access modifiers. Methods and overloading. Special methods (constructors, getters / setters). Ba		
		-	
data types. Innerita	nce. Polymorphism. Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lambda expre	ssions, anonymou	s functions.
14Y10P	Operating System	KZ	2
Distributions, Ins	tallation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Programs	s and processess.	OS boot.
	console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, graph		
Turnevers. Dasic c		no editors, sourid, v	nueo anu
	communication. Services management. Safe and secure configuration of OS. Remote administration.		
14Y1P2	Computer Aid of Transportation Projecting 2	KZ	2
	plication for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, data		nced blocks
-	Ites, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic transition		
modification (attribu		i cuive, cioss-and	iongitudinai
	section). Basics of 3D modelling.		
14Y1PA	3D Modeling in AutoCAD	KZ	2
	arametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object		
Work in ob non p		data ordation, work	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 d	raphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editir	ng programs (withi	n the user
`	level scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics		
4.4V/4.DI			
14Y1PI	Corporate Information System	KZ	2
Data-informatio	n-knowledge, components of information system, syntatic and semantic sense of data, structure of corporate information system, par	rticular information	system
(personalistic, prod	uction, storage, etc.), corporate information politic and information control, risks of information system operation, legal environment of	information system	operation,
, , ,	state information system, information system security, data protection, safety politics.	,	
4.0745.1		177	
14Y1PJ	C Programming Language	KZ	2
C programming lan	guage. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation, strin	ıg, files, structures a	and unions.
	Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise op	orerators.	
14Y1PZ	Advanced Data Processing in Spreadsheets	KZ	2
	,		
	familiar with principles of working in a spreadsheet. Graphic layout of the table appearance, formatting of numbers, insertion of formu		incluaing
addressing, error de	etection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatting, so		
	data analysis. Examples and questions from various companies and training.	olution finding, solv	er, macros,
		olution finding, solv	er, macros,
1/V1TI	Creating Interactive Internet Applications	-	rer, macros,
14Y1TI	Creating Interactive Internet Applications	KZ	2
	ting language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions. Your	KZ	2
	· · · · · · · · · · · · · · · · · · ·	KZ	2
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15DPLG	Transportation Psychology	Z	2
bject of psycholog	gy and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle const	truction. Psycholog	gical aspe
of travel	route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in training of the staff.	ansport operation.	
15JZ1A	Foreign Language - English 1	Z	3
ammatical Structu	ares and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and co	mmunicative skills	Element
:	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of	of rhetoric.	
15JZ2A	Foreign Language - English 2	Z,ZK	3
ammatical structu	res and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and co	mmunicative skills	Element
:	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of	of rhetoric.	
15JZ3F	Foreign Language - French 3	Z	3
rammar and stylis	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	anguage structure	knowled
nd perceptive and	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and
	features. Practice of oral and written presentation.		
15JZ3I	Foreign Language - Italian 3	Z	3
rammar and stylis	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	anguage structure	knowled
nd perceptive and	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work was a communicative skills, vocabulary development.	with (professional)	text and
	features. Practice of oral and written presentation.		
15JZ3N	Foreign Language - German 3	Z	3
	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la		
nd perceptive and	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and
	features. Practice of oral and written presentation.		
15JZ3R	Foreign Language - Russian 3	Z	3
•	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la	0 0	
nd perceptive and	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and
	features. Practice of oral and written presentation.		1
15JZ3S	Foreign Language - Spanish 3	Z	3
=	stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la		
d perceptive and	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and
	features. Practice of oral and written presentation.		_
15JZ4F	Foreign Language - French 4	Z,ZK	3
	ttics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.		
nd perceptive and	communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	with (professional)	text and
	features. Practice of oral and written presentation.		
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15JZ4I	Foreign Language - Italian 4	Z,ZK	3
rammar and stylis	Foreign Language - Italian 4 stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language level and study focus at the Faculty.	anguage structure	knowled
rammar and stylis	Foreign Language - Italian 4 stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of la communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work v	anguage structure	knowled
rammar and stylis	Foreign Language - Italian 4 stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of lacommunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work vocabulary development. Basic stylistic forms and written presentation.	anguage structure	knowled text and
rammar and stylis and perceptive and	Foreign Language - Italian 4 stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of lacommunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work features. Practice of oral and written presentation.  Foreign Language - German 4	anguage structure with (professional)	knowled text and
rammar and stylis nd perceptive and  15JZ4N rammar and stylis	Foreign Language - Italian 4  stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of lacommunicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work of features. Practice of oral and written presentation.  Foreign Language - German 4  stics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of lacest conversation and professional topics based on the language level and study focus at the Faculty.	anguage structure with (professional)  Z,ZK anguage structure	knowled text and
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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	of 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 skil	lls of a man.
	Practical examples from the field of transportation; relevant legislature.		,
15Y1HL	History of Civil Aviation	KZ	2
	g, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of a	•	
World airports. F	amous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era o	aviation. Golden	era of civil
457445414	aviation. Modern era of civil aviation. Airline companies. Supersonic flying.		
15Y1MK	Modern History in Context: Every Day Life and Transport	KZ	2
457/41/5	Historical overview of modern history of every day life, science, technology and transport in a wider context.	1/7	
15Y1NE	German in the Economy and Society	KZ	2
Recent economic	and social issues of German speaking countries and of the EU. Reading and listening of texts. Lexical, grammatical and semantic are	alysis of texts. Dis	scussion on
45\/47\/	selected topics.	1/7	
15Y1ZV	East-West dichotomy: Prelude to the Cold War, evolution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and continu	KZ	2
	century and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, the	-	
in the end of 15th	Economic and financial history. Social changes. Discussions on texts, sources.	, causes and cone	ocqueriocs.
16DOKY	Vehicle Technology	Z,ZK	5
	enclature in transportation technology. Vehicle in legislation. Design. Operation. Influence on environment. Vehicle and ecology. Tractic	,	1 1
100111110011110111	combustion engines, electric engines, change of energy principles. Powertrain construction. Power transmission. Brake syste	-	01.01.00
16DYJV	Vehicle Dynamics	Z,ZK	5
	hanics. Wheel and axle suspension mechanism. Wheel to road positioning characteristics. Wheel - road contact. Skid and its characte	'	1
• •	eceleration. Vertical dynamics, spring suspension, driving characteristics. Directional dynamics, gyroscopical characteristics. Driving sta	-	
	forces. Driving and feedback. ABS, ESP.		-
16PAV	Passive Safety	Z,ZK	4
Road accident eval	luation. Testing and legislation. Crash tests. Carbody properties. Injury mechanics. Restrain systems. Airbags. Road user safety. Mathe	matic modelling. F	ost collision
	safety systems.		
16UDOP	Introduction into Vehicles	Z	2
Vehicles and trans	sportation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and wate	r transport. Alterna	ative means
	of transport. Lifting equipment and conveyors. Legislation.		
16X31D	Project 1 DOS	Z	2
16X32D	Project 2 DOS	Z	2
16X33D	Project 3 DOS	Z	4
16Y1EN	Energy Requirements of Vehicles	KZ	2
Dynamics and the	e driving inertial of the vehicles. Types of energy - kinetic, static, heat, chemical and others. Ways of energy change into kinetic energy	_	ine, electric
	drive, steam engine, air engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW anal		
16Y1IS	Interactive simulators and simulations	KZ	2
	ry and application of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical m		methods.
	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  ility theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. K	KZ	2
	Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other methods u		
Wodo and Enocio	Knowledge-based systems of quality and reliability, data collection.	ood iii iiiddotiidi a	ppilodilorio.
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2
	e production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measurements		
mounded or vormone	General principles of engine diagnostics.		
16Y1RE	Control and Electronic Vehicle Systems	KZ	2
	ots and a local solution. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disadva	l .	1
and hybrid drive	e control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control,	safety, communic	ation and
	comfort systems.		
16Y1SO	Strategy and innovation in mobility	KZ	2
	novation, definition. Innovation strategy. Innovation life cycle and ecosystem, main sources and funding opportunities. Successful inno		- 1
co-financing, evalu	ation. Sprint method and its use. Innovative business model - main patterns and examples, design, strategy, processes and outlook (l	ousiness plan and	possibilities
	of use). Creating an innovation strategy. Customer and value map, design and testing.		
16Y1VT	Development in Railroad Vehicles	KZ	2
Railroad vehicles	s traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trar	isportation. Critica	al situation
401/470	assesment. New materials in design. International standardization.	1/7	
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2
	s, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour sche on, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basic:		
and ob generali	on, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation rive basic.  graphics software.		
16Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2
	terrible resting, Legislation and Construction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal constructions.		1
	slation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical mode		,
17FID	Financing and Investment in Transport	Z,ZK	4
	ng of transport infrastructure, the role of public administration in the financing and realization of investment in transport, the investmen		
	programs and their rules, competition, effectiveness and efficiency of spending public funds, evaluation systems of public projects and		
17TEDL	Transport Technology and Logistics	KZ	3
Basic terms in tran	sport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight tran	sport, organisation	n of traffic in
	adua tachnalagia factora of the gide of aparatar and glight, arganization of gits transport, logistic tachnalagias and their anlication see		a = 4 = = = = = = = = = = = = = = = = =

47TC A	Cyanh Theory and the Applications in Transport	7 71/	1
17TGA	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 ot	Z,ZK	d definitiones
17X31D	Project 1 DOS	Z	2
17X31D	Project 21 DOS	<u>Z</u>	2
17X32D	Project 3 DOS	<u>Z</u>	4
17X33D 17Y1EV	Public Sector Economy	KZ	2
	ncial theory of public sector, public choice theory, externalites, decisions about public finance allocation, economic assesment of public		_
	CR, state budget, management of public projects a their economic efficiency assessment, way of elaboration of PPP projects, funding froi		
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
	Issenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial trans		
	air cargo. Information systems in air transport. Global distribution systems.		3
17Y1MD	Marketing in Transportation	KZ	2
	s of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport are		
	the application of marketing.	· ·	
17Y10F	Personal Finance	KZ	2
Personal finance	(budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of housi	ing (rent, mortgag	je, saving
onsumer loans, r	financing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and a	dequacy), securi	ng the futi
	(retirement savings and insurance).		
17Y1PM	Personnel Management	KZ	2
Human sou	ces, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, interc	cultural communic	ation.
17Y1SK	Urban and Regional Rail Transport Systems	KZ	2
Factors affecting	transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, lin e timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transpo	e networking. Cre	eating and
	marketing.		
17Y1SL	Sociology of Human Resources	KZ	2
_	and their importance, work group as a special kind of social group, communication, personal management, modern management, huma		
	of the organization.		
17Y1ST	Titan Simulation	KZ	2
Titan is a mana	gement game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same produc	t. Students set a	price and
etermine the qua	ntity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequences	of their decisions	by the fo
	of financial corporate reports and they use this information for other business decisions.		
18DYKS	Dynamics of Structures and Systems	Z,ZK	3
Vibration of syste	ms with multiple degrees of freedom. Natural modes and natural frequencies. Method of stiffness constants, method of elastic constant	ts, other numerica	al method
systems with cont	nuously distributed mass. Matrix form of equations of vibration. Finite element method in dynamics of structures. Solving vibrations by su	perposition of na	tural mode
	Subspace iteration methods. Introduction to nonlinear vibrations.		
18KIDY	Kinematics and Dynamics	Z,ZK	4
	ong a line and a curve. Kinematics of rigid body. Kinematics of the point mass and the system of mass points. Dynamics of a mass point		1
	on. Method of Newton. D'Alembert principle. Free and forced vibration with one degree of freedom. Viscous damping. Impact theory. In	-	
	vibration with two degrees of freedom.		
18MECK	Mechanics of Constructions	KZ	3
nergetic solution	, of elastic beam. Solution of statically indeterminate systems - force and deformation method. Stiffness and compliance matrix of a syst	114	
His	tory and fundamentals of structural design. Characteristics of steel, design of steel structures. Introduction to mathematical theory of e		
18MTY	tory and fundamentals of structural design. Orial acteristics of steel, design of steel structures. Introduction to mathematical theory of e	tem. Finite differe	
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-	Materials Science and Engineering	tem. Finite different elasticity in 3D. Z,ZK	nce metho
sasic course of ma		tem. Finite different elasticity in 3D. Z,ZK e. However the m	ain attenti
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18X32D	Project 2 DOS	Z	2
18X33D	Project 2 DOS	Z	4
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
	natomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation		_
-	of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured n	-	
	joint prostheses. Protective means and traffic safety regulations.		
18Y1EM	Experimental Methods in Mechanics	KZ	2
	ole of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive	testing of materia	ıls. Design of
experimental pro-	cedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fa	tigue and lifetime	prediction.
	Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.		
18Y1MT	Engineering Materials	KZ	2
	ew of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and ogical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's	· ·	-
18Y1PS	Computer Simulations in Mechanics	KZ	2
	rview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model developmen		_
	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.		
18Y1UK	Introduction of Rail Vehicles	KZ	2
Basic characterist	ics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion tra	in and unit trains	. Rolling and
track resistance. To	tal running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle - I	nydromechanic, h	ydrodynamic
	and electric drive. Design concept rail vehicles and drive of wheel set.		
20SYSA	Systems Analysis	Z,ZK	5
-	em 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 tab	oles, algorithms for	or structural
0011170	tasks. Soft and hard systems, methods for soft system analysis.	7.71	
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
	gislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of infor		
systems for 115. Pr	inciples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples principles of ITS.	or possible appli	cations of the
20X31D	Project 1 DOS	Z	2
	·		_
20X32D	Project 2 DOS	Z	2
20X33D	Project 3 DOS	Z	4
20Y1AE	Applied Fleatranies		
	Applied Electronics	KZ	2
Basic electronic s	semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, trans	sistors, thyristor,	operational
Basic electronic s	semiconductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, transposes gates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transisto	sistors, thyristor,	operational
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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	-	
periormance. Filo	pht planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic ma security. Air crew. Airlines and economics. Space technologies.	magement, groun	u Hanuling,
21X31D	Project 1 DOS	Z	2
21X31D	Project 2 DOS	Z	2
	,		
21X33D	Project 3 DOS	Z	4
21Y1AM	Aeronautical Information Management (AIM)	KZ	2
	ic overview of AIS and AIM. Transition from AIS to AIM. Regulatory base. Provision of AIS/AIM in the Czech Rep. AIP (Aeronautical Ir IRAC System. NOTAM messages.PIB (Pre-flight Informtion Bulletin). AIC (Aeoronautical Inf. Circulars). Aeronautical Charts. EAD (Eu		
the Gzech Rep. A	(Quality Mng. System). ADQ (Aeronautical Data Quality). AIXM (Aeronautical Inf. Exchnage Format).	ropena AlS Datat	base). Qivis
21Y1BS		KZ	2
	Unmanned aircraft systems 1  n Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division. Op-		1
Offinalified Aviatio	procedures. Practical flights.	rational risks and	Operational
21Y1LJ	Aeronautical Radio and Flight Instruments	KZ	2
	istory of aircraft instrumentation, aerometric instrumentation, Earth magnetism, aircraft electric equipment, gyroscopic instrumentation		1
	aft equipment, engine instrumentation, warning and recording systems, instrumentation operational requirements, radiocommunication		
21Y1LS	Air Traffic Services	KZ	2
	in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, APP		1
.,	at USA and Czechoslovakia. ATS - Model of financing. Training System of Air Traffic Controllers. Future development of ATS		,
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		_
-	eles, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvement		_
21Y1OH	Airline Business and Operations	KZ	2
The course provide	s a comprehensive view of the commercial, operational and transportation activities of air transport companies. It focuses on the organiz	ational structure o	f companies
various aspects of	their strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of transp	ortation processe	s. It provides
	a basic view of the economic aspects of air transport.		
21Y1PA	Air Traffic Control Operating Procedures	KZ	2
	on the ATC simulator with the following focus - getting familiar with the simulation environment, acquiring basic habits, aircraft identified	•	_
level changes, ATO	C clearance, use of RNAV points. Practical exercises focused on the basis of vectoring, timely application of vertical spacing, EST and	d REV message tr	ansmission.
	Exercises in the APPROACH airspace, arrivals, departures and conflict solutions.		_
21Y1PC	ATC Procedures and Activities	KZ	2
	procedures, basics of communication and phraseology, aircraft identification, spacing and traffic coordination. In addition, the course		
	rts and low visibility operational procedures. Students will during the course learn basic safety management applications applied acro		_
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 rer		
environment of flui	dismissal and redundancies of employees. Education of employees. Planning career management.	nuneration of Stan	. Positioning
21Y1SI	ATC Simulator	KZ	2
	ATO SITUATION 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	•	
0,10,0,000,10000.	departure management procedures, conflict resolution.	. a. ca, p. accg	arrivar arra
21Y1TH	Aircraft Technical Handling	KZ	2
	and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and unic		I
_	issangers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and techn		
21Y1UL	Aircraft Maintenance	KZ	2
	and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and qua		I
Basic documental	ion for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft maintenance	enance. Regulatio	n of director
	EASA for aircraft maintenance. Seminars will be focused on practical application.		
21ZALD	Basics of Air Transport	KZ	2
History, definitions,	terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation.	Weight, balance, p	erformance
Flight planning, op	timization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, grou	nd handling, secu	rity. Air crew
	Airlines and economics. Space technologies.		
22DON	Traffic Accidents	Z,ZK	6
Introduction to Roa	d Accidents and Forensic Expertise; Rail, Water and Air Accidents; Road Accident Documentation and Documentation Technology; A	ccident Data Reco	orders - EDF
Systems; Road Ac	cident Trace Analysis and Fake Accidents; Simulation Programmes for Road Accident Analysis; Pedestrian and Cyclist Accidents; Veh	icle technologies	-
Systems; Road Ac	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety	icle technologies	-
Systems; Road Ac and autonomous v	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety  Prevention (traffic education, awareness, repression)	icle technologies /; Accidents at lev	el crossings
Systems; Road Ac and autonomous v	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety  Prevention (traffic education, awareness, repression)  Measurement Methods and Technology in Transportation	icle technologies y; Accidents at lev ZK	el crossings
Systems; Road Ac and autonomous volume 22METD  Measurement m	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety  Prevention (traffic education, awareness, repression)  Measurement Methods and Technology in Transportation  ethods in transport, their meaning and use. Geodetic basics in Czechia. Angular, length and height measurements. Principles of map	icle technologies  /; Accidents at lev  ZK  ping, accuracy an	el crossings  4 d errors of
Systems; Road Ac and autonomous volume 22METD  Measurement m	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety Prevention (traffic education, awareness, repression)  Measurement Methods and Technology in Transportation ethods in transport, their meaning and use. Geodetic basics in Czechia. Angular, length and height measurements. Principles of map nents. Surveying and setting out. Challenges of localization, navigation and Global Navigation Satellite Systems. Laser scanning (terre	icle technologies  /; Accidents at lev  ZK  ping, accuracy an	el crossings  4 d errors of
Systems; Road Ac and autonomous v  22METD  Measurement m geodetic measurer	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety Prevention (traffic education, awareness, repression)  Measurement Methods and Technology in Transportation ethods in transport, their meaning and use. Geodetic basics in Czechia. Angular, length and height measurements. Principles of map nents. Surveying and setting out. Challenges of localization, navigation and Global Navigation Satellite Systems. Laser scanning (terre photography and photogrammetry. Dynamic measurements of vehicles. High-speed cameras.	icle technologies /; Accidents at lev  ZK ping, accuracy an estrial, mobile, UA	el crossings  4 d errors of V). Technica
Systems; Road Ac and autonomous v 22METD Measurement m geodetic measurer 22X31D	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety Prevention (traffic education, awareness, repression)  Measurement Methods and Technology in Transportation ethods in transport, their meaning and use. Geodetic basics in Czechia. Angular, length and height measurements. Principles of map nents. Surveying and setting out. Challenges of localization, navigation and Global Navigation Satellite Systems. Laser scanning (terre photography and photogrammetry. Dynamic measurements of vehicles. High-speed cameras.  Project 1 DOS	icle technologies /; Accidents at lev  ZK ping, accuracy an estrial, mobile, UA	el crossings  4 d errors of V). Technica
Systems; Road Ac and autonomous v  22METD  Measurement m geodetic measurer  22X31D  22X32D	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety Prevention (traffic education, awareness, repression)  Measurement Methods and Technology in Transportation ethods in transport, their meaning and use. Geodetic basics in Czechia. Angular, length and height measurements. Principles of map nents. Surveying and setting out. Challenges of localization, navigation and Global Navigation Satellite Systems. Laser scanning (terre photography and photogrammetry. Dynamic measurements of vehicles. High-speed cameras.  Project 1 DOS  Project 2 DOS	icle technologies /; Accidents at lev  ZK ping, accuracy an estrial, mobile, UA  Z  Z	el crossings  4 d errors of V). Technica
Systems; Road Ac and autonomous v 22METD Measurement m geodetic measurer 22X31D	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety Prevention (traffic education, awareness, repression)  Measurement Methods and Technology in Transportation ethods in transport, their meaning and use. Geodetic basics in Czechia. Angular, length and height measurements. Principles of map nents. Surveying and setting out. Challenges of localization, navigation and Global Navigation Satellite Systems. Laser scanning (terre photography and photogrammetry. Dynamic measurements of vehicles. High-speed cameras.  Project 1 DOS  Project 2 DOS  Project 3 DOS	icle technologies  /; Accidents at lev  ZK  ping, accuracy an  estrial, mobile, UA  Z  Z  Z	el crossings  4 d errors of V). Technica
Systems; Road Ac and autonomous v  22METD  Measurement m geodetic measurer  22X31D  22X32D	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety Prevention (traffic education, awareness, repression)  Measurement Methods and Technology in Transportation ethods in transport, their meaning and use. Geodetic basics in Czechia. Angular, length and height measurements. Principles of map nents. Surveying and setting out. Challenges of localization, navigation and Global Navigation Satellite Systems. Laser scanning (terre photography and photogrammetry. Dynamic measurements of vehicles. High-speed cameras.  Project 1 DOS  Project 2 DOS	icle technologies /; Accidents at lev  ZK ping, accuracy an estrial, mobile, UA  Z  Z	el crossings  4 d errors of V). Technica
Systems; Road Ac and autonomous v  22METD  Measurement m geodetic measurer  22X31D  22X32D  22X33D	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety Prevention (traffic education, awareness, repression)  Measurement Methods and Technology in Transportation ethods in transport, their meaning and use. Geodetic basics in Czechia. Angular, length and height measurements. Principles of map nents. Surveying and setting out. Challenges of localization, navigation and Global Navigation Satellite Systems. Laser scanning (terre photography and photogrammetry. Dynamic measurements of vehicles. High-speed cameras.  Project 1 DOS  Project 2 DOS  Project 3 DOS	icle technologies  /; Accidents at lev  ZK  ping, accuracy an  estrial, mobile, UA  Z  Z  Z	el crossings  4 d errors of V). Technica  2 2 4
Systems; Road Ac and autonomous v  22METD  Measurement m geodetic measurer  22X31D  22X32D  22X33D  23X31D	ehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety Prevention (traffic education, awareness, repression)  Measurement Methods and Technology in Transportation ethods in transport, their meaning and use. Geodetic basics in Czechia. Angular, length and height measurements. Principles of map nents. Surveying and setting out. Challenges of localization, navigation and Global Navigation Satellite Systems. Laser scanning (terre photography and photogrammetry. Dynamic measurements of vehicles. High-speed cameras.  Project 1 DOS  Project 2 DOS  Project 3 DOS  Project 1 DOS	icle technologies /; Accidents at lev  ZK ping, accuracy an estrial, mobile, UA  Z  Z  Z  Z	el crossings  4 d errors of V). Technica  2 2 4 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 circui		1
	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
Basic concepts of	security and cyber security, legal status in the field of cyber security, virtual cyberspace and communities, taxonomy of crimes in cyberspace and cybe	rspace, social im	pacts, social
engineerir	ng, cyber attack technology, information security, cyber attacks on telematics systems, security of systems with artificial intelligence, n	orms and standa	ırds.
23Y1KM	Crisis Management	KZ	2
Theory and legal fr	ame of crisis management with direction to Rescue system (IZS). After introduction to safety domain, there are terms and knowledge of	n: theory and pos	sition of crisis
mana	gement and its targets; IZS-crisis management-crisis planning; and basic legislation. Practical part is concentrated to responsibility management	atrix compilation.	_
23Y1KO	Quantum Physics and Optoelectronics	KZ	2
	Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics component	ents.	
23Y1KY	Cybernality	KZ	2
Juridical aspects of	behavior on the computer network and computer systems. Cybernetic crime technology. Theory basis and models. Cyberterrorism. Info	oware and conne	cted aspects.
23Y1MK	Crisis Situation Management in Critical Infrastructure	KZ	2
Determination of o	ritical infrastructute elements on all levels, their protection systems, responsibilities of particular agencies of the state administration	and the self-gove	rnment, and
their	responsibilities to anounce particular safety provisions. Physical and cyber protection of critical infrastructure with special attention to	the soft targets.	
23Y1MU	Emergency Events Management Solution in Transport Infrastructure	KZ	2
Basic solutions of e	mergency events with emphasis of the transport infrastructure events and their solution management. Knowledge in the emergency pla	inning and specia	al procedures
	in liquidation work within the transport infrastructure.		
23Y1OK	Protection of Critical Objects and Infrastructures	KZ	2
Types of technolog	cal systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, safet	y of critical objec	ts and critical
	infrastructures.		
23Y1TP	Criminal Law in IT and Transportation	KZ	2
Introduction of cri	minal law into legal order, conception of culpability and criminal delict, consequency of other legal standards. international treaty and	criminal law, inve	estigation of
	crime, specific indicia of criminal court cases, practical examples.		_
23Y1VS	Negotiation and Cooperation	KZ	2
	r negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Information and commanding of the command of		
Principles of negot	ation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", specific	ations and biddir	ng, the role of
	trust.		
TV-1	Physical Education 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 <a href="http://bilakniha.cvut.cz/en/FF.html">http://bilakniha.cvut.cz/en/FF.html</a> Generated: day 2025-08-18, time 11:29.