### Study plan

### Name of study plan: PRE bak. studium oboru LOG roz azení v 19-20

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: 128 Elective courses credits: 52 Sum of credits in the plan: 180

Note on the plan:

Name of the block: Compulsory courses Minimal number of credits of the block: 116

The role of the block: Z

Code of the group: 1S PRE 18-19 P

Name of the group: 1. sem. bak. PRE 18-19 povinné p edm ty (spol. ást studia)

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:

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Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
611CAL1	Calculus 1 Romana Zibnerová Ond ej Navrátil (Gar.)	Z,ZK	7	2P+4C+22E	B Z	Z
611LA	Linear Algebra Romana Zibnerová Romana Zibnerová Martina Be vá ová (Gar.)	Z,ZK	3	2P+1C+10E	B Z	Z
612ZYDI	Introduction to Transportation Engineering Dagmar Ko árková Dagmar Ko árková (Gar.)	Z,ZK	2	1P+1C	Z	Z
618MTY	Materials Science and Engineering Vít Malinovský Jaroslav Valach (Gar.)	Z,ZK	3	2P+1C+10E	3 Z	Z
611GIE	Geometry Vít Malinovský Šárka Vorá ová (Gar.)	KZ	3	2P+2C+12E	Z	Z
614ASD	Algorithm and Data Structures  Jan Mejst ik	KZ	3	0P+2C+8E	Z	Z
614KSP	Constructing with Computer Aid  Libor Žídek	KZ	2	0P+2C+8E	Z	Z
618TED	Technical Documentation Vít Malinovský Jitka ezní ková (Gar.)	KZ	2	1P+1C+8E	Z	Z
615DPLG	Transportation Psychology Jana Štikarová	Z	2	2P+0C+6E	Z	Z
616UDOP	Introduction into Vehicles Zuzana Radová Petr Bouchner (Gar.)	Z	2	2P+0C+8E	B Z	Z
TV-1	Physical Education	Z	1		Z	Z

## Characteristics of the courses of this group of Study Plan: Code=1S PRE 18-19 P Name=1. sem. bak. PRE 18-19 povinné p edm ty (spol. ást studia)

(spoi. ast studia)			
611CAL1	Calculus 1	Z,ZK	7
Sequence of real numb	ers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n	-dimensional Eukl	idean space and
Cartesian coordinate s	stem. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several rea	al variables.	
611LA	Linear Algebra	Z,ZK	3
Vector spaces (linear c	mbinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and	their solvability. D	eterminants and
their applications. Scala	ar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.		
612ZYDI	Introduction to Transportation Engineering	Z,ZK	2
Role of transportation in	i land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roac	ds, public mass tra	nsport. Negative
impacts of transportation	on to environment and safety.		

618MTY	Materials Science and Engineering	Z,ZK	3
Basic course of ma	aterials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstr	ucture. However th	e main attention
is paid to metals a	s the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and	composites. Atten	tion is also paid
to degradation pro	cesses in materials, to defectoscopy and to main mechanical tests.		
611GIE	Geometry	KZ	3
Orthographic and	oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - para	ameterization, arc	of the curve,
torsion and curvatu	ure, Frenet's trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a contract of the motion of a particle moving on a contract of the motion of the	curved path.	
614ASD	Algorithm and Data Structures	KZ	3
Students will be far	miliarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will ana	lyze problems, pro	pose theoretica
solutions to the se	t task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart	and use the basic	s of Boolean
algebra with formir	ng the conditions for the algorithms.		
614KSP	Constructing with Computer Aid	KZ	2
	Constructing with Computer Aid red determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common	1	<del>-</del>
"CAD systems" ter	· · · · · · · · · · · · · · · · · · ·	work rules in grapl	nic applications
"CAD systems" ter and CA systems. 0	m determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common	work rules in grapl	nic applications
"CAD systems" ter and CA systems. 0	rm 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.)	work rules in grapl	nic applications
"CAD systems" ter and CA systems. O profiles, drawings 618TED	rm 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 posswith raster foundaments).	work rules in graph sibilites, AutoCAD	nic applications environment
"CAD systems" ter and CA systems. O profiles, drawings 618TED	rm 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 posswith raster foundaments).    Technical Documentation	work rules in graph sibilites, AutoCAD	nic applications environment
"CAD systems" ter and CA systems. Oprofiles, drawings 618TED Technical standard	rm 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 posswith raster foundaments).    Technical Documentation	work rules in graph sibilites, AutoCAD	nic applications environment
"CAD systems" ter and CA systems. Oprofiles, drawings of 618TED Technical standard arrangement of dra 615DPLG	rm 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 posswith raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimension sawing sheets.	work rules in graph sibilites, AutoCAD  KZ  nal and geometrica	nic applications environment  2 al accuracy,
"CAD systems" ter and CA systems. Oprofiles, drawings of 618TED Technical standard arrangement of dra 615DPLG Subject of psychology	rm 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 posswith raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional sheets.    Transportation Psychology	work rules in graph sibilites, AutoCAD  KZ nal and geometrica  Z construction. Psych	nic applications environment  2 al accuracy,
"CAD systems" ter and CA systems. Oprofiles, drawings of 618TED Technical standard arrangement of dra 615DPLG Subject of psychology	rm 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 possibility raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional sheets.    Transportation Psychology	work rules in graph sibilites, AutoCAD  KZ nal and geometrica  Z construction. Psych	nic applications environment  2 al accuracy,
"CAD systems" ter and CA systems. O profiles, drawings of 618TED Technical standard arrangement of dra 615DPLG Subject of psycholo of travel route and 616UDOP	rm 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 possibility raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional sheets.    Transportation Psychology   Transportation Psychology	work rules in graph sibilites, AutoCAD  KZ nal and geometrica  Z construction. Psychoperation.	nic applications environment  2 al accuracy,  2 ological aspects
"CAD systems" ter and CA systems. O profiles, drawings of 618TED Technical standard arrangement of dra 615DPLG Subject of psycholo of travel route and 616UDOP Vehicles and trans	rm 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 possibility in the control of the control	work rules in graph sibilites, AutoCAD  KZ nal and geometrica  Z construction. Psychoperation.	nic applications environment  2 al accuracy,  2 ological aspects
"CAD systems" ter and CA systems. O profiles, drawings of 618TED Technical standard arrangement of dra 615DPLG Subject of psycholo of travel route and 616UDOP Vehicles and trans	rm 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 possivith raster foundaments).    Technical Documentation	work rules in graph sibilites, AutoCAD  KZ nal and geometrica  Z construction. Psychoperation.	nic applications environment  2 al accuracy,  2 ological aspects

Code of the group: 2S PRE 18-19 P

Name of the group: 2. sem. bak. PRE 18-19 povinné p edm ty (spol. ást studia)

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:

	Name of the second (Name of the many of seconds	1	1	1	1	
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
611CAL2	Calculus 2 Romana Zibnerová Romana Zibnerová Ond ej Navrátil (Gar.)	Z,ZK	5	2P+3C+20E	L L	Z
611STAT	Statistics Pavel Provinský, Pavla Pecherková Pavla Pecherková Pavel Provinský (Gar.)	Z,ZK	4	2P+2C+12E	L L	Z
612ZTS	Railway Lines and Stations Tomáš Javo ík, Ond ej Trešl	Z,ZK	4	2P+2C+10E	L L	Z
618SAT	Structural Analysis Tomáš Doktor Daniel Kytý (Gar.)	Z,ZK	4	2P+2C+14E	L L	Z
620SYSA	Systems Analysis Petr Bureš, Ji í R ži ka Zuzana B linová (Gar.)	Z,ZK	5	2P+2C+14E	L L	Z
614PRG	Programming Libor Židek	KZ	2	0P+2C+8E	B L	Z
617TEDL	Transport Technology and Logistics Michal Drábek Vít Janoš (Gar.)	KZ	3	2P+1C	L	Z
621ZALD	Basics of Air Transport  Jakub Hospodka	KZ	2	0P+2C+8E	B L	Z
TV-2	Physical Education	Z	1		L	Z

# Characteristics of the courses of this group of Study Plan: Code=2S PRE 18-19 P Name=2. sem. bak. PRE 18-19 povinné p edm ty (spol. ást studia)

(spoi. ast studia)							
611CAL2	Calculus 2	Z,ZK	5				
Antiderivative, Newtoni	ntiderivative, Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in Rn. Parametric description of regular						
k-dimensional surfaces	k-dimensional surfaces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations of the first						
order, linear differential	equations with constant coefficients and its systems.						
611STAT	Statistics	Z,ZK	4				
Definition of probability,	random variable and its description, known distributions, random vector, function of random variable. Methods of point estimation	on. Testing of statis	stical hypothesis.				
Regression and correla	tion, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linea	ar regression, anal	lysis of variance,				
multiple regression, the	use of matrices in regression.						
612ZTS	Railway Lines and Stations	Z,ZK	4				
Rail transport. Railway	Rail transport. Railway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. Spatial layout of railway lines.						

Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport.

618SAT	Structural Analysis	Z,ZK	4
General system of	forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determin	ate beams and sir	nple girders.
Principle of virtual v	vork. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructi	ons. Cross-section	al characteristics
of planar shapes. F	iber polygons and chains.		
620SYSA	Systems Analysis	Z,ZK	5
Introduction to syst	tem sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface to	asks, processes, s	ystem behaviour
and its analysis, st	rong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision	tables, algorithms	for structural
tasks. Soft and har	d systems, methods for soft system analysis.		
614PRG	Programming	KZ	2
Algorithm developr	nent, methods of structured programming, high-level programming languages, basics of C programming languages (types, varial	oles, conditions, cy	cles, arrays,
	nent, methods of structured programming, high-level programming languages, basics of C programming languages (types, varial nming techniques, complexity.	oles, conditions, cy	cles, arrays,
		kZ	vcles, arrays,
functions), program	nming techniques, complexity.	KZ	3
functions), program 617TEDL Basic terms in tran	mming techniques, complexity.  Transport Technology and Logistics	KZ transport, organis	3 ation of traffic in
functions), program 617TEDL Basic terms in tran	Transport Technology and Logistics sport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight	KZ transport, organis	3 ation of traffic in
functions), program 617TEDL Basic terms in tran each transport mod 621ZALD	Transport Technology and Logistics sport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight dus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication of the side of operator and client, organisation of city transport, logistic technologies and their aplication of the side of operator and client, organisation of city transport, logistic technologies and their aplication of the side of operator and client, organisation of city transport, logistic technologies and their aplication of the side of operator and client, organisation of city transport, logistic technologies and their aplication of the side of operator and client, organisation of city transport, logistic technologies and their aplication of the side of operator and client, organisation of city transport, logistic technologies and their aplication of the side of operator and client, organisation of city transport, logistic technologies and their aplication of the side of operator and client, organisation of city transport, logistic technologies and their aplication of the side of operator and client, organisation of city transport, logistic technologies and their aplication of the side	KZ transport, organis using various trans	3 ation of traffic in sport modus.
functions), program 617TEDL Basic terms in tran each transport mod 621ZALD History, definitions,	mining techniques, complexity.  Transport Technology and Logistics sport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight dus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication  Basics of Air Transport	KZ transport, organis using various trans KZ tion. Weight, balan	3 ation of traffic in sport modus.  2 ce, performance.
functions), program 617TEDL Basic terms in tran each transport mod 621ZALD History, definitions, Flight planning, opt	Inming techniques, complexity.  Transport Technology and Logistics sport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight dus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication  Basics of Air Transport terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation.	KZ transport, organis using various trans KZ tion. Weight, balan	3 ation of traffic in sport modus.  2 ce, performance.
unctions), program 617TEDL Basic terms in tran each transport mod 621ZALD History, definitions, Flight planning, opt	Transport Technology and Logistics sport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight dus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication Basics of Air Transport terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigationation of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management,	KZ transport, organis using various trans KZ tion. Weight, balan	3 ation of traffic in sport modus. 2 ce, performance

Code of the group: 3S PRE 19-20 P

Name of the group: 3. sem. bak. PRE 19-20 povinné p edm ty (S S)

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

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

Credits in the group: 30 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
611FYZ	Physics Goce Chadzitaskos Zuzana Malá (Gar.)	Z,ZK	5	2P+2C+18B	Z	Z
612MDE	Transport Models and Transport Excesses Josef Kocourek, Tomáš Pad lek Josef Kocourek (Gar.)	Z,ZK	3	2P+1C+8B	Z	Z
617TGA	Graph Theory and its Applications in Transport  Alexandra Dvo á ková Denisa Mocková (Gar.)	Z,ZK	4	2P+2C+12B	Z	Z
618PZP	Elasticity and Strength Tomáš Doktor Ond ej Jiroušek (Gar.)	Z,ZK	3	2P+1C+10B	Z	Z
620UITS	Introduction to Intelligent Transport Systems Vladimír Faltus Pavel Hrubeš (Gar.)	Z,ZK	7	3P+2C+20B	Z	Z
612PPOK	Designing Roads, Highways and Motorways Tomáš Pad lek, Petr Kumpošt	KZ	3	1P+2C+10B	Z	Z
614DATS	Database Systems Ond ej Smíšek Jana Kaliková (Gar.)	KZ	2	1P+1C+10B	Z	Z
615JZ1A	Foreign Language - English 1 V ra Pastorková	Z	3	0P+4C+10B	Z	Z

## Characteristics of the courses of this group of Study Plan: Code=3S PRE 19-20 P Name=3. sem. bak. PRE 19-20 povinné p edm ty (S. S.)

(S S)			
611FYZ	Physics	Z,ZK	5
Kinematics, particle	dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.		
612MDE	Transport Models and Transport Excesses	Z,ZK	3
Parameters of the t	affic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory	of queues, shock wa	aves. Quality of
transport and its as	sessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the conse	equences. Improving	of transport
safety and fluency.			
617TGA	Graph Theory and its Applications in Transport	Z,ZK	4
Basic terms of grap	h theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in o	ther scientific discip	lines.
618PZP	Elasticity and Strength	Z,ZK	3
Tension and compre	ession. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, l	polted and welded jo	int of structure
Analysis of deflection	on curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic f	oundation. Strength	analysis.
620UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
Terminology and leg	islative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of	information and tele	communicatio
systems for ITS. Pri	nciples and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real exam	ples of possible app	olications of th
orinciples of ITS.			
612PPOK	Designing Roads, Highways and Motorways	KZ	3
Definition, types, ov	rnership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and stanc	lard speed. Route in	ı rural areas.
Range of vision for	stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. S	Safety device. Cross	ings, junctions
intersections.			
614DATS	Database Systems	KZ	2
Basic concepts of d	atabase systems, conceptual model, relational data model, the principles of normal forms, relational database design, security,	and integrity of data	database

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

615JZ1A Foreign Language - English 1

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

Code of the group: 4S P LOG 19-20 P

Name of the group: 4. sem. PREZ bak. LOG 19-20 povinné p edm ty

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

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

Credits in the group: 26 Note on the group:

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
611MSP	Modeling of Systems and Processes  Jana Kuklová, Bohumil Ková Bohumil Ková (Gar.)	Z,ZK	4	2P+2C+12B	L	Z
617LGT	Logistics Daniel Pilát Tomáš Horák (Gar.)	Z,ZK	6	3P+2C+18B	L	Z
617SFID	Public Administration and Financing in Transport	Z,ZK	4	2P+1C+12B	L L	Z
611LP	Linear Programming Šárka Vorá ová, Ivan Nagy Ivan Nagy Šárka Vorá ová (Gar.)	KZ	3	2P+1C+12B	L	Z
616DPO	Vehicle Technology Josef Mík Josef Mík (Gar.)	KZ	2	2P+0C+10B	L	Z
617EMY	Management Science	Z	2	2P+0C+8B	L L	Z
617PAZ	Carriage and Forwarding	Z	2	2P+0C+8B	L	Z
615JZ2A	Foreign Language - English 2 V ra Pastorková	Z,ZK	3	0P+4C+10B	L	Z

## Characteristics of the courses of this group of Study Plan: Code=4S P LOG 19-20 P Name=4. sem. PREZ bak. LOG 19-20 povinné

p edm ty			
611MSP	Modeling of Systems and Processes	Z,ZK	4
System and subsys	tem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation o	of differential and differential	ential equations
Linear and nonlinea	ar system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer fun	ction. Stability of LTI s	ystems.
Discretization of co	ntinuous systems. System interconnection.		
617LGT	Logistics	Z,ZK	6
Logistics definition,	basic concepts, store, warehouse, transport and handling equipment, logistics technology, logistics centers, information and	intelligent logistics sys	stems, logistics
city.			
617SFID	Public Administration and Financing in Transport	Z,ZK	4
Basic issues of tran	sport and transport policy in the social context, environmental issues in transport, economical aspects of transport, public adr	ninistration and financ	ing of transport
611LP	Linear Programming	KZ	3
Formulation of the	problem of linear programming, transcription of some practical problems to the linear programming problems. Simplex and co	nvex polyedra. Simple	x method, basic
solutions, duality pr	inciple in linear programming, stability of solution of linear programming problem. Traffic problem.		
616DPO	Vehicle Technology	KZ	2
Vehicle. Functions,	principles. Drive, vehicle construction. Road transport, safety, heavy duty vehicle desing, dynamics. Rail transport, safety, car	riage design. Drive. El	ectric traction.
Transshipment. Tec	hnological components of various modes of transport. Management and control of various means of transport. Safety.		
617EMY	Management Science	Z	2
The introduction to	economical-mathematical models before its application in concrete technical and economical cases. The basic mathematical	methods to modelise	economical
situations. Several	classes of problems are formulated and different methods used in qualitatively distinct real situations are introduced. The task	s of interpretation and	l application.
617PAZ	Carriage and Forwarding	Z	2
Contracts of carriag	e and forwarding, waybills and documents; transport modes, multimodal transport, tariffs and prices in transport, rights and c	bligations of carriers,	hauliers and
forwarders, duty an	d tariff agreements, INCOTERMS, insurance in transport.		
615JZ2A	Foreign Language - English 2	Z,ZK	3
Grammatical struct	ures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive	1 ' 1	kills. Elementary
stylistics forms. Ora	I and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.		_

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

The role of the block: ZP

Code of the group: PROJ 19-20

Name of the group: projekty 19-20 (4., 5., 6. sem.)

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

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

Credits in the group: 6 Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
615X31	Project 1	Z	2	0P+1C	L	ZP
620X31	Project 1	Z	2	0P+1C	L	ZP
612X31	Project 1	Z	2	0P+1C	L	ZP
622X31	Project 1	Z	2	0P+1C	L	ZP
617X31	Project 1	Z	2	0P+1C	L	ZP
616X31	Project 1	Z	2	0P+1C	L	ZP
617X32	Project 2	Z	2	0P+2C	Z	ZP
622X32	Project 2	Z	2	0P+2C	Z	ZP
612X32	Project 2	Z	2	0P+2C	Z	ZP
620X32	Project 2	Z	2	0P+2C	Z	ZP
615X32	Project 2	Z	2	0P+2C	Z	ZP
616X32	Project 2	Z	2	0P+2C	Z	ZP
616X33	Project 3	Z	2	0P+1C	L	ZP
620X33	Project 3	Z	2	0P+1C	L	ZP
615X33	Project 3	Z	2	0P+1C	L	ZP
612X33	Project 3	Z	2	0P+1C	L	ZP
622X33	Project 3	Z	2	0P+1C	L	ZP
617X33	Project 3	Z	2	0P+1C	L	ZP

Characteristics of the courses of this group of Study Plan: Code=PROJ 19-20 Name=projekty 19-20 (4., 5., 6. sem.)

615X31	Project 1	Z	2
620X31	Project 1	Z	2
612X31	Project 1	Z	2
622X31	Project 1	Z	2
617X31	Project 1	Z	2
616X31	Project 1	Z	2
617X32	Project 2	Z	2
622X32	Project 2	Z	2
612X32	Project 2	Z	2
620X32	Project 2	Z	2
615X32	Project 2	Z	2
616X32	Project 2	Z	2
616X33	Project 3	Z	2
620X33	Project 3	Z	2
615X33	Project 3	Z	2
612X33	Project 3	Z	2
622X33	Project 3	Z	2
617X33	Project 3	Z	2

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 6

The role of the block: PV

Code of the group: PVP PRE 19-20

Name of the group: 3x PVP pro bak. PREZ od 19-20: LOG (1x v 4. sem. ,1x PVP v 5.sem., 1x PVP v 6.sem.)

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

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

Credits in the group: 6

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
620Y1AF	Alternative Forms of Transportation Project Financing	KZ	2	2P+0C	Z	PV
618Y1AM	Anatomy, Mobility and Safety of Man	KZ	2	2P+0C	Z	PV

614Y1AV	Animation and Visualization	KZ	2	2P+0C	L	PV
620Y1AE	Applied Electronics	KZ	2	2P+0C	Z	PV
614Y1BE	Barrierless Transport	KZ	2	2P+0C	L	PV
621Y1BC	Aviation safety and security	KZ	2	2P+0C	L	PV
615Y1BO	Work Safety and Health Protection in Transportation	KZ	2	2P+0C	L	PV
621Y1BS	Unmanned aircraft systems 1	KZ	2	2P+0C	L	PV
614Y1BM	Biometric Methods	KZ	2	2P+0C	Z	PV
623Y1DZ	Data and Their Processing for Engineering Fields Needs	KZ	2	2P+0C	Z	PV
615Y1DZ	History of Railway	KZ	2	2P+0C	L	PV
612Y1DS	Project Documentation in Practice	KZ	2	2P+0C	Z	PV
620Y1EK	Qualification in Electrical Engineering	KZ	2	2P+0C	L	PV
616Y1EN	Energy Requirements of Vehicles	KZ	2	2P+0C	L	PV
620Y1EA	Environmental Aspects of Transport	KZ	2	2P+0C	Z	PV
615Y1EH	European Integration within Historical Context	KZ	2	2P+0C	Z	PV
618Y1EM	Experimental Methods in Mechanics	KZ	2	2P+0C	Z	PV
615Y1FD	French Area Studies and Transportation	KZ	2	2P+0C	L	PV
614Y1HW	Computer Hardware	KZ	2	2P+0C	L	PV
615Y1HL	History of Civil Aviation	KZ	2	2P+0C	Z	PV
615Y1HD	History of City Mass Transport	KZ	2	2P+0C	Z	PV
612Y1HD	Traffic Noise	KZ	2	2P+0C	L	PV
615Y1HE	Work Hygiene and Ergonomics in Traffic Petr Musil	KZ	2	2P+0C	Z	PV
616Y1IS	Interactive simulators and simulations Libor Žídek, Ond ej Smíšek, Ond ej Piksa, Martin Scháno, Ji í Zeisek	KZ	2	2P+0C	L	PV
612Y1KN	Combined Transportation	KZ	2	2P+0C	Z	PV
623Y1KO	Quantum Physics and Optoelectronics	KZ	2	2P+0C	L	PV
617Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2	2P+0C	L	PV
620Y1LN	Location and Navigation	KZ	2	2P+0C	L	PV
617Y1MD	Marketing in Transportation Alexandra Dvo á ková	KZ	2	2P+0C	Z	PV
611Y1MM	Mathematical Models in Economy	KZ	2	2P+0C	Z	PV
618Y1MT	Engineering Materials	KZ	2	2P+0C	L	PV
621Y1MP	Matlab for project-oriented study	KZ	2	2P+0C	Z	PV
614Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2	2P+0C	Z	PV
615Y1MK	Modern History in Context: Every Day Life and Transport	KZ	2	2P+0C	L	PV
615Y1NE	German in the Economy and Society	KZ	2	2P+0C	Z	PV
623Y1OK	Protection of Critical Objects and Infrastructures	KZ	2	2P+0C	L	PV
620Y1OI	Fare Collection and Information Systems	KZ	2	2P+0C	L	PV
614Y1OJ	Object - oriented programming in JAVA	KZ	2	2P+0C	L	PV
614Y1OP	Operating System	KZ	2	2P+0C	Z	PV
617Y1OF	Personal Finance Alexandra Dvo á ková	KZ	2	2P+0C	Z	PV
620Y1OK	Road Lighting	KZ	2	2P+0C	L	PV
611Y1PV	Parametrical and Multicriterial Programming	KZ	2	2P+0C	Z	PV
617Y1PM	Personnel Management Stanislava Holíková	KZ	2	2P+0C	L	PV
612Y1PC	Pedestrian and Cycling Transport	KZ	2	2P+0C	L	PV
614Y1PG	Computer Graphics	KZ	2	2P+0C	L	PV
614Y1P2	Computer Aid of Transportation Projecting 2	KZ	2	2P+0C	Z	PV
618Y1PS	Computer Simulations in Mechanics	KZ	2	2P+0C	L	PV
614Y1PI	Corporate Information System	KZ	2	2P+0C	Z	PV
614Y1PZ	Advanced Data Processing in Spreadsheets	KZ	2	2P+0C	Z	PV
612Y1PD	Assessment of Transport	KZ	2	2P+0C	Z	PV
620Y1PK	Product Quality Management Processes	KZ	2	2P+0C	Z	PV
614Y1PJ	C Programming Language	KZ	2	2P+0C	Z	PV

612Y1C2 Designing Roads in Civil 3D II	KZ	2	2P+0C	Z	PV
Doorganing House in Civil D. I.	KZ	2	2P+0C		PV
	KZ	2	2P+0C 2P+0C	 	PV
			+		
612Y1PU Organization Disposition of Railway Stations	KZ	2	2P+0C	L	PV
616Y1RE Control and Electronic Vehicle Systems	KZ	2	2P+0C	Z	PV
621Y1RZ Human Resources Management	KZ	2	2P+0C	L	PV
617Y1ST Titan Simulation	KZ	2	2P+0C	L	PV
620Y1SC Sensors and Actuators	KZ	2	2P+0C	L	PV
617Y1SL Sociology of Human Resources Stanislava Holíková	KZ	2	2P+0C	Z	PV
611Y1SI Transportation Software Engineering	KZ	2	2P+0C	Z	PV
622Y1SZ Forensic Expertise	KZ	2	2+0	L	PV
616Y1KS Quality and Reliability of Vehicles	KZ	2	2P+0C	Z	PV
612Y1SU Management and Maintenance of Roads	KZ	2	2P+0C	L	PV
617Y1SK Urban and Regional Rail Transport Systems	KZ	2	2P+0C	L	PV
621Y1TH Aircraft Technical Handling	KZ	2	2P+0C	Z	PV
611Y1TG Graph Theory	KZ	2	2P+0C	L	PV
614Y1TI Creating Interactive Internet Applications	KZ	2	2P+0C	L	PV
614Y1UP Editing of Theses in MS Word	KZ	2	2P+0C	L	PV
618Y1UK Introduction of Rail Vehicles	KZ	2	2P+0C	L	PV
612Y1VC Waterways and Shipping	KZ	2	2P+0C	Z	PV
623Y1VS Negotiation and Cooperation	KZ	2	2P+0C	Z	PV
614Y1VM Development of Applications for Mobile Devices	KZ	2	2P+0C	Z	PV
616Y1VT Development in Railroad Vehicles	KZ	2	2P+0C	L	PV
614Y1W1 Webdesign 1	KZ	2	2P+0C	Z	PV
614Y1W2 Webdesign 2	KZ	2	2P+0C		PV
	KZ	2	2P+0C		PV
milioudusis milio Applica Compator Crapinos	KZ	2	2P+0C		PV
611Y17M Foundation of MATLAB Programming	KZ	2	2P+0C	 L	PV
Sárka Vorá ová  612Y1ZU Principles of Urbanism	KZ	2	2P+0C	Z	PV
615Y1ZV East-West dichotomy: Prelude to the Cold War	KZ	2	2P+0C		PV
616Y1ZL Vehicle Testing, Legislation and Construction	KZ	2	2P+0C	 	PV
Characteristics of the courses of this group of Study Plan: Code=PVP PRE 19-20 N sem. ,1x PVP v 5.sem., 1x PVP v 6.sem.)			. PREZ od	19-20: L	OG (1x v 4.
620Y1AF Alternative Forms of Transportation Project Financing				(Z	2
In will be specifed such forms of financing in transportation and telecomunications, where the public sector body public the final debtor is not a direct participant of the transaction and it is not the counterparty of the financial institute who firansportation and telecomunication projects.  618Y1AM Anatomy, Mobility and Safety of Man			ue of securities		

ΚZ

2P+0C

612Y1C1

Designing Roads in Civil 3D I

Snaracteristics of	the courses of this group of Study Plan: Code=PVP PRE 19-20 Name=3X PVP pro bak. PR	EZ 00 19-20:	LOG (1X V 4
sem. ,1x PVP v 5.s	sem., 1x PVP v 6.sem.)		
620Y1AF	Alternative Forms of Transportation Project Financing	KZ	2
In will be specifed such	forms of financing in transportation and telecomunications, where the public sector body perform the final debtor, i. e. debt p	ayments come fro	om its budget but
the final debtor is not a	direct participant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of	securities as an a	Iternative source
of transportation and te	lecomunication projects.		
618Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues. Anato	mical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circular	tion and nervous	system. Structure
and biomechanics of m	uscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injure	ed man and his tr	eatment. Human
joint prostheses. Protect	tive means and traffic safety regulations.		
614Y1AV	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	Space Warp obje	cts. Atmospheric
and other effects, rende	ring filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animatio	n using Inverse K	linematics.
620Y1AE	Applied Electronics	KZ	2
Basic electronic semico	nductor components, their principles, characteristics and typical connection diagrams. Semiconductor PN junction diodes, tr	ansistors, thyristo	r, operational
amplifiers, basic logic g	ates. Functions of basic electronic circuits and methods for their designs (rectifiers, voltage regulator with Zener diode, transi	istor as an amplifi	er, operational
amplifier as an inverting	and noninverting amplifier).		
614Y1BE	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	nts will gain theor	etical knowledge
of barrierless environme	ent roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation syste	ems and transport	ation technology.
Theoretical knowledge	will be supplemented by practical examples.		
621Y1BC	Aviation safety and security	KZ	2
History of safety and se	curity development in aviation. Modern tools for safety and security management. Research and development of safe and se	cure systems.	•
615Y1BO	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 protection	n programmes,
health insurance of hon	ne and foreign business trips, statistics, working practice		

621Y1BS 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.	Operational risks	and operational
procedures. Practical flights.  614Y1BM Biometric Methods	KZ	2
Basic biometric terms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies,	I	<del>-</del>
retina recognition method, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavior		-
in transport applications, safety and risks of biometric technologies.		
Data and Their Processing for Engineering Fields Needs	KZ	2
Courses of risk, basic terms, data collection, data sets, data random uncertainty and data epistemic uncertainty, data processing, hazard, risk, value	e scales, analytica	I, empirical and
heuristic methods, hazard determination and risk determination, methods for variants' creation, decision support systems.	V7	2
615Y1DZ   History of Railway Horse-drawn railways, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Re	KZ epublic" electric tr	
War II railways, railway development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train conf	•	
railway accidents, railway junctions. Excursions and projections.		
612Y1DS 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 pri	cing. Practical
creation of some project documentation parts.	1/7	
620Y1EK   Qualification in Electrical Engineering Practical experience with measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock haza	KZ	2 sheling nominal
voltage, maximum allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legis	-	_
in relation to health and safety and electrical engineering.		J
616Y1EN Energy Requirements of Vehicles	KZ	2
Dynamics and the driving inertial of the vehicles. Types of energy - kinetic, static, heat, chemical and others. Ways of energy change into kinetic energy - kinetic, static, heat, chemical and others.	rgy. Combustion e	ngine, electric
drive, steam engine, air engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW analysis.		
620Y1EA Environmental Aspects of Transport	KZ	2
State of the atmosphere, weather observation network, weather in transportation, road meteorology. Weather forecasting, data assimilation, probabil Air quality, main pollutants and their effects, atmospheric chemistry, traffic emissions. Greenhouse gasses, carbon cycle, a role of energy and transportation.		
615Y1EH 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	1	
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.		
618Y1EM Experimental Methods in Mechanics	KZ	2
The purpose and role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destruct	-	-
experimental procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.	-aligue and illelim	e prediction.
615Y1FD French Area Studies and Transportation	KZ	2
France - geography and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air tr	1	
French society and culture. Current political system. System of education, studying in France. Selected authors of French literature. French gastrono	my.	
614Y1HW Computer Hardware	KZ	2
Computer architecture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate	e parts designing	controllers,
arithmetic and logical units, I/O subsystem.  615Y1HL History of Civil Aviation	1/7	2
615Y1HL History of Civil Aviation Beginnings of flying, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development	KZ	<del>-</del>
World airports. Famous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era	•	
aviation. Modern era of civil aviation. Airline companies. Supersonic flying.		
615Y1HD History of City Mass Transport	KZ	2
History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current tren	•	ents of tariff and
clearance systems. History of city transport in Prague and Brno. History of tram, bus and trolley-bus operation systems in the Czech Republic and S		
612Y1HD Traffic Noise	KZ	2
Acoustic introduction, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regula area, principles of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area		
computing and measurement of transport noise. Acoustic studies, measuring protocol.		aciegy c.
615Y1HE 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 thes	e factors on healtl	of workers.
Creation and protection of working conditions that do not damage public health. Mutual links man-machine-environment. Adaptation of technology to	possibilities and	skills of man.
Practical examples from the field of transportation; relevant legislative.	1/7	
616Y1IS Interactive simulators and simulations Simulation theory and application of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical m	KZ	2 mothods
Simulation of vehicle dynamics, on-land carriage in particular. Virtual reality systems. Practical exercise with simulation software and interactive simulation.	-	metrious.
612Y1KN Combined Transportation	KZ	2
Combined transport strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping area	1	
623Y1KO Quantum Physics and Optoelectronics	KZ	2
Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics components.	,	
617Y1LL Logistics of Passenger and Freight Air Transport	KZ	2
Logistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transport. Airlines in air transport. Global distribution systems.	ransport process	passengers and
air cargo. Information systems in air transport. Global distribution systems.  620Y1LN Location and Navigation	KZ	2
Description and examples of road networks, localization on the network. Routing algorithms, their properties and implementation. Description and examples of road networks, localization on the network.	1	
transport connections, routing algorithms, their properties and implementation.	, 32 2. 00.000	· ···-································
617Y1MD Marketing in Transportation	KZ	2
General principles of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport	rt and the resultin	g differences in
the application of marketing.		

611Y1MM Mathematical Models in Economy	KZ	2
The goal of the course is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their progr of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained optimization.	am implementation	on. The outcom
618Y1MT Engineering Materials	KZ	2
Systematic overview of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers a	and composites, a	attention is paid
to biological materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's selection		
621Y1MP   Matlab for project-oriented study   The subject's syllabus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises	KZ	2 ad according to
particular examples, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvem		- 1
614Y1MP Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2
Assemblies programming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipe	lines, and distribu	ition lines.
Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.  615Y1MK Modern History in Context: Every Day Life and Transport	KZ	2
615Y1MK   Modern History in Context: Every Day Life and Transport   Historical overview of modern history of every day life, science, technology and transport in a wider context.	NΔ	2
615Y1NE 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	analysis of texts.	Discussion on
selected topics.  623Y1OK Protection of Critical Objects and Infrastructures	KZ	2
Types of technological systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, s		
infrastructures.		
620Y1OI Fare Collection and Information Systems	KZ "	2
Fare collection systems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their component panels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems (parking	•	abies, maps,
614Y1OJ Object - oriented programming in JAVA	KZ	2
Objective Thinking, Encapsulation, Classes, Attributes, Access Modifiers, Methods and Overloading, Special Methods (Constructors, Getters / Setter		
$Reference\ Data\ Types,\ Inheritance,\ Polymorphism,\ Statics,\ constants,\ interfaces,\ abstract\ classes,\ enum,\ packages,\ exceptions,\ collections,\ generics,\ abstract\ classes,\ enum,\ packages,\ exceptions,\ collections,\ descriptions,\ desc$	lambda expressi	ons, anonymous
functions	1/7	
614Y1OP Operating System   Distributions. Installation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Program	KZ	2 s OS boot
runlevels. Basic console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, graphic shell - t	-	
communication. Services management. Safe and secure configuration of OS. Remote administration.		
617Y1OF 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 hoconsumer loans, refinancing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability a		
(retirement savings and insurance).	na adequacy), se	curing the ruture
620Y1OK Road Lighting	KZ	2
Basic lighting quantities and terms, street lighting components (luminaires, control cabinets for street lighting, street lighting cables), characteristics of lighting quantities and terms, street lighting cables).	-	_
light distribution), standards, measurement of illuminance and luminance in road lighting, tunnels, conceptual approach to street lighting design, light Relux, street lighting control systems.	ing calculations in	n DIALux and
611Y1PV Parametrical and Multicriterial Programming	KZ	2
Solution to the problem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints		
617Y1PM Personnel Management	KZ	2
Human sources, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, intercul		
612Y1PC Pedestrian and Cycling Transport  Reutes for pedestrians Pedestrian grassings Medifications for blind dim sighted and disabled people. Pegign of guele routes naturally Ways of guele re-	KZ	2
Routes for pedestrians. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle rocyclists. Separation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossing		
crossroads. Traffic signs and road marking for cyclists.		
614Y1PG Computer Graphics	KZ	2
Basic formats of graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with ed level scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.	iting programs (w	ithin the user
614Y1P2 Computer Aid of Transportation Projecting 2	KZ	2
Overview of CAx application for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting,		
modification (attributes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic trans	ition curve, cross	and longitudinal
section). Basics of 3D modelling.		
618Y1PS Computer Simulations in Mechanics	KZ	2
Principles and overview of programs for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model devigeometry from other CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary of	-	•
load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.		
614Y1PI Corporate Information System	KZ	2
Data-information-knowledge, components of information system, syntatic and semantic sense of data, structure of corporate information system, par		-
(personalistic, production, storage, etc.), corporate information politic and information control, risks of information system operation, legal environmen state information system, information system security, data protection, safety politics.	t of information s	stem operation,
614Y1PZ Advanced Data Processing in Spreadsheets	KZ	2
Students will be familiar with principles of working in a spreadsheet. Graphic layout of the table appearance, formatting of numbers, insertion of of numbers	ulas and functions	s, including
addressing, error detection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatting	g, solution finding	, solver, macros,
data analysis. Examples and questions from various companies and training.  612Y1PD Assessment of Transport	KZ	2
Assessment of transport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilitie		
transport structures on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of		
the environment.		

620Y1PK Product Quality Management Processes	KZ	2
General principles of organization management. Management systems and international standards; quality management systems. Quality products,	processes, syster	ns. A framework
of standards for systems management, management principles. Principles of process management, monitoring and measurement systems management	nt. Uniform framew	ork of standards
for systems management. Process management principles. Metrology and testing. Product certification.		
614Y1PJ 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, structi	ures and unions.
Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.	<b>.</b>	
612Y1C1 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	1	
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.	no ocurco alco ino	adoo a baolo
612Y1C2 Designing Roads in Civil 3D II	KZ	2
	1 1	<del>-</del>
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 throughout the software and the public specifically the design of roads as such, by the means of a 3D software. Students go throughout the software and the public specifically the design of roads as such, by the means of a 3D software.	-	-
particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. T	ne previously acqu	iirea skiiis are
improved and developed. Students learn to design intersections.		
614Y1PA 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	ct data creation, v	ork with data
connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.		
616Y1PV Operation, Construction and Maintenance of Vehicles	KZ	2
Methods of vehicle production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measur	ement. Transmissi	on mechanism.
General principles of engine diagnostics.		
612Y1PU 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	1	
Reserve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic railway		anon yarao.
	KZ	2
	1	
Elementary concepts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disa	_	
and hybrid drive control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control	, sarety, communic	ation and
comfort systems.	, ,	
621Y1RZ 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	I remuneration of s	taff. Positioning,
dismissal and redundancies of employees. Education of employees. Planning career management.		
617Y1ST 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	uct. Students set a	price and
determine the quantity and capacity of production, plan budgets for marketing, research and development. They become familiar with the conseque	nces of their decis	ons by the form
of financial corporate reports and they use this information for other business decisions.		•
620Y1SC Sensors and Actuators	KZ	2
Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensor	1	
	is of friedrianical, e	lectro-magnetic,
state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.		
617Y1SL   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,	human resources p	olanning, culture
of the organization.		
611Y1SI Transportation Software Engineering	KZ	2
Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and imple	mentation using fo	rmal techniques
and practical usuage.		
622Y1SZ Forensic Expertise	KZ	2
Historical evolution of forensic engineering, forensic activity, current legislature in the Czech Republic, different disciplines, notion of forensic, forens		
expert role in the obtaining proofs, forensic methodology. Notion of the evidence, general principles of evidence obtaining, metrology, protocol, evidence obtaining, metrology, evidence obtaining, metrology, evidence obtaining, metrology, evidence obtaining, metrology, evidence obtaining, evi	-	
forensic report, elements. Finding, expert testimony / report.	inces concentri, si	ic inspection,
	1/7	
616Y1KS Quality and Reliability of Vehicles	KZ	2
Quality and reliability theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability.	· -	•
Mode and Effects Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other method	s used in industria	l applications.
Knowledge-based systems of quality and reliability, data collection.		
612Y1SU Management and Maintenance of Roads	KZ	2
Getting familiar with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented develor	pment of road net	work, short,
medium and long-term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and re-	pair methods are	discussed in the
classroom as well as investment activity in highway engineering.		
617Y1SK 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,		
evaluation of the timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transpose	_	_
marketing.		
621Y1TH Aircraft Technical Handling	KZ	2
	1 1	
Aircraft towing and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and units are processed aircraft tochnical handling and requisitions. Modernization and technical processes of aircraft tochnical handling and requisitions. Modernization and technical processes of aircraft tochnical handling and requisitions.		mention
passangers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and technical progress		
611Y1TG Graph Theory	KZ	2
Basic concepts and terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees	· ·	-
path problem, Eulerian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existen	ce and optimization	n and algorithms
for their solving. Computational complexity,dealing with NP-complete problems, heuris		
614Y1TI Creating Interactive Internet Applications	KZ	2
Possibilities of scripting language PHP Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions.		on programmed
Tossibilities of scripting language 11th. Overview of 11th language syntax, and functions. Analysis of limistied scripts and demonstration of solutions.	your own applicat	on programmed
in PHP language.	Your own applicat	on programmed

614Y1UP			
0171101	Editing of Theses in MS Word	KZ	2
Students will be introdu	uced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, cre	eate tables of conte	ents, lists of
figures, tables, graphs,	, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamles	s editing dissertati	ions and theses,
so that they are able to	o concentrate mainly on writing a thesis.		
618Y1UK	Introduction of Rail Vehicles	KZ	2
Basic characteristics a	nd parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion	train and unit train	ns. Rolling and
track resistance. Total r	running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehic	cle - hydromechani	c, hydrodynamic
and electric drive. Desi	ign concept rail vehicles and drive of wheel set.		
612Y1VC	Waterways and Shipping	KZ	2
Basic modes of transp	ort. The position of water transport in the transport system of the Czech Republic and the EU. Advantages and disadvantages	s of water transpor	t. Basic systems
of waterways in Europe	e, a network of waterways in the Czech Republic. Construction of the waterway and its equipment. Management of waterways	and its operation.	The legal regime
in inland navigation, na	avigation rules of operation, navigation maps.		
623Y1VS	Negotiation and Cooperation	KZ	2
Code of conduct for ne	egotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Inf	ormal and formal r	ole in the team.
Principles of negotiation	on, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", sp	ecifications and bid	dding, the role o
trust.			
614Y1VM	Development of Applications for Mobile Devices	KZ	2
Object oriented progra	mming, Java programming language, development environment, operating system Android, development application - widge	ts, containers, thre	ads, menu,
permissions, services,	GUI.		
616Y1VT	Development in Railroad Vehicles	KZ	2
Railroad vehicles tracti	in. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal tr	ansportation. Critic	cal situation
assesment. New mater	rials in design. International standardization.		
	I	1	
614Y1W1	Webdesign 1	l KZ	2
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Students will learn the	Webdesign 1 basics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web access of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practiced	ibility and usability	, CSS properties
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Students will learn the and selectors, the issue 614Y1W2 Students will learn advectives. Topics will be 616Y1ZG Computer graphics, diversity and 3D generation, elegraphics software. 614Y1ZM Basics of work at production and to another sy 611Y1ZM To explain the principle control flow, inputs and 612Y1ZU Survey on history of citypes of towns or cities 615Y1ZV Historical prologue, even in the end of 19th cent Economic and financial 616Y1ZL	basics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web access to five birowsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practiced.  Webdesign 2  vanced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, website practiced on practical examples.  Introduction into Applied Computer Graphics vision and applications with emphasis on transport, including development and research. Colours, colour perception, colour sementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basing Fundamentals of parametric and adaptive modeling ucts and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from the stems. Fundamentals of assemblies creation.  Foundation of MATLAB Programming of a foundation of MATLAB environment and its settings, MATLAB help, mathematical operators, and outputs, graphics, optimization and program code debugging.  Principles of Urbanism ty and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spans with a certain prevailing function, forms of their development. Brief overview of land-use planning.  East-West dichotomy: Prelude to the Cold War outputs and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, urganization and transportations, the causes and consequences. Scientific and technological progress, urganization and transportations, the causes and consequences. Scientific and technological progress, urganization and transportations, the causes and consequences. Scientific and technological progress, urganization and transportations.	ibility and usability don practical exam KZ aserver installation KZ chemes, models, places. Introduction to KZ amatrices and elem KZ cial arrangement of KZ attinuity of the interruthe causes and countries.	coss propertientles.  2 n + configuration  2 principles of 2D 2D and 3D  2 principles of 2D 2D and sport  2 principles of 2D 2D and

### List of courses of this pass:

Code	Name of the course	Completion	Credits
611CAL1	Calculus 1	Z,ZK	7
Sequence of real n	umbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dim	iensional Euklidea	n space and
Cartesi	an coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of se	veral real variables	•
611CAL2	Calculus 2	Z,ZK	5
Antiderivative, N	ewtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in Rn. Para	metric description	of regular
k-dimensional su	rfaces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary diff	erential equations	of the first
	order, linear differential equations with constant coefficients and its systems.		
611FYZ	Physics	Z,ZK	5
	Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.	'	ı
611GIE	Geometry	KZ	3
Orthographic and	l oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - paran	neterization, arc of	the curve,
torsion	and curvature. Frenet's tribedron, Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle movin	n on a curved nath	

611LA	Linear Algebra	Z,ZK	3
	ar combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and thei their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classifications.	r solvability. Deterr	_
611LP	Linear Programming	KZ	3
	problem of linear programming, transcription of some practical problems to the linear programming problems. Simplex and convex po solutions, duality principle in linear programming, stability of solution of linear programming problem. Traffic problem.		_
611MSP	Modeling of Systems and Processes	Z,ZK	4
	tem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of difference of the system of		· · ·
Linear and non	linear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer functio  Discretization of continuous systems. System interconnection.	n. Stability of LTI s	systems.
611STAT	Statistics	Z,ZK	4
	ility, random variable and its description, known distributions, random vector, function of random variable. Methods of point estimation. T		hypothesis.
Regression and co	rrelation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linear re	gression, analysis	of variance,
044)/48484	multiple regression, the use of matrices in regression.	1/7	
611Y1MM	Mathematical Models in Economy urse is to teach selected methods of linear programming, with theoretical procedures applicable for individual tasks and their program	KZ	L 2
The goal of the col	of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained op		ine outcom
611Y1PV	Parametrical and Multicriterial Programming	KZ	2
_	lem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Co		1
611Y1SI	Transportation Software Engineering	KZ	2
	oftware engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implemen	itation using forma	l techniques
	and practical usuage.		
611Y1TG	Graph Theory	KZ	2
Basic concepts and	d terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, mir	imum spanning tr	ee, shortest
path problem, Eulei	rian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence a	nd optimization and	d algorithms
	for their solving. Computational complexity, dealing with NP-complete problems, heuris		_
611Y1ZM	Foundation of MATLAB Programming	KZ	2
To explain the princ	ciple of algorithmization, flow charts, description of MATLAB environment and its settings, MATLAB help, mathematical operators, matr control flow, inputs and outputs, graphics, optimization and program code debugging.	ices and elements	operations,
612MDE	Transport Models and Transport Excesses	Z,ZK	3
	traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of qu	,	_
	assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequence.		-
	safety and fluency.	, , , ,	
612PPOK	Designing Roads, Highways and Motorways	KZ	3
Definition, types,	ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard	speed. Route in r	ural areas.
Range of vision for	stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safet	y device. Crossing	s, junctions,
040\/04	intersections.		
612X31	Project 1	Z	2
612X32	Project 2	Z	2
612X33	Project 3	Z	2
612Y1C1	Designing Roads in Civil 3D I	KZ	2
	voted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The		
particular in loar 2	explanation of the traffic building design in the real-life profession.		.00 4 240.0
612Y1C2	Designing Roads in Civil 3D II	KZ	2
	voted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through		1
particular linear b	uilding, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The	previously acquire	d skills are
	improved and developed. Students learn to design intersections.		ı
612Y1DS	Project Documentation in Practice	KZ	2
Project document	ation creating. Project documentation types. Support materials for project documentation creating. Building permit obtaining process. creation of some project documentation parts.	budget and pricing	g. Practical
612Y1HD	Traffic Noise	KZ	2
	name Noise   on, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulation:		I
	of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area		
	computing and measurement of transport noise. Acoustic studies, measuring protocol.		0,
612Y1KN	Combined Transportation	KZ	2
Combined transp	ort strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas.	Multimodal logisti	c centres.
612Y1PC	Pedestrian and Cycling Transport	KZ	2
	ans. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route		
ror cyclists. Separ	ation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings crossroads. Traffic signs and road marking for cyclists.	with other transp	ort modes,
612Y1PD	Assessment of Transport	KZ	2
	Assessment of Transport sport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of		
	s on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of ass	=	
	the environment.		
612Y1PU	Organization Disposition of Railway Stations	KZ	2
_	on. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zon		ion yards.
Reser	ve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic	railway network.	

612Y1SU	Management and Maintenance of Roads	KZ	2
•	with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented developr		
medium and long-i	term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and repair classroom as well as investment activity in highway engineering.	methods are disci	ussed in the
612Y1VC	Waterways and Shipping	KZ	2
	ansport. The position of water transport in the transport system of the Czech Republic and the EU. Advantages and disadvantages of w		
	urope, a network of waterways in the Czech Republic. Construction of the waterway and its equipment. Management of waterways and		
	in inland navigation, navigation rules of operation, navigation maps.		
612Y1ZU	Principles of Urbanism	KZ	2
Survey on history	y of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial	arrangement of se	ettlements.
040770	Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.	7.71/	
612ZTS	Railway Lines and Stations   ailway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. S	Z,ZK	4
Kali transport. K	Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail tr	-	way iii les.
612ZYDI	Introduction to Transportation Engineering	Z,ZK	2
	tion in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, pu		l
	impacts of transportation to environment and safety.		-
614ASD	Algorithm and Data Structures	KZ	3
	miliarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze		
solutions to the s	set task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart an	d use the basics of	of Boolean
614DATS	algebra with forming the conditions for the algorithms.  Database Systems	KZ	2
-	of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and		l
240.0 000001.0	queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via t	• •	aatababb
614KSP	Constructing with Computer Aid	KZ	2
"CAD systems" te	rm determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common world	k rules in graphic a	applications
and CA systems	. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possible	ílites, AutoCAD en	vironment
	profiles, drawings with raster foundaments).		
614PRG	Programming	KZ	2
Algorithm develo	expment, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables functions), programming techniques, complexity.	s, conditions, cycle	es, arrays,
614Y1AV	Animation and Visualization	KZ	2
-	ations and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Spa		_
	ts, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation		· -
614Y1BE	Barrierless Transport	KZ	2
	rless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students v	-	_
of barrierless envir	comment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems	and transportation	technology.
C44V4DM	Theoretical knowledge will be supplemented by practical examples.		_
614Y1BM Basic biometric te	Biometric Methods   erms, authentication methods, principles and performance measurement of biometric systems, overview of biometric technologies, ha	KZ nd geometry iris r	2 ecognition
	method, 2D and 3D face recognition, vein patterns on the wrist, ear biometrics, fingerprint recognition, skin spectroscopy, behavioral n	•	•
· ·	in transport applications, safety and risks of biometric technologies.		
614Y1HW	Computer Hardware	KZ	2
Computer archite	ecture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate p	arts designing - c	ontrollers,
	arithmetic and logical units, I/O subsystem.		
614Y1MP	Modeling Complex Assemblies and Models in Parametric Modeller	KZ	2
Assemblies pro	ogramming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipel Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.	ines, and distribut	ion lines.
614Y1OJ	Object - oriented programming in JAVA	KZ	2
	ing, Encapsulation, Classes, Attributes, Access Modifiers, Methods and Overloading, Special Methods (Constructors, Getters / Setters		l
Reference Data Ty	pes, Inheritance, Polymorphism, Statics, constants, interfaces, abstract classes, enum, packages, exceptions, collections, generics, lam	nbda expressions,	anonymous
	functions		
614Y1OP	Operating System	KZ	2
	stallation GNU/Linux OS. X-window system. Rights management - users and groups, ACL rights. Filesystems and attributes. Programs	-	
runlevels. Basic	console programs / commands. Config files. SW management, package systems. Programs in graphic shell - text, spreadsheet, graph communication. Services management. Safe and secure configuration of OS. Remote administration.	ic editors, sound,	video and
614Y1P2	Computer Aid of Transportation Projecting 2	KZ	2
	pplication for transportation projecting aid. AutoCAD environment possibilities of basic tasks automatizing (programming, scripting, data		l
	outes, relation to databases). Work in projecting group, external references. Basic tasks for cummunication projecting (clotoidic transition		
	section). Basics of 3D modelling.		
614Y1PA	3D Modeling in AutoCAD	KZ	2
Work in 3D non-p	parametric modeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object	data creation, work	k with data
04.4)/450	connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.	1/7	
614Y1PG	Computer Graphics	KZ	2
บลอเบ เบเทลเร 0โ	graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editing level scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics		iii uie usel
614Y1PI	Corporate Information System	KZ	2
	on-knowledge, components of information system, syntatic and semantic sense of data, structure of corporate information system, par		l
	duction, storage, etc.), corporate information politic and information control, risks of information system operation, legal environment of		-
	state information system, information system security, data protection, safety politics.		

614Y1PJ	C Programming Language	KZ	2
	Inguage. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation, strin Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise op	g, files, structures	
614Y1PZ	Advanced Data Processing in Spreadsheets	KZ	2
Students will be	familiar with principles of working in a spreadsheet. Graphic layout of the table appearance, formatting of numbers, insertion of formula	las and functions,	including
addressing, error d	letection. Working with large spreadsheets, filters, advanced filters, database functions. Pivot tables and charts, conditional formatting, s	olution finding, solv	ver, macros,
6147/471	data analysis. Examples and questions from various companies and training.	V7	2
614Y1TI	Creating Interactive Internet Applications  pting language PHP. Overview of PHP language syntax, and functions. Analysis of finished scripts and demonstration of solutions. You	KZ	2
Possibilities of scrip	in PHP language.	омп аррисацоп р	nogrammeu
614Y1UP	Editing of Theses in MS Word	KZ	2
	introduced to the principles of creating and editing large documents and basic typographic rules. They will properly apply styles, creat		l
	phs, etc. Footnotes, captions, index. They practice corrections of finished documents. The goal is to prepare students for seamless ed so that they are able to concentrate mainly on writing a thesis.		
614Y1VM	Development of Applications for Mobile Devices	KZ	2
Object oriented	programming, Java programming language, development environment, operating system Android, development application - widgets, permissions, services, GUI.	containers, thread	ds, menu,
614Y1W1	Webdesign 1	KZ	2
Students will learn	the basics of communication HTTP, URL and addressing, markup languages HTML and XHTML, HTML tags, rules of web accessibility	and usability, CS	S properties
and selectors	s, the issue of web browsers, creating one to three column layout pages, sites validation, conditional comments. Topics will be practice	d on practical exa	mples.
614Y1W2	Webdesign 2	KZ	2
Students will learn	advanced techniques CSS, responsive webdesign, CSS frontends, content management systems, JavaScript, jQuery, SEO, web ser directives. Topics will be practiced on practical examples.	ver installation + c	onfiguration
614Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2
Basics of work at p	products and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from 2 from and to another systems. Fundamentals of assemblies creation.	D sketches. Import	t and export
615DPLG	Transportation Psychology	7	2
	pogy and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle const	_	_
1	el route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in tra	-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
615JZ1A	Foreign Language - English 1	Z	3
	tures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and cor	nmunicative skills.	Elementary
	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of	of rhetoric.	
615JZ2A	Foreign Language - English 2	Z,ZK	3
Crommotical atrust			
Graninalicai Struct	tures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and cor		Elementary
	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of	of rhetoric.	-
615X31	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of Project 1	of rhetoric.	2
615X31 615X32	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of Project 1  Project 2	of rhetoric.  Z  Z	2 2
615X31 615X32 615X33	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of Project 1 Project 2 Project 3	of rhetoric.  Z  Z  Z	2 2 2
615X31 615X32 615X33 615Y1BO	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of Project 1 Project 2 Project 3 Work Safety and Health Protection in Transportation	of rhetoric.  Z  Z  Z  KZ	2 2 2 2
615X31 615X32 615X33 615Y1BO	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of Project 1 Project 2 Project 3 Work Safety and Health Protection in Transportation slative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation.	of rhetoric.  Z  Z  Z  KZ	2 2 2 2
615X31 615X32 615X33 615Y1BO Fundamental legis	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of Project 1  Project 2  Project 3  Work Safety and Health Protection in Transportation slative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. He health insurance of home and foreign business trips, statistics, working practice.	of rhetoric.  Z  Z  Z  KZ  ealth protection pro	2 2 2 2 ogrammes,
615X31 615X32 615X33 615Y1BO Fundamental legis 615Y1DZ	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of Project 1 Project 2 Project 3 Work Safety and Health Protection in Transportation slative, 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. History of Railway	of rhetoric.  Z Z Z KZ ealth protection pro	2 2 2 2 2 ogrammes,
615X31 615X32 615X33 615Y1BO Fundamental legis 615Y1DZ Horse-drawn rails	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of Project 1  Project 2  Project 3  Work Safety and Health Protection in Transportation slative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. He health insurance of home and foreign business trips, statistics, working practice.	of rhetoric.  Z Z Z KZ ealth protection pro	2 2 2 2 2 2 ogrammes,
615X31 615X32 615X33 615Y1BO Fundamental legis 615Y1DZ Horse-drawn rails	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of Project 1  Project 2  Project 3  Work Safety and Health Protection in Transportation slative, 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.  History of Railway ways, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Repu	of rhetoric.  Z Z Z KZ ealth protection pro	2 2 2 2 2 2 ogrammes,
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615X31 615X32 615X33 615Y1BO Fundamental legis 615Y1DZ Horse-drawn railw War II railways, railw 615Y1EH Versailles system, goals. Europe afte 615Y1FD France - geograp Free 615Y1HD History of city mas clears 615Y1HE Basic knowledge Creation and prof 615Y1HL Beginnings of flyin World airports. F	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of Project 1 Project 2 Project 3 Work Safety and Health Protection in Transportation slative, 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.  History of Railway ways, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Repular acidents, railway punctions. Excursions and projections.  European Integration within Historical Context formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism. Life Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and its New quality of French-German relationship - a driving power of starting European integration.  French Area Studies and Transportation phy and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air traffich society and culture. Current political system. System of education, studying in France. Selected authors of French literature. French History of City Mass Transport  History of City Mass Transport  Work Hygiene and Ergonomics in Traffic of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these tection of working conditions that do not damage public health. Mutual links man-machine-environment. Adaptation of technology to p Practical examples from the field of transportation; relevant legislative.  History of Civil Aviation g, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of aircrafts newer than air. Czechoslovak abetween the years 1945-1	of rhetoric.  Z Z Z KZ ealth protection protection protections, railway lines consequences for KZ fic, specialised terch gastronomy.  KZ and developments olic and Slovakia.  KZ factors on health o cossibilities and ski	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

615Y1ZV	East-West dichotomy: Prelude to the Cold War	KZ	2
	evolution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and continui	•	
in the end of 19th	century and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, the	e causes and cons	equences.
616DPO	Economic and financial history. Social changes. Discussions on texts, sources.  Vehicle Technology	KZ	2
	verificie Tecrifiology , principles. Drive, vehicle construction. Road transport, safety, heavy duty vehicle desing, dynamics. Rail transport, safety, carriage d	I	1
vernole. I dilottoris	Transshipment. Technological components of various modes of transport. Management and control of various means of transport	-	inc traction.
616UDOP	Introduction into Vehicles	Z	2
	portation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and wate	1	I
	of transport. Lifting equipment and conveyors. Legislation.		
616X31	Project 1	Z	2
616X32	Project 2	Z	2
616X33	Project 3	Z	2
616Y1EN	Energy Requirements of Vehicles	KZ	2
Dynamics and the	driving inertial of the vehicles. Types of energy - kinetic, static, heat, chemical and others. Ways of energy change into kinetic energy	_	ne, electric
	drive, steam engine, air engine. Energy accumulation means, accumulator, flywheel, fuel cell. Energy recuperation. WTW anal		1
616Y1IS	Interactive simulators and simulations	KZ	2
	ry and application of computing equipment. Creating computing models. Mechanical and dynamic systems and their mathematical me lation of vehicle dynamics, on-land carriage in particular. Virtual reality systems. Practical exercise with simulation software and intera		metnoas.
616Y1KS	Quality and Reliability of Vehicles	KZ	2
	ility theory in design, development, production and operation of vehicles. Definition and possible approach to quality and reliability. K		
	Analysis), QFD (Quality Function Deployment), DFx (Design for Assamly, Manufacturying, Quality, Services) and other methods u		•
	Knowledge-based systems of quality and reliability, data collection.	·	•
616Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2
Methods of vehicle	production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measureme	ent. Transmission r	nechanism.
	General principles of engine diagnostics.		
616Y1RE	Control and Electronic Vehicle Systems	KZ	2
	ts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disadva	-	
and hybrid drive	control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control, comfort systems.	sarety, communica	ation and
616Y1VT	Development in Railroad Vehicles	KZ	2
	s traction. Railroad vehicle parametres regulation. Control and driving of railroad vehicles. Importance in heavy duty and personal trar		
	assesment. New materials in design. International standardization.	ioportationi ortifoa	. onualion
616Y1ZG	Introduction into Applied Computer Graphics	KZ	2
	s, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour sche	mes, models, princ	ciples of 2D
and 3D generation	on, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basics	s. Introduction to 2	D and 3D
	graphics software.		_
616Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2
	n, aggregate computing, driving resistance, building and parameters of traction, constructional arrangement of personal cars, trucks, in the EU and in the world, creation of technical legislation, testing methods, vehicle tests, accelerated tests, mathematical modelling		, legislation
617EMY	Management Science	Z	2
	to economical-mathematical models before its application in concrete technical and economical cases. The basic mathematical meth		1
	Il classes of problems are formulated and different methods used in qualitatively distinct real situations are introduced. The tasks of in		
617LGT	Logistics	Z,ZK	6
Logistics definition	, basic concepts, store, warehouse, transport and handling equipment, logistics technology, logistics centers, information and intelligent	ent logistics syster	ns, logistics
	city.		
617PAZ	Carriage and Forwarding	Z	2
Contracts of carri	age and forwarding, waybills and documents; transport modes, multimodal transport, tariffs and prices in transport, rights and obligat	ions of carriers, ha	auliers and
0470510	forwarders, duty and tariff agreements, INCOTERMS, insurance in transport.	7.71/	
617SFID	Public Administration and Financing in Transport sport and transport policy in the social context, environmental issues in transport, economical aspects of transport, public administrar	Z,ZK	of transport
617TEDL	Transport Technology and Logistics	KZ	3
	sport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight tran	I .	_
	odus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication usi		
617TGA	Graph Theory and its Applications in Transport	Z,ZK	4
	graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in c		
617X31	Project 1	Z	2
617X32	Project 2	Z	2
617X33	Project 3	Z	2
617Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
	ssenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial trans	I	1
	air cargo. Information systems in air transport. Global distribution systems.		
617Y1MD	Marketing in Transportation	KZ	2
General principles	of marketing applied to transport issues, marketing tools suitable for transport as a service, specifics of public passenger transport a	nd the resulting di	fferences in
04-14-5-	the application of marketing.		_
617Y1OF	Personal Finance	KZ	2
	budget, financing of basic living needs), debt (loans and credits, payment instruments, interest and fees, debt trap), financing of hous financing), savings and investments (investment horizon, return, risk, investment strategy), insurance (insurance types, suitability and		_
container loans, le	(retirement savings and investments (investment nonzon, return, risk, investment strategy), insurance (insurance types, suitability and		.g and rature
	/		

047)/4514		1/7	
617Y1PM Human sour	Personnel Management rces, work group, man as personality, planning, choice, evaluation and education of human sources, work adaptation, teamwork, interc	KZ cultural communi	2 cation.
617Y1SK	Urban and Regional Rail Transport Systems g transport demand, modal-split, distribution of passenger flows on public regional transport lines. Optimization of line management, lin	KZ	2
_	ne timetable. Vehicle circulation creation. Optimizing driver shifts and arranging them in turnus. Effects of barrier-free and public transpo marketing.	_	_
617Y1SL	Sociology of Human Resources	KZ	2
uman resources a	and their importance, work group as a special kind of social group, communication, personal management, modern management, humand their importance, work group as a special kind of social group, communication, personal management, modern management, humand their importance, work group as a special kind of social group, communication, personal management, modern management, humand their importance, work group as a special kind of social group, communication, personal management, modern management, humand their importance, work group as a special kind of social group, communication, personal management, modern management, humand their importance, work group as a special kind of social group, communication, personal management, modern management, humand their importance, work group as a special kind of social group, communication, personal management, modern management, humand their importance is a special kind of social group, communication, personal management, modern management, humand their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social group and their importance is a special kind of social kind of social group and their importance is a special kind of soc	an resources pla	nning, cultur
617Y1ST	Titan Simulation	KZ	2
Titan is a manag	igement game simulating the business decisions. Lets 2-8 student groups to produce and compete in the market with the same produc		-
etermine the quar	intity and capacity of production, plan budgets for marketing, research and development. They become familiar with the consequences of financial corporate reports and they use this information for other business decisions.	of their decision	s by the forn
618MTY	Materials Science and Engineering	Z,ZK	3
	aterials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructur		
paid to metals as	is the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and com to degradation processes in materials, to defectoscopy and to main mechanical tests.	posites. Attentio	n is also pai
618PZP	Elasticity and Strength	Z,ZK	3
	ression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted	-	
<u>-</u>	ection curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic fou	<del>_</del> _	
618SAT	Structural Analysis	Z,ZK	4
	of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions.		
iricipie di virtuai v	of planar shapes. Fiber polygons and chains.	21055-Sectional C	naraciensii
618TED	Technical Documentation	KZ	2
	ards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional		1
	arrangement of drawing sheets.	g	, ,
618Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
	Anatomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation a		em. Structui
nd biomechanics	of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured m joint prostheses. Protective means and traffic safety regulations.	an and his treati	ment. Huma
618V1EM		K7	2
618Y1EM	Experimental Methods in Mechanics	KZ	2 Us Design o
he purpose and r	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to	esting of materia	ıls. Design d
he purpose and r	Experimental Methods in Mechanics	esting of materia	ıls. Design o
he purpose and r	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to possible preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.	esting of materia	ıls. Design o
the purpose and resperimental pro	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to possible and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat	esting of materia	prediction.
the purpose and reperimental pro 618Y1MT systematic overvie	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  Engineering Materials	esting of materia igue and lifetime KZ composites, atte	prediction.  2 ention is paid
the purpose and resperimental pro 618Y1MT systematic overvies to biol 618Y1PS	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  Engineering Materials ew of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and logical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's  Computer Simulations in Mechanics	esting of materia igue and lifetime KZ composites, atte selection charts	prediction.  2 ention is paid
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618Y1MT systematic overvie to biol 618Y1PS Principles and o	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  Engineering Materials lew of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and logical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's  Computer Simulations in Mechanics overview of programs for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model developer CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary con	esting of materia	lls. Design o prediction.  2 ention is paid. 2 aptation of
618Y1MT cystematic overvie to biol 618Y1PS Principles and o	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  Engineering Materials  ew of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and alogical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's  Computer Simulations in Mechanics  overview of programs for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model developer CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary con load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.	esting of materia igue and lifetime  KZ composites, atte selection charts  KZ elopment and additions and appli	prediction.  2 ention is paid 2 apptation of the
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he purpose and rexperimental pro 618Y1MT ystematic overvice to biol 618Y1PS Principles and o eometry from oth 618Y1UK sasic characterist	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  Engineering Materials lew of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and elogical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's  Computer Simulations in Mechanics overview of programs for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model developer CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary con load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.  Introduction of Rail Vehicles tics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion trail	esting of materia igue and lifetime KZ composites, atte selection charts KZ elopment and additions and appli	ls. Design of prediction.  2 ention is paid.  2 aptation of cation of the last
he purpose and rexperimental pro 618Y1MT ystematic overvice to biol 618Y1PS Principles and o eometry from oth 618Y1UK sasic characterist	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  Engineering Materials lew of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and alogical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's  Computer Simulations in Mechanics overview of programs for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model developer CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary con load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.  Introduction of Rail Vehicles	esting of materia igue and lifetime KZ composites, atte selection charts KZ elopment and additions and appli	ls. Design of prediction.  2 ention is paid.  2 aptation of cation of the Rolling and
he purpose and rexperimental pro 618Y1MT ystematic overvice to biol 618Y1PS Principles and o eometry from oth 618Y1UK sasic characterist	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to be deduced and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.  Engineering Materials lew of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and elogical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's  Computer Simulations in Mechanics overview of programs for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model develor there CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary con load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.  Introduction of Rail Vehicles tics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion trailotal running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle - hand electric drive. Design concept rail vehicles and drive of wheel set.	esting of materia igue and lifetime KZ composites, atte selection charts KZ elopment and additions and appli KZ n and unit trains ydromechanic, h	ls. Design of prediction.  2 ention is paid.  2 aptation of cation of the Rolling and
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The purpose and rexperimental pro  618Y1MT Systematic overvies to biolo  618Y1PS Principles and of geometry from other  618Y1UK Basic characterist ack resistance. To  620SYSA antroduction to systematic analysis, see the second of the systems for ITS. Pro  620W31  620W32  620W33  620Y1AE Basic electronic see the specified see the speci	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to occdures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.    Engineering Materials   Engineering Materials     wo of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and logical materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's     Computer Simulations in Mechanics     Computer Simulations in Mechanics     Computer Simulations in Mechanics     Computer Simulations in Mechanics     Computer Simulations of Mechanics     Computer Simulations in Mechanics     Computer Simulations in Mechanics     Computer Simulations of structural methods in mechanics, finite element method. Geometric model deve here CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary con load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.     Introduction of Rail Vehicles     Introduction of Rail Vehicles     Introduction of Rail Vehicles     Introduction of Rail Vehicles     Systems Analysis     System service	esting of materia gue and lifetime KZ composites, atte selection charts KZ elopment and additions and applied KZ n and unit trains ydromechanic, however, and the conference of possible applied KZ n attended to the conference of possible applied KZ n attended to the conference of possible applied KZ n attended to the conference of possible applied KZ n attended to the conference of possible applied KZ n attended to the conference of possible applied KZ n attended to the conference of possible applied KZ n attended to the conference of the conferen	2 aptation of the 2 aptations of the 2 apparations
The purpose and rexperimental pro  618Y1MT Systematic overvies to biolo  618Y1PS Principles and of geometry from other  618Y1UK Basic characterist ack resistance. To  620SYSA antroduction to systematic analysis, see the second of the systems for ITS. Pro  620UITS erminology and legystems for ITS. Pro  620X31  620X32  620X33  620Y1AE Basic electronic semplifiers, basic legystems for ITS. Pro  will be specified semplifiers and debtor is not for its not followed as the final debtor is not followed as the specified semplifiers.	Experimental Methods in Mechanics role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive to occurre and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fat Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.    Engineering Materials	esting of materia gue and lifetime KZ composites, atte selection charts KZ elopment and additions and applied KZ n and unit trains ydromechanic, however, and the control of possible applied KZ n at an amplifier, as an amplifier, as an amplifier, kZ ents come from in trities as an alter KZ	2 aptation of the 3 aptation of the 4 aptation of the 4 aptation of the 4 aptation of the 5 aptation of the 5 aptation of the 4 aptation o

620Y1EK	Qualification in Electrical Engineering	KZ	2			
•	e with measurements in laboratories, electrical equipment, power supply, electrical installation of low voltage, electric shock hazard, s	-	- 1			
voltage, maximum	allowed currents, electrical equipment protection against short circuit and overload protection, control and revision, first aid, legislatic	on, standards and	regulations			
COOVALN	in relation to health and safety and electrical engineering.	1/7				
620Y1LN	Location and Navigation	KZ	2			
Description and e	examples of road networks, localization on the network. Routing algorithms, their properties and implementation. Description and exa transport connections, routing algorithms, their properties and implementation.	mples of datasets	for finding			
620Y1OI	Fare Collection and Information Systems	KZ	2			
-	vstems in public transport and their components (on-board units, validators, turnstiles,). Information systems and their components		es, maps,			
	nels) and operators (cycles, location or current delay of vehicles,). The issue of tariff systems. Other examples of clearance systems					
620Y1OK	Road Lighting	KZ	2			
	tities and terms, street lighting components (luminaires, control cabinets for street lighting, street lighting cables), characteristics of lumin standards, measurement of illuminance and luminance in road lighting, tunnels, conceptual approach to street lighting design, lightin Relux, street lighting control systems.					
620Y1PK	Product Quality Management Processes	KZ	2			
General principles	of organization management. Management systems and international standards; quality management systems. Quality products, protects, prot	cesses, systems. A	I			
,	for systems management. Process management principles. Metrology and testing. Product certification.					
620Y1SC	Sensors and Actuators	KZ	2			
Principles of sensor	's and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of	mechanical, electr	o-magnetic,			
	state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase ele	ements.				
621Y1BC	Aviation safety and security	KZ	2			
	f safety and security development in aviation. Modern tools for safety and security management. Research and development of safe a	and secure system	S.			
621Y1BS	Unmanned aircraft systems 1	KZ	2			
Unmanned Aviation	n Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division. Ope procedures. Practical flights.	erational risks and	operational			
621Y1MP	Matlab for project-oriented study	KZ	2			
	bus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises		-			
	les, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improveme	nt of students' Mat				
621Y1RZ	Human Resources Management	KZ	2			
	human resources in the organization and related disciplines file. Substance, importance and challenges of human resources manage					
environment of num	nan resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and ren dismissal and redundancies of employees. Education of employees. Planning career management.	nuneration of staff.	Positioning,			
621Y1TH	Aircraft Technical Handling	KZ	2			
	and pushing tractors. GPU. Air conditioning and heating units. Aircraft fuel equipment. De-acing and anti-icing units. Loading and unlo					
_	ssangers onboarding and offboarding. Operational processes of aircraft technical handling and regulations. Modernization and technical handling and regulations. Modernization and technical handling and regulations.					
621ZALD	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, opt	imization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ground	nd handling, secur	ity. Air crew.			
	Airlines and economics. Space technologies.					
622X31	Project 1	Z	2			
622X32	Project 2	Z	2			
622X33	Project 3	Z	2			
622Y1SZ	Forensic Expertise	KZ	2			
	n of forensic engineering, forensic activity, current legislature in the Czech Republic, different disciplines, notion of forensic, forensic le	-				
expert role in the	obtaining proofs, forensic methodology. Notion of the evidence, general principles of evidence obtaining, metrology, protocol, evidence forensic report, elements. Finding, expert testimony / report.	es collection, site i	nspection,			
623Y1DZ	Data and Their Processing for Engineering Fields Needs	KZ	2			
	isic terms, data collection, data sets, data random uncertainty and data epistemic uncertainty, data processing, hazard, risk, value sc					
	heuristic methods, hazard determination and risk determination, methods for variants' creation, decision support systems.					
623Y1KO	Quantum Physics and Optoelectronics	KZ	2			
'	Ground of quantum physics. Application of quantum physics in practice. Optoelectronics. Production of optoelectronics compon					
623Y1OK	Protection of Critical Objects and Infrastructures	KZ	2			
	ical systems, critical item, risks and their courses, criticality, vulnerability, connectivity, dependability, resilience, failure, protection, safe					
	infrastructures.					
623Y1VS	Negotiation and Cooperation	KZ	2			
	or negotiation. The influence of personality traits on the negotiations. Negotiation and commanding. Teamwork. Variants teams. Information					
Principles of negotiation, the essence of negotiation, the differences in negotiation in business and in crisis situations, the principle of "win both", specifications and bidding, the role of trust.						
	trust.					
TV-1	Physical Education	Z	1			

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