Study plan

Name of study plan: 2.bl.bak.prez.AI 09/10začátek

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Welcome page
Type of study: unknown full-time
Required credits: 120
Elective courses credits: 0
Sum of credits in the plan: 120
Note on the plan:

Name of the block: Compulsory courses
Minimal number of credits of the block: 80
The role of the block: Z

Code of the group: 5S.BP-AI06/07
Name of the group: 5.s.bak.prez.AI od06/07
Requirement credits in the group: In this group you have to gain 24 credits
Requirement courses in the group: In this group you have to complete at least 8 courses
Credits in the group: 24
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
20BSS	**Safety and Reliability of Systems**	ZK	3	2+0		z
11MST	**Mathematical Statistics**	Z,ZK	2	1+1		z
11MZD	**Measurement and Data Processing**	KZ	2	1+1		z
13PE	**Operational Economy**	Z,ZK	3	2+1		z
14SSS	**Networks and Network Operating Systems**	KZ	2	1+1		z
20SANL	**Systems Analysis**	Z,ZK	4	2+1		z
14TLK	**Telecommunications**	Z,ZK	4	2+1		z
17ZTD	**Introduction to Theory of Transport**	Z,ZK	4	2+1		z

Characteristics of the courses of this group of Study Plan: Code=5S.BP-AI06/07 Name=5.s.bak.prez.AI od06/07

20BSS	Safety and Reliability of Systems	ZK	3
Basic theory of reliability and safety with special regard to information and automation equipments used in transportation safety systems. The aspects of reliability and safety systems analysis and synthesis are taken into account. A special interest is given to problems of human subject - artificial system (namely of the transportation nature) interaction reliability.			
11MST	Mathematical Statistics	Z,ZK	2
Point estimation, properties of point estimators (consistency, unbiasedness, efficiency), methods of point estimation (method of moments, maximum likelihood metod). Bayes estimators. Testing of statistical hypothesis, critical values, choice of hypothesis and level of significance, observed level of significance (P-value). Goodness of fit test, independence test. Regression and correlation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linear regression, analysis of variance, multiple regression, the use of matrices in regression.			
11MZD	Measurement and Data Processing	KZ	2
General principles of detectors with special attention to traffic. Different technologies, data analysis, data preprocessing, analytical methods (decision trees, clustering or soft computing).			
13PE	Operational Economy	Z,ZK	3
14SSS	Networks and Network Operating Systems	KZ	2
Acquaintance with operating and possibilities of computer networks and their services utilize is the subject target. Network topology, IP addressing, WAN networks, connection information (ping, trace route). Detailed familiarity with selected WIN NT, Novell, and Unix network environment in the second semester part. Introduction to server and workstations installation, users and groups creation, folder structure creation, disc mapping, users protection, folders security, network printing, network security.			
20SANL	Systems Analysis	Z,ZK	4
Models and analyses of systemic features, means of detection of systemic characteristics, ways, decomposition, boundary and structure of systems, system behavior, decision-making processes, disgram characteristics, fuzzy sets/equations, formulation of states underindistinctly defined conditions, stability of systems.			

14TLK	Telecommunications	Z,ZK	4
Telecommunication bases as cross-section branch create the subject's contents. During introduction, basic legislative conditions forming telecommunication market consistent with the EU rules (selected parts of legislative and sub legislative standards, regulation and regulation frame) and existing and perspective telecommunication services characteristics are lectured. In the second part, transmission and connecting system and terminal devices basic principles (analogue and digital systems, used modulations in view of PCM modulation and modulation predicative methods) and solution of modern connecting systems are explained. In the third part, network management principles from view of operational organization are briefly described.			
17ZTD	Introduction to Theory of Transport	Z,ZK	4

Code of the group: 6S.BP-AI05/06
Name of the group: 6.s.bak.prez.AI od05/06
Requirement credits in the group: In this group you have to gain 24 credits
Requirement courses in the group: In this group you have to complete at least 7 courses
Credits in the group: 24
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
14DAPS	**Database and Presentation Systems**	KZ	2	1+1		z
13EFI	**Enterprise Economics**	Z,ZK	3	2+1		z
14IFS	**Information Systems**	ZK	4	2+0		z
11MSAP	**Modeling of Systems and Processes**	Z,ZK	4	2+1		z
20OPM	**Optimization and Modeling**	Z,ZK	3	2+1		z
14TKMS	**Telecommunication Systems**	Z,ZK	4	3+1		z
20ZT	**Railway Interlocking**	KZ	4	2+1		z

Characteristics of the courses of this group of Study Plan: Code=6S.BP-AI05/06 Name=6.s.bak.prez.AI od05/06

14DAPS	Database and Presentation Systems	KZ	2
Database systems. E-R data model, relational data model, relational databases. Creation of a simple database application in the MS ACCESS environment. Creation of presentations by help of the PowerPoint environment - static snaps, simple animations, linking with other applications.			
13EFI	Enterprise Economics	Z,ZK	3
14IFS	Information Systems	ZK	4
The subject is specialized in theoretic and practical design resources and principles and information systems (IS) creation and realization. Students get knowledge of various information systems terminology, classification and characterization (process, transaction, knowledge, metainformation, etc.), IS projecting procedures, data/information computer proceeding technology by help of data structures, database systems and models. They obtain view of IS and information technologies technical infrastructure trends, understand IS architecture principles and purposes, human role in IS and possibilities of IS evaluation. In brief, they acquaint themselves with creation principles, architecture and standards of the state information system.			
11MSAP	Modeling of Systems and Processes	Z,ZK	4
The course introduces mathematical methods and algorithms providing an essential tool for system analysis. Methods and algorithms represent context in which the systems are modelled and evaluated in continuous and discrete time domain. The Laplace transform, z-transform, and the recursive algorithms are introduced in order to understand solution of differential and difference equations, which are developed for system description. The course focuses on practical use of technical computing environment MATLAB.			
20OPM	Optimization and Modeling	Z,ZK	3
The concept of decision making. Linear and non-linear optimization, Structural, dynamic and stochastic programming. Definition of optimization task, problems arising within the bodies of economics and technology that results in the task of linear programming, classical transportation problem, geometric interpretation of the tasks of linear programming, simplex method, their concept and techniques. Complex decision making based on the metodologies of the theory of games, decision making in the situation of uncertainty and risk, basic methods of the multicriteral decision making.			
14TKMS	Telecommunication Systems	Z,ZK	4
20ZT	Railway Interlocking	KZ	4
Monolitic end composite materials. Development of composite materials. Particular, fibre end laminar composite. Mechanics of composite materials.			

Code of the group: 7S.BP-AI06/07
Name of the group: 7.s.bak.prez.AI od06/07
Requirement credits in the group: In this group you have to gain 18 credits
Requirement courses in the group: In this group you have to complete at least 6 courses
Credits in the group: 18
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
14IP1	**Tutorial in Informatics 1**	Z	2	0+2		z
14RD	**Robotics in Transportation**	ZK	3	2+0		z
20RSSD	**Road Transportation Control Systems**	Z,ZK	3	2+1		z

20SRDP	**Vehicular Control Systems**	ZK	3	2+0		z
17TEC	**Technology of Transport**	Z,ZK	4	2+1		z
20ZS	**Railway Interlocking Systems**	ZK	3	2+0		z

Characteristics of the courses of this group of Study Plan: Code=7S.BP-AI06/07 Name=7.s.bak.prez.AI od06/07

14IP1	Tutorial in Informatics 1	Z	2
The course involves introductory theoretical part (basic terminology from information technologies, information theory, computer terminology, data damage protection, theft and destruction, protection of computer network, security and legal problems relevant to information technologies, copyright and data protection law, computer criminality) and practical part according to the specialization.			
14RD	Robotics in Transportation	ZK	3
The subject is focused on elementary components and their relations in robotics systems. Lessons starts with discussion of terms robot, industrial robot and follows acros terms of robot progress generations, mobile robots, robot kinematics, sensors, actuators, tactile recognition, transmissions, control systems, the role of arificial intellingence in robotics, robot groups.			
20RSSD	Road Transportation Control Systems	Z,ZK	3
The content of the subject is the complex of the traffic knot, line or area control. In the introduction to this problem the basic conceptions from the branch are being introduced. The princip of control by means of light signalisation equipments, princip of signal picture proposal basic transport characteristic are being discussed. The technical means of knot control and the corresponding software, princips and properties of traffic detectors and models of transport flow, methods of line control of transport flow, specifications of areas control, central control, safety systems, modes of preferences in public transport and statistic component of transport (parking and parking systems etc) are always being gone through. The conception of the telematics is being introduced, its content and the spedific problems of traffic control in tunnels and their environment also discussed.			
20SRDP	Vehicular Control Systems	ZK	3
The aim of the course is to introduce fundamental principles of feedback control and to demonstrate their applications in different transport systems. Students are acquainted with fundamental concepts of linear control theory and discrete control. The fundamentals of nonlinear, adaptive and optimal control and their applications in transportation are also explained.			
17TEC	Technology of Transport	Z,ZK	4
Course deals with foundations of technology and management of transportation proceses. It is concerning mainly in way and organization transfer of persons and goods on the defined transport network by moving of transport means through the transport ways. It connects on knowledges of transport and handling tools from tke first period of study. \r\nStudy is concerning on these questions from technology of single sorts of transportation:\r\n \r\n most important terms of transfer process, particularities,and using indicators,\r\n making and using of basing technologic plans and tools,\r\n combination and integration of sorts of transportation into transport systems,\r\n using knowledges of system analyses and kybernetics in management of transportation process\r\n			
20ZS	Railway Interlocking Systems	ZK	3

Code of the group: 8S.BP.AI06/07
Name of the group: 8.s.bak.prez.AI od06/07
Requirement credits in the group: In this group you have to gain 14 credits
Requirement courses in the group: In this group you have to complete at least 4 courses
Credits in the group: 14
Note on the group:

Code	**Name of the course / Name of the group of courses** ***(in case of groups of courses the list of codes of their members)*** *Tutors,* ***authors*** *and guarantors (gar.)*	**Completion**	**Credits**	**Scope**	**Semester**	**Role**
14ISVD	**Information Systems in Transportation**	ZK	4	2+0		z
14IP2	**Tutorial in Informatics 2**	KZ	2	0+2		z
17LGS	**Logistics**	Z,ZK	4	2+1		z
20TM	**Telematics**	Z,ZK	4	2+1		z

Characteristics of the courses of this group of Study Plan: Code=8S.BP.AI06/07 Name=8.s.bak.prez.AI od06/07

14ISVD	Information Systems in Transportation	ZK	4
The subject's contents: information transmission processes, transmission security and reliability problems. Information protection, access control, authentification. Specification of database and expert systems in transportation and telecommunication. Problems of user comfort in relation to interaction human-machine security and reliability, optionally with functional properties of complex social and technical systems.			
14IP2	Tutorial in Informatics 2	KZ	2
Knowledge systems. Expert systems and programmes based on knowledge, their architecture, knowledge representation, basic derivation and implementation methods. Interface for knowledge systems creation andt their design principles. Certainty and uncertainty in knowledge systems and different approaches to them. Common model of balances combination, fuzzy logics. Knowledge base design methods. Database and knowledge systems and their rules.			
17LGS	Logistics	Z,ZK	4
As an integrated managerial system of circular and transfer flows, logistics form new ways of partnership between production and business organization on one hand, and material and information carriers on the other hand. This subject is focused on: \r\n \r\n Concept of logistics, its development and principles\r\n Logistics systems units, logistics chain\r\n Logistics coupling, logistics methods and technologies, decision making in the logistics managerial systems\r\n Marketing as a basic tool in the logistics managerial systems, marketing survey, marketing offer, marketing evaluation techniques and completion marketing planning\r\n Status of transportation in the logistics system\r\n Information flows in the logistics chain\r\n			
20TM	Telematics	Z,ZK	4
The subject Transport Telematics defines the basic principles of telematics in both theoretical and applicational areas. The user requirements are taking into account in telematics system decomposition into the subsystems, modules, functions and processes. By chaining of strong processes the telematics applications are defined. The system parameters for different telematics applications are determined e.g. on computer centers, telecommunication environment, etc. The main goal of subject Transport Telematics is to present the design methodology of telematics systems in such way that the user requirements are fullfiled and the solution in close to optimality.			

Name of the block: Semestrální projekt

Minimal number of credits of the block: 20
The role of the block: ZP

Code of the group: P-BAK.5.SEM.
Name of the group: Projekty 5.s.bak.AI,DS,ME od 05/06
Requirement credits in the group: In this group you have to gain 2 credits
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 2
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
11X15	**Project 5**	Z	2	0+2		ZP
12X15	**Project 5**	Z	2	0+2		ZP
13X15	**Project 5**	Z	2	0+2		ZP
14X15	**Project 5**	Z	2	0+2		ZP
15X15	**Project 5**	Z	2	0+2		ZP
22X15		Z	2	0+2		ZP
17X15	**Project 5**	Z	2	0+2		ZP
18X15	**Project 5**	Z	2	0+2		ZP
20X15	**Project 5**	Z	2	0+2		ZP
21X15	**Project 5**	Z	2	0+2		ZP
16X15	**Project 5**	Z	2	0+2		ZP

Characteristics of the courses of this group of Study Plan: Code=P-BAK.5.SEM. Name=Projekty 5.s.bak.AI,DS,ME od 05/06

11X15	Project 5	Z	2
12X15	Project 5	Z	2
13X15	Project 5	Z	2
14X15	Project 5	Z	2
15X15	Project 5	Z	2
22X15		Z	2
17X15	Project 5	Z	2
18X15	Project 5	Z	2
20X15	Project 5	Z	2
21X15	Project 5	Z	2
16X15	Project 5	Z	2

Code of the group: P-BAK.6.SEM.
Name of the group: Projekty 6.s.bak.AI,DS,ME od 05/06
Requirement credits in the group: In this group you have to gain 2 credits
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 2
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
13X16	**Project 6**	Z	2	0+2		ZP
14X16	**Project 6**	Z	2	0+2		ZP
15X16	**Project 6**	Z	2	0+2		ZP
16X16	**Project 6**	Z	2	0+2		ZP
17X16	**Project 6**	Z	2	0+2		ZP
22X16	**Project 6**	Z	2	0+2		ZP
20X16	**Project 6**	Z	2	0+2		ZP
21X16	**Project 6**	Z	2	0+2		ZP
11X16	**Project 6**	Z	2	0+2		ZP

12X16	**Project 6**	Z	2	0+2		ZP
18X16	**Project 6**	Z	2	0+2		ZP

Characteristics of the courses of this group of Study Plan: Code=P-BAK.6.SEM. Name=Projekty 6.s.bak.AI,DS,ME od 05/06

13X16	Project 6	Z	2
14X16	Project 6	Z	2
15X16	Project 6	Z	2
16X16	Project 6	Z	2
17X16	Project 6	Z	2
22X16	Project 6	Z	2
20X16	Project 6	Z	2
21X16	Project 6	Z	2
11X16	Project 6	Z	2
12X16	Project 6	Z	2
18X16	Project 6	Z	2

Code of the group: P-BAK.7.SEM.
Name of the group: Projekty 7.s.bak.AI,DS,ME od 06/07
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 at least 1 course
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**
11X17	**Project 7**	Z	6	0+6		ZP
12X17	**Project 7**	Z	6	0+6		ZP
13X17	**Project 7**	Z	6	0+6		ZP
14X17	**Project 7**	Z	6	0+6		ZP
15X17	**Project 7**	Z	6	0+6		ZP
22X17		Z	6	0+6		ZP
17X17	**Project 7**	Z	6	0+6		ZP
18X17	**Project 7**	Z	6	0+6		ZP
20X17	**Project 7**	Z	6	0+6		ZP
21X17	**Project 7**	Z	6	0+6		ZP
16X17	**Project 7**	Z	6	0+6		ZP

Characteristics of the courses of this group of Study Plan: Code=P-BAK.7.SEM. Name=Projekty 7.s.bak.AI,DS,ME od 06/07

11X17	Project 7	Z	6
12X17	Project 7	Z	6
13X17	Project 7	Z	6
14X17	Project 7	Z	6
15X17	Project 7	Z	6
22X17		Z	6
17X17	Project 7	Z	6
18X17	Project 7	Z	6
20X17	Project 7	Z	6
21X17	Project 7	Z	6
16X17	Project 7	Z	6

Code of the group: P-BAK.8.SEM
Name of the group: Projekty 8.s.bak.AI,DS,ME od 06/07
Requirement credits in the group: In this group you have to gain 10 credits
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 10
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
11X18	**Project 8**	Z	10	0+10		ZP
12X18	**Project 8**	Z	10	0+10		ZP
13X18	**Project 8**	Z	10	0+10		ZP
14X18	**Project 8**	Z	10	0+10		ZP
15X18	**Project 8**	Z	10	0+10		ZP
22X18	**Project 8**	Z	10	0+10		ZP
17X18	**Project 8**	Z	10	0+10		ZP
18X18	**Project 8**	Z	10	0+10		ZP
20X18	**Project 8**	Z	10	0+10		ZP
21X18	**Project 8**	Z	10	0+10		ZP
16X18	**Project 8**	Z	10	0+10		ZP

Characteristics of the courses of this group of Study Plan: Code=P-BAK.8.SEM Name=Projekty 8.s.bak.AI,DS,ME od 06/07

11X18	Project 8	Z	10
12X18	Project 8	Z	10
13X18	Project 8	Z	10
14X18	Project 8	Z	10
15X18	Project 8	Z	10
22X18	Project 8	Z	10
17X18	Project 8	Z	10
18X18	Project 8	Z	10
20X18	Project 8	Z	10
21X18	Project 8	Z	10
16X18	Project 8	Z	10

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 12
The role of the block: S

Code of the group: VP-B-AI,DS,ME PREZ.
Name of the group: VP-bak.prez.AI,ME,DS od 05/06
Requirement credits in the group: In this group you have to gain 12 credits
Requirement courses in the group: In this group you have to complete at least 6 courses
Credits in the group: 12
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
16Y1AV	**Automobile Aerodynamics**	KZ	2	2+0		S
17Y1AF	**Alternative Forms of Transportation Project Financing**	KZ	2	2+0	Z	S
18Y1AN	**Traffic Accidents Analysis**	KZ	2	2+0	Z	S
22Y1A1	**Traffic Accidents Analysis 1**	KZ	2	2+0	Z	S
22Y1A2	**Traffic Accidents Analysis 2**	KZ	2	2+0	L	S
18Y1AM	**Anatomy, Mobility and Safety of Man** *Jitka Jírová*	KZ	2	2P+0C	Z	S
14Y1AV	**Animation and Visualization**	KZ	2	2P+0C	L	S
14Y1AP	**Automatization in Mail**	KZ	2	2+0	Z	S
17Y1BB	**Banks and Banking**	KZ	2	2+0	Z	S
14Y1BE	**Barrierless Transport**	KZ	2	2P+0C	L	S
21Y1BLD	**Safety in Aviation**	KZ	2	2+0		S
15Y1BO	**Work Safety and Health Protection in Transportation** *Petr Musil, Eva Rezlerová*	KZ	2	2P+0C	L	S
13Y1BC	**Bourse, Stock, Investment Comanies**	KZ	2	2+0		S
17Y1BC	**Bourse, Stock and Investment Companies**	KZ	2	2+0		S

15Y1DU	**History of Art and Society**	KZ	2	2+0	Z	s
15Y1DZ	**History of Railway** *Eva Rezlerová, Martin Jacura*	KZ	2	2P+0C	L	s
17Y1DN	**Transportation of Dangerous Goods**	KZ	2	2+0	Z	s
17Y1DG	**Transport Geography**	KZ	2	2+0	Z	s
12Y1DO	**Transport Services of Settlements and Regions**	KZ	2	2+0	Z	s
17Y1DP	**Transportation Policy and Strategy**	KZ	2	2+0	L	s
15Y1DP	**Transportation Psychology**	KZ	2	2+0		s
17Y1DZ	**Transported Commodities Cognization**	KZ	2	2+0	L	s
18Y1D1	**Dynamics of Routes and Vehicles 1**	KZ	2	2+0	Z	s
13Y1EA	**Economic - Energetic Analysis of Land Transport**	KZ	2	2+0	Z	s
13Y1EP	**Economics and Management of Postal Services**	KZ	2	2+0	L	s
13Y1EV	**Public Sector Economy**	KZ	2	2+0	Z	s
15Y1EH	**European Integration within Historical Context** *Jan Feit*	KZ	2	2P+0C	Z	s
18Y1EV	**Experimental Methods and Numerical Modelling**	KZ	2	2+0	L	s
18Y1EZ	**Experimental Methods and Testing of Constructions**	KZ	2	2+0	Z	s
18Y1EM1	**Experimental Methods 1**	KZ	2	2+0		s
18Y1EM2	**Experimental Methods 2**	KZ	2	2+0		s
15Y1FD	**French Area Studies and Transportation**	KZ	2	2P+0C	L	s
15Y1FJ	**French as a foreign language**	KZ	2	2+0		s
20Y1GI	**Geographical Information Systems**	KZ	2	2+0	L	s
14Y1GD	**GIS and Maps Digitalization**	KZ	2	2+0	Z	s
14Y1HW	**Computer Hardware**	KZ	2	2P+0C	L	s
17Y1HO	**Heuristic Methods in Optimization Problems**	KZ	2	2+0		s
15Y1HL	**History of Civil Aviation** *Eva Rezlerová, Vladimír Plos*	KZ	2	2P+0C	L,Z	s
15Y1HD	**History of City Mass Transport** *Eva Rezlerová, Milan Dont*	KZ	2	2P+0C	Z	s
12Y1HD	**Traffic Noise** *Libor Ládyš, Dagmar Kočárková*	KZ	2	2P+0C	L	s
12Y1HZ	**Assesment of Impact of Investment Constructions on the Environment**	KZ	2	2+0	Z	s
13Y1HG	**Economic Geography**	KZ	2	2+0	L	s
15Y1HE	**Work Hygiene and Ergonomics in Traffic** *Petr Musil, Eva Rezlerová*	KZ	2	2P+0C	Z	s
20Y1IC	**Human Machine Interaction**	KZ	2	2+0	L	s
15Y1IM	**Intercultural management**	KZ	2	2+0		s
16Y1KJ	**Railroad Vehicles**	KZ	2	2+0	L	s
12Y1KN	**Combined Transportation** *Petr Nejedlý*	KZ	2	2P+0C	Z	s
16Y1KA	**Vehicle and Motorcycle Design**	KZ	2	2+0	Z	s
16Y1KP	**Car Body Design with Respect to Passive Safety of Vehicles**	KZ	2	2+0	L	s
14Y1K2	**Computer Aided Design 2 (AutoCAD, 3D, Map)**	KZ	2	2+0	Z	s
13Y1KM	**Crisis Management in Transportation**	KZ	2	2+0	Z	s
12Y1KB	**Quality and Safety of Roads**	KZ	2	2+0		s
20Y1K	**Cybernetics**	KZ	2	2+0	Z	s
16Y1LZ	**Vehicle Testing and Legislation**	KZ	2	2+0	L	s
21Y1LM	**Aviation Meteorology**	KZ	2	2+0	L	s
21Y1LR	**Radio Technology in Aviation**	KZ	2	2+0	L	s
21Y1LP	**Traffic and Requirements in Aviation**	KZ	2	2+0		s
21Y1L	**Airports - Design and Operation**	KZ	2	2+0	L	s
21Y1LC	**Human Factor**	KZ	2	2+0	Z	s
11Y1LP	**Linear Programming**	KZ	2	2+0	L	s
15Y1LU	**Logics of Engineer's Judgement**	KZ	2	2+0	Z	s
17Y1LL	**Logistics of Passenger and Freight Air Transport** *Petra Skolilová Petra Skolilová (Gar.)*	KZ	2	2P+0C	L	s
13Y1MZ	**Management of the Environment**	KZ	2	2+0		s

13Y1MR	**Managerial Decision-making**	KZ	2	2+0	Z	s
12Y1MA	**Marketing**	KZ	2	2+0		s
13Y1MS	**Marketing Strategies**	KZ	2	2+0		s
11Y1MM	**Mathematical Models in Economy**	KZ	2	2P+0C	Z	s
16Y1MV	**Material Application in Industry**	KZ	2	2+0		s
18Y1MT	**Engineering Materials** *Jaroslav Valach*	KZ	2	2P+0C	L	s
18Y1MK	**Finite Element Method and Its Application**	KZ	2	2+0	Z	s
20Y1MK	**Quality Tools in the Development Phase**	KZ	2	2+0		s
11Y1MS	**Systems Modelling From Data**	KZ	2	2+0		s
17Y1ND	**Maritime Transportation**	KZ	2	2+0	Z	s
14Y1ND	**Databases Design and Programming**	KZ	2	2+0	L	s
14Y1NH	**Databases Design and Programming**	KZ	2	2+0	L	s
20Y1NE	**Designing and Evalution of Experiments in the Procedures and the Quality Operation of Vehicles**	KZ	2	2+0		s
16Y1NV	**Configuration and Calculation of Vehicle Structures**	KZ	2	2+0		s
14Y1NP	**Non-parametric 3D Modelling**	KZ	2	2+0	Z	s
20Y1NS	**Neural Networks**	KZ	2	2+0	Z	s
18Y1NM	**Numerical Modelling**	KZ	2	2+0	Z	s
20Y1OI	**Fare Collection and Information Systems** *Milan Sliacky, Patrik Horažďovský Milan Sliacky (Gar.)*	KZ	2	2P+0C	L	s
14Y1OL	**Linux Operating System**	KZ	2	2+0	Z	s
14Y1OS	**Operating Systems**	KZ	2	2+0	Z	s
11Y1OS	**Image systems**	KZ	2	2+0		s
15Y1OC	**Crucial Moments of Czechs**	KZ	2	2+0	*	s
11Y1PV	**Parametrical and Multicriterial Programming** *Olga Vraštilová*	KZ	2	2P+0C	Z	s
16Y1PB	**Vehicle Passive Safety**	KZ	2	2+0		s
13Y1PM	**Personal Management**	KZ	2	2+0	L	s
13Y1PM2	**Personal Management 2**	KZ	2	2+0		s
12Y1PC	**Pedestrian and Cycling Transport** *Denis Liutov*	KZ	2	2P+0C	L	s
12Y1PN	**Planning and design roads**	KZ	2	2+0		s
14Y1PG	**Computer Graphics**	KZ	2	2P+0C	L	s
11Y1PE	**Computer Controlled Experiments**	KZ	2	2+0	L	s
18Y1PA	**Computer Simulations and Road Traffic Accident Analysis**	KZ	2	2+0	L	s
13Y1PD	**The Participation of Transport in Tourist Trade Management**	KZ	2	2+0	L	s
16Y1PD	**Traction Elements of Vehicles**	KZ	2	2+0	Z	s
14Y1PM	**Advanced Methods of Parametric Programming**	KZ	2	2+0	L	s
21Y1PU	**Aircraft Maintenance Technology**	KZ	2	2+0	L	s
12Y1PD	**Assessment of Transport Structures**	KZ	2	2P+0C	Z	s
18Y1PN	**Prevention of Road Traffic Accidents**	KZ	2	2+0	L	s
22Y1PN	**Prevention of Road Traffic Accidents**	KZ	2	2+0	L	s
14Y1PJ	**C Programming Language**	KZ	2	2P+0C	Z	s
14Y1PVJ	**Programming in Java**	KZ	2	2+0		s
12Y1PJ	**Road Planning in Civil 3D**	KZ	2	2P+0C	Z	s
12Y1PT	**Road Planning in Civil 3D - Project**	KZ	2	2+0		s
12Y1C1	**Designing Roads in Civil 3D I** *Tomáš Honc*	KZ	2	2P+0C	L	s
12Y1C2	**Designing Roads in Civil 3D II** *Tomáš Honc*	KZ	2	2P+0C	Z	s
12Y1PM	**Road Planning in MX Road Environment**	KZ	2	2+0	Z	s
12Y1PP	**Road Planning in MX Road Environment - Project Processing**	KZ	2	2+0	L	s
18Y1PK	**Projection of Structures**	KZ	2	2+0	Z	s
18Y1P1	**Design of Structures 1**	KZ	2	2+0	L	s
12Y1PZ	**Railway Lines Design**	KZ	2	2+0		s
16Y1PV	**Operation, Construction and Maintenance of Vehicles**	KZ	2	2P+0C	L	s

12Y1PU	**Organization Disposition of Railway Stations**	KZ	2	2P+0C	L	s
16Y1PR	**Industrial Design**	KZ	2	2+0		s
15Y1PF	**French as a foreign language, Improvers level**	KZ	2	2+0		s
12Y1RS	**Reconstruction and Maintenance of Roads**	KZ	2	2+0	L	s
12Y1RZ	**Railway Lines Reconstruction**	KZ	2	2+0	Z	s
15Y1RE	**Oral Communication**	KZ	2	2+0		s
16Y1RE	**Control and Electronic Vehicle Systems** *Josef Mík, Přemysl Toman*	KZ	2	2P+0C	Z	s
16Y1RV	**Railroad Vehicles Driving**	KZ	2	2+0	L	s
21Y1RL	**Air Traffic Control**	KZ	2	2+0	L	s
12Y1SF	**Road Software**	KZ	2	2+0		s
20Y1SC	**Sensors and Actuators**	KZ	2	2P+0C	L	s
15Y1SN	**Sociology of Violence**	KZ	2	2+0		s
11Y1SI	**Transportation Software Engineering** *Martin Pěnička*	KZ	2	2P+0C	Z	s
12Y1SU	**Road Management and Maintenance** *Dagmar Kočárková, Otakar Vacín*	KZ	2	2P+0C	L	s
18Y1SN	**Statically Nondeterminated Structures**	KZ	2	2+0	Z	s
14Y1SP	**Strategic Planning for E-Business**	KZ	2	2+0		s
13Y1TC	**Techniques of Travel Services**	KZ	2	2+0	Z	s
16Y1TJ	**Technological Quality Aspects**	KZ	2	2+0	Z	s
20Y1TE	**Technology of Electronic Systems**	KZ	2	2+0	L	s
14Y1TD	**Design Theory**	KZ	2	2+0		s
11Y1TG	**Graph Theory** *Lucie Kárná* ***Lucie Kárná*** *Lucie Kárná (Gar.)*	KZ	2	2P+0C	L	s
18Y1TK	**Theory of Structures**	KZ	2	2+0	L	s
16Y1TR	**Theory of Railroad Vehicle Driving**	KZ	2	2+0	Z	s
16Y1TZ	**Transporting Devices**	KZ	2	2+0	L	s
14Y1TI	**Creating Interactive Internet Applications**	KZ	2	2P+0C	L	s
14Y1TF	**Technical Documentation**	KZ	2	2+0		s
21Y1ULE	**Aircraft Maintenance**	KZ	2	2+0		s
18Y1UK	**Introduction of Rail Vehicles** *Josef Kolář, Jitka Řezníčková*	KZ	2	2P+0C	L	s
22Y1UN	**Traffic Accidents Introduction**	KZ	2	2+0		s
14Y1VB	**Visual Basic**	KZ	2	2+0	L	s
12Y1VC	**Waterways and Shipping**	KZ	2	2P+0C	Z	s
12Y1VD	**Water Transport and Transportation**	KZ	2	2+0	L	s
18Y1VF	**Numerical and Experimental Modelling in Transportation**	KZ	2	2+0	L	s
14Y1VM	**Development of Applications for Mobile Devices**	KZ	2	2P+0C	Z	s
15Y1VV	**Origins and Development of Cars**	KZ	2	2+0	L	s
21Y1ZT	**ATM Systems**	KZ	2	2+0	Z	s
17Y1ZC	**Transportation in Tourism**	KZ	2	2+0	L	s
14Y1ZA	**Basics of Animation and Visualization**	KZ	2	2+0	Z	s
20Y1ZG	**Fundamentals of Applied Computer Graphics**	KZ	2	2+0	L	s
16Y1ZG	**Introduction into Applied Computer Graphics**	KZ	2	2P+0C	L	s
18Y1ZD	**Basics of Two-Dimensional Design**	KZ	2	2+0	Z	s
11Y1ZF	**Introduction to Solid State Physics**	KZ	2	2+0	Z	s
14Y1ZM	**Fundamentals of parametric and adaptive modeling**	KZ	2	2P+0C	L	s
16Y1ZR	**Principles of Transportation Machinery Control**	KZ	2	2+0	L	s
18Y1ZT	**Basics of Three-Dimensional Design**	KZ	2	2+0	L	s
12Y1ZU	**Principles of Urbanism** *Karel Hájek*	KZ	2	2P+0C	Z	s
15Y1ZD	**Radiation in Traffic**	KZ	2	2+0	Z	s
16Y1ZL	**Vehicle Testing, Legislation and Construction** *Josef Mík, Zuzana Radová*	KZ	2	2P+0C	Z	s
12Y1ZV	**Rail Vehicles**	KZ	2	2+0		s

Characteristics of the courses of this group of Study Plan: Code=VP-B-AI,DS,ME PREZ. Name=VP-bak.prez.AI,ME,DS od 05/06

16Y1AV	Automobile Aerodynamics	KZ	2
17Y1AF	Alternative Forms of Transportation Project Financing	KZ	2
There will be specifed such forms of financing in transportation, where the public sector body perform the final debtor, i. e. debtor payments come from its budget, but the final debtor is not a direct participant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of securities as an alternative source of transportation project.			
18Y1AN	Traffic Accidents Analysis	KZ	2
Analysis a road traffic accident as a physical process with its own regularities, quantities and applications. Basic types of accidents in terms of analytical approach. Preparing documents for analysis. Vehicle road-holding. Tyre adhesion. Conditions of car collisions. Analysis of wheel traces. Basic analysis of road traffic accident processes in space and time.			
22Y1A1	Traffic Accidents Analysis 1	KZ	2
The subject analysis the road traffic accident as a physical process with its own regularities, quantities and their applications. Basic types of accidents in terms of analytical approach. How to prepare documents for analysis. Vehicle road-holding. Tyre adhesion. Conditions of car collision. Analysis of wheel traces. Basic analysis of road traffic accident processes in space and time. \r\n\r\nThis subject will be continued in the summer term by the "Prevention of road traffic accidents".			
22Y1A2	Traffic Accidents Analysis 2	KZ	2
The subject analysis the road traffic accident as a physical process with its own regularities, quantities and their applications. Basic types of accidents in terms of analytical approach. How to prepare documents for analysis. Vehicle road-holding. Tyre adhesion. Conditions of car collision. Analysis of wheel traces. Basic analysis of road traffic accident processes in space and time. \r\n\r\nThis subject will be continued in the summer term by the "Prevention of road traffic accidents".			
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues. Anatomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation and nervous system. Structure and biomechanics of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured man and his treatment. Human joint prostheses. Protective means and traffic safety regulations.			
14Y1AV	Animation and Visualization	KZ	2
Advanced modifications and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Space Warp objects. Atmospheric and other effects, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation using Inverse Kinematics.			
14Y1AP	Automatization in Mail	KZ	2
Technology of post shipment submission, transport, and delivery via physic and electronic way, virtual post operation. Technology of information transmission by electronic way, application of new information and communication technologies in an offer of permanent, mobile, and NGN e-communication networks, solutions to e-communication network interfaces, technological principles of end telecommunication devices.			
17Y1BB	Banks and Banking	KZ	2
Banks and banking system. Balance sheet, income statement, bank's capital and its functions. Banking risks. Banking products. Interest types, pay-off and loan securing, financial loan products. Banking deposit products. Banking payment-clearing products. Financial intermediation, open-end and closed-end funds, collective investment schemes. Central bank and its role. Bank regulation and supervision. International banking.			
14Y1BE	Barrierless Transport	KZ	2
The issue of barrierless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students will gain theoretical knowledge of barrierless environment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems and transportation technology. Theoretical knowledge will be supplemented by practical examples.			
21Y1BLD	Safety in Aviation	KZ	2
15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
Fundamental legislative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health protection programmes, health insurance of home and foreign business trips, statistics, working practice.			
13Y1BC	Bourse, Stock, Investment Comanies	KZ	2
17Y1BC	Bourse, Stock and Investment Companies	KZ	2
15Y1DU	History of Art and Society	KZ	2
History of art - definitions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Stations, bridges, industrial buildings. Design of transport vehicles.			
15Y1DZ	History of Railway	KZ	2
Horse-drawn railways, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Republic", electric traction, World War II railways, railway development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connections, railway lines construction, railway accidents, railway junctions. Excursions and projections.			
17Y1DN	Transportation of Dangerous Goods	KZ	2
Classification, filling, packing, marking, sending, carrying and receiving dangerous goods, technical requirements and certification for transport means and drivers; safety requirements.			
17Y1DG	Transport Geography	KZ	2
Transport and reciprocal relations between economical development and the transport system. Arrangement of transport infrastructure as a result of long-term relationship. Railway, road, water, air and combined transportation, cooperatiom betwen them; services offered.			
12Y1DO	Transport Services of Settlements and Regions	KZ	2
17Y1DP	Transportation Policy and Strategy	KZ	2
Current state of transportation as a system; development of transport infrastructure, mobile technical platforms, transport law, transport financing, transport territory services, transport safety and security, social development and research - all in the context of EU.			
15Y1DP	Transportation Psychology	KZ	2
17Y1DZ	Transported Commodities Cognization	KZ	2
Useful features. Quality. Testing. Standardization. Features relevant for the transport. Packing. Stress. Protection of goods and damage prevention during the carriage. Optimization of the choice and effective transport means utility.			
18Y1D1	Dynamics of Routes and Vehicles 1	KZ	2
Theory and analysis of vibration of multimass systems. Dynamical model of vehicle and interaction with transport structure. Assessment of structure vibration and allowable criteria. Vibroisolation and absorbers of dynamical effects. Methods of experimental dynamics. FEM in structure dynamics.			
13Y1EA	Economic - Energetic Analysis of Land Transport	KZ	2
Vehicle traction systems, traction-energetic properties, laws of vehicle motion, assessment of energy demands, traction-energetic conceptions, technical, economical and social aspects.			
13Y1EP	Economics and Management of Postal Services	KZ	2
Special character of postal service and its impact on economic activity and company management. The position of the state as a regulator of liberalisation of postal service.			
13Y1EV	Public Sector Economy	KZ	2
Summary of basic economic findings, public goods - definition, public sector domains, state budget, taxes, public goods and externalities, externalities in transportation and their treatment, methods of assessment of public projects, transport projects and their funding, benefits of transport projects, the assessment of transport projects by the CBA method, HDM-4, CSHS.			

15Y1EH	European Integration within Historical Context	KZ	2
Versailles system, formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism. Little Entente, its principles and goals. Europe after Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and its consequences for Europe. New quality of French-German relationship - a driving power of starting European integration.			
18Y1EV	Experimental Methods and Numerical Modelling	KZ	2
Physical properties measured in structural mechanics and dynamics. Principles of strain gauge measurement. Theory of photoelasticimetry, experimental methods in structural dynamics. Basic principles of numerical methods in structural mechanics and dynamics. Finite element method in statics and dynamics. Geometry development, discretization to elements, types of structural elements. Boundary conditions. Material models. Solution of problems.			
18Y1EZ	Experimental Methods and Testing of Constructions	KZ	2
18Y1EM1	Experimental Methods 1	KZ	2
18Y1EM2	Experimental Methods 2	KZ	2
15Y1FD	French Area Studies and Transportation	KZ	2
France - geography and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air traffic, specialised terminology. French society and culture. Current political system. System of education, studying in France. Selected authors of French literature. French gastronomy.			
15Y1FJ	French as a foreign language	KZ	2
20Y1GI	Geographical Information Systems	KZ	2
Introduction to geographical information systems, creating real-world model, data models, storage of geographical data, methods of data entry, digitization, geographical coordinate systems, map projections, raster and vector representation, spatial algorithms and operations, and general transport roles in GIS.			
14Y1GD	GIS and Maps Digitalization	KZ	2
Work with map sources and their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. Interlinking external references with drawings containing maps.			
14Y1HW	Computer Hardware	KZ	2
Computer architecture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate parts designing - controllers, arithmetic and logical units, I/O subsystem.			
17Y1HO	Heuristic Methods in Optimization Problems	KZ	2
Introduction and overview of heuristic methods, exact approaches for solving the Traveling Salesman Problem (TSP), Lagrangean approach, assignment problem, algorithm of Little, vehicle routing problem (VRP) - derivation from the TSP, classical heuristics solving the VRP, local search methods, Tabu Search method, genetic algorithms in location problems and its enhancements.			
15Y1HL	History of Civil Aviation	KZ	2
Beginnings of flying, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of airports in the Czech Republic. World airports. Famous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era of aviation. Golden era of civil aviation. Modern era of civil aviation. Airline companies. Supersonic flying.			
15Y1HD	History of City Mass Transport	KZ	2
History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current trends and developments 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 Slovakia.			
12Y1HD	Traffic Noise	KZ	2
Acoustic introduction, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulations. Creation acoustic climate in area, principles of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area of interest. Methodology of computing and measurement of transport noise. Acoustic studies, measuring protocol.			
12Y1HZ	Assesment of Impact of Investment Constructions on the Environment	KZ	2
Systematic research of the consequences of assumed intentions, projects , plans and political interests with regard to the environment; negative and undesirable effects in terms of E.I.A. (Environmental Impact Assessment) process.			
13Y1HG	Economic Geography	KZ	2
Basic concepts of economic geography. Economy and territorial relations. Rules of functioning and development of socio-economic spheres as the standpoint of understanding the world economy.			
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
Basic knowledge of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these factors on health 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 a man. Practical examples from the field of transportation; relevant legislature.			
20Y1IC	Human Machine Interaction	KZ	2
Interaction of human-system. Methods and procedures for detecting decrease in attention. Used software and hardware tools. Bio-feedback, EEG measurements.			
15Y1IM	Intercultural management	KZ	2
16Y1KJ	Railroad Vehicles	KZ	2
21st century mobility. Recent construction of railroad, city and intercity public vehicles, future and present situation, speed as a solution, maglev. From principle to design and construction; some realization in the world. Division and ways of drive, efficient electronics, changers, railroad traction, energetic calculation. Railroad safety signalling systems, railroad vehicle and infrastructure compliance (interference). Testing.			
12Y1KN	Combined Transportation	KZ	2
Combined transport strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas. Multimodal logistic centres.			
16Y1KA	Vehicle and Motorcycle Design	KZ	2
Inputs for decission-making on vehicle concept type and character, description of project procedure. Vehicle construction and its computer back up. Possibilities of vehicle concepts, concept of power units. Legislative preconditions of vehicle projection, legislation. Preconditions of the construction of motorcycles, passenger vehicles, lorries, and buses.			
16Y1KP	Car Body Design with Respect to Passive Safety of Vehicles	KZ	2
This subject concerns principles of car body design with respect to passve safety, deformation zones´ properties within accidents and legislative. Car body frames and integral body frame design, construction of apportionable body parts and their juncture, variation of forces in operation mode, bending and torsion, body dynamics, principles of controlled deformation, restraint systems, biomechanics of injury, injury mechanisms and injury seriousness.			
14Y1K2	Computer Aided Design 2 (AutoCAD, 3D, Map)	KZ	2
3D space handling, user setting creation, object sets creation, digitalization and filtering of map backgrounds, data work linked with external database and following map data analysis. Possibilities of raster backgrounds use.			
13Y1KM	Crisis Management in Transportation	KZ	2
Crisis situations in transport. Risk of extraordinary events in relation to transport. Measures in the case of the state economic mobilisation in the sphere of transport and telecommunications. Organisation prerequisites for crisis solution in transportation. Technical means for liquidation of the consequences of extraordinary events in transport. Crisis management.			
12Y1KB	Quality and Safety of Roads	KZ	2

20Y1K	Cybernetics	KZ	2
Fundamentals of information theory, dynamic systems, the principle of feedback, logical systems. Finite automata as a special case of dynamical systems. Relations between languages and automata.			
16Y1LZ	Vehicle Testing and Legislation	KZ	2
National and international legislation concerning technical roadworthiness of vehicles. Procedures of homologation. Types of testing according to the stage of development (prototype, type, homologation and operating life). Types of testing according to function (brakes, noise, exhalation, passive safety, driving properties, power). Types of testing according to compatibility (components, sets, units). Testing methodologies and ways of evaluation.			
21Y1LM	Aviation Meteorology	KZ	2
Structure of atmosphere. Vertical stratification. Pressures QNH, QFE, QFF, QME. Instability. Atmospherical fronts. Atmospherical precipitation, origin & categorisation. Turbulence. Forces producing wind. Cyclone and anticyclone. Gradient wind. Geostrofical and geocyclostrophical wind. Visibilities in air transport. Dangerous meteorological aspects. Meteorological maps. Climatology. Circulation.Intertropical front. Meteorological information.			
21Y1LR	Radio Technology in Aviation	KZ	2
Electric signals and the wave spectrum. Analog and digital modulations. Noises. Filters. Resonance circuits. Electromagnetic field. Electromagnetic wave propagation. Wave ranges in aviation, radiation and reception of electromagnetic field. Antennas in aviation, receivers and transmitters.			
21Y1LP	Traffic and Requirements in Aviation	KZ	2
21Y1L	Airports - Design and Operation	KZ	2
Introductory conditions for development of planning of runway systems and terminal facilities. Road construction, approximate analysis of RWY distance. Investment planning - operator activities. Certification of international airports - standard checking. Unexpected events and their handling.			
21Y1LC	Human Factor	KZ	2
Human performace & limitations, ability & competence, accident statistics, flight safety, basics of flight physiology, individuals & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & learning, theory & model of human error, biorhythms & sleep, stress, fatigue, working methods.			
11Y1LP	Linear Programming	KZ	2
Definition of the optimization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic problems and traffic problems with constrains. Geometrical interpretation of linear programming problems, simplex method, duality principle.			
15Y1LU	Logics of Engineer's Judgement	KZ	2
Logical structure of engineer's judgement, its propositional and predicative logical base. Solutions of logical tasks through the methods of truthfulness and semantic analysis charts. Venn's diagram method. Logical basis for network design for the solution of technical tasks.			
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
Logistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transport process passengers and air cargo. Information systems in air transport. Global distribution systems.			
13Y1MZ	Management of the Environment	KZ	2
13Y1MR	Managerial Decision-making	KZ	2
Solution of decision-making issues. Basic concepts of decision-making theory , rational logistics for solution of decision-making issues in organisations - from identification of decision-making problems to assesment of different variants. Procedures of multi-criteria decision-making, choice of decision-making methods under risk and uncertainty. Choice of a successful type of decision-making procedure.			
12Y1MA	Marketing	KZ	2
13Y1MS	Marketing Strategies	KZ	2
11Y1MM	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 program implementation. The outcom of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained optimization.			
16Y1MV	Material Application in Industry	KZ	2
18Y1MT	Engineering Materials	KZ	2
Systematic overview of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and composites, attention is paid to biological materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's selection charts.			
18Y1MK	Finite Element Method and Its Application	KZ	2
Variational principles of solid mechanics used in finite element method. Types of finite elements and their applicability in different problems. Shape functions for selected elements. Direct generation, meshing of solid models. Boundary conditions and loads. Methods for solving large systems of algebraic equations. Preprocessor, solution pass, postprocessor.			
20Y1MK	Quality Tools in the Development Phase	KZ	2
11Y1MS	Systems Modelling From Data	KZ	2
17Y1ND	Maritime Transportation	KZ	2
History and importance of the maritime transportation, theoretical discipline in maritime transportation, seafaring vessels, maritime ports and their utilization, inland logistic centre and maritime ports, transport corridors and link by maritime, river and rail transport I and II, global maritime corridors, logistics of maritime transportation, maritime transportation and smart containers, ITS in maritime transport.			
14Y1ND	Databases Design and Programming	KZ	2
Creation and sustaining of DB application, i.e. database design, basic graphical interface creation , and programming of requested application behaviour. Introduction to DB engine Jet, basics of programming in Visual Basic for Application language, DAO object models, and their use for programme-controlled database.			
14Y1NH	Databases Design and Programming	KZ	2
Students in this course will deepen their knowledge and skills in database design and learn the procedural extension of SQL, PL/SQL, which makes it possible to ensure data integrity on the level of the database engine.			
20Y1NE	Designing and Evalution of Experiments in the Procedures and the Quality Operation of Vehicles	KZ	2
16Y1NV	Configuration and Calculation of Vehicle Structures	KZ	2
14Y1NP	Non-parametric 3D Modelling	KZ	2
Work in 3D non-parametricmodeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object data creation, work with data connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.			
20Y1NS	Neural Networks	KZ	2
The basic structure and function of human brain and its main functional blocks and building elements - neurons. Models of neurons, modelling their networks and the basic paradigms of artificial neural networks.			

18Y1NM	Numerical Modelling	KZ	2
Introduction to Finite Element Method computational software in general. Philosophy behind the ANSYS software package. Development of the model geometry. Modification and Boolean operations with basic geometrical primitives. Import and cleanup of geometry imported from other CAE systems. Definition of material properties. Element types. From geometrical model to finite element model (mesh generation). Loading and boundary conditions. Selected basic problems (statical analysis, mode shapes and frequency analysis). Introduction to nonlinear problems (contact analysis, plasticity).			
20Y1OI	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 components for users (timetables, maps, panels ...) and operators (cycles, location or current delay of vehicles, ...). The issue of tariff systems. Other examples of clearance systems (parking).			
14Y1OL	Linux Operating System	KZ	2
Distributions. GNU/Linux system installation. X-window system. Rights - Users and Groups, ACL rights. Filesystems and file attributes. Programs and processes. Boot of OS, runlevels. Basic console commands. Configuration files. Managing SW system. Programs in graphic mode - tools for text, graphics, sound, video, communication. Services management. Principles of OS secure configuration. Remote administration.			
14Y1OS	Operating Systems	KZ	2
Operating systems, their function and architecture, process and memory management, virtual memory, threads, interprocess communication, synchronization, file systems, architecture of operating systems Win and Linux, start of PC and operating systems, networking, safety in OS, terminals in MS Win and Linux, batch files. Domains and workgroups in MS Win, users and their rights, configuration of networks, Windows registry, remote desktop.			
11Y1OS	Image systems	KZ	2
15Y1OC	Crucial Moments of Czechs	KZ	2
The contemporary view of crucial moments of the more than a thousand-year long history of western Slavs in Central Europe stressing the relations with bordering nations and with Europe as a whole. Formation and strengthening of the Přemysl state. The lands of the Czech Crown as a part of the Habsburgh monarchy. Political programmes in the 19th century and formation of Czechoslovakia. Disputes over the sense of Czech history. Changes of the power structure of Europe in the 20th century regarding the position of our lands.			
11Y1PV	Parametrical and Multicriterial Programming	KZ	2
Solution to the problem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Computation of efficient solution.			
16Y1PB	Vehicle Passive Safety	KZ	2
13Y1PM	Personal Management	KZ	2
Basic overview of leadership issue from the viewpoint of an employee as well as a manager. The accent at the experience of basic situations through a simulation game. Systemic approach to the personal management, the assessment as a process, SWOT analysis, basic principles of personal management, theory and practice of motivation, managerial leadership styles.			
13Y1PM2	Personal Management 2	KZ	2
12Y1PC	Pedestrian and Cycling Transport	KZ	2
Routes for pedestrians. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route layout and design parameters for cyclists. Separation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings with other transport modes, crossroads. Traffic signs and road marking for cyclists.			
12Y1PN	Planning and design roads	KZ	2
14Y1PG	Computer Graphics	KZ	2
Basic formats of graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editing programs (within the user level scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.			
11Y1PE	Computer Controlled Experiments	KZ	2
Implementation of experiment consisting of designing, measurement method selection according to required results accuracy and available measurement devices, selection of computer-recorded parameters, data acquisition and results calculation. Evaluation of measurement method accuracy and result uncertainty.			
18Y1PA	Computer Simulations and Road Traffic Accident Analysis	KZ	2
Analysis of traffic accidents by means of PC-Crash and Impulz Expert 2000 applications. Introduction to principles and mathematic models used in basic tasks solutions within computing systems. Vehicle movement simulation. Kinematic versus dynamic models. Basics of software use for analysis of road tolls and their reconstruction, model solutions of particular tasks, problems of boundary conditions.			
13Y1PD	The Participation of Transport in Tourist Trade Management	KZ	2
Tourist trade, transport, typology, market, marketing mix, transport service providers, contract cooperation, reservation systems, transport valuables, standard air carriers, low cost air carriers, IATA, ICAO, road, water, rail transport.			
16Y1PD	Traction Elements of Vehicles	KZ	2
Principal characteristics of combustion engines. Principal characteristics of blade jet engines. Traction characteristics of surface devices output tranfer. Mechanical tranfer of output. Hydraulic transfer of output, hydrostatic, hydrodynamic with different coupling settings. Dieselelectric tranfer of output.			
14Y1PM	Advanced Methods of Parametric Programming	KZ	2
Assemblies programming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipelines, and distribution lines. Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.			
21Y1PU	Aircraft Maintenance Technology	KZ	2
Basics of aircraft maintenance technology, legislation, aircraft release into operation, safety, equipment.			
12Y1PD	Assessment of Transport Structures	KZ	2
Assessment of transport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of its protection and assessment transport structures on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of assessment of traffic buildings on the environment.			
18Y1PN	Prevention of Road Traffic Accidents	KZ	2
Systematic accident causes with focus on education. Typical examples of unsuitable street pattern creating places of frequent road accidents. Car defects causing road accidents; possibilities to reduce the risk of accidents. Influence of speed. Pedestrians.Visibility.			
22Y1PN	Prevention of Road Traffic Accidents	KZ	2
Students will learn about systematic accident causes with emphasis on education, about typical examples of unsuitable street pattern creating places of frequent road accidents, about car defects causing road accidents and about possibilities to reduce the risk of accidents.\r\nThis course is an optional continuation of the subject "Analysis of road traffic accidents" in logical sequence: causes-analysis-prevention. That's why students who have completed the "Analysis of road accidents" in the winter term will be enrolled in preference.			
14Y1PJ	C Programming Language	KZ	2
C programming language. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation, string, files, structures and unions. Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.			
14Y1PVJ	Programming in Java	KZ	2
12Y1PJ	Road Planning in Civil 3D	KZ	2
Basic course for Autodesk Civil 3D. Work with fundamental commands, prezentation of differences between Civil and Autocad. Depiciton of terrain model, path, koridor, crossections.			

12Y1PT	Road Planning in Civil 3D - Project	KZ	2
Advanced course for work with Autodesk Civil 3D. Enhancement of laying - out skills, count of cubage, latiny - out pipe lines in project, vizualization. Work with terrain and with its schneme, methods of terrain analyses. Team work on project.			
12Y1C1	Designing Roads in Civil 3D I	KZ	2
The course is devoted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through the complete design of this particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The course also includes a basic explanation of the traffic building design in the real-life profession.			
12Y1C2	Designing Roads in Civil 3D II	KZ	2
The course is devoted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through the complete design of this particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The previously acquired skills are improved and developed. Students learn to design intersections.			
12Y1PM	Road Planning in MX Road Environment	KZ	2
Basic course of MX environment. Review of MX environment further to AutoCAD. Introduction to work with projects, standard procedures at design conduit. Model drawing, changes in database, triangulation, routing, design methods, grade line design, bottom layers and plain design, cross-sections editor.			
12Y1PP	Road Planning in MX Road Environment - Project Processing	KZ	2
Design and analysis of cross-roads. MXRenew - design model preparation, data conversion (dwg, dxf, dgn). Loading of points ASCII file. Use of VBA techniques. Work on particular performance jobs in designer teams, processing of project documentation.			
18Y1PK	Projection of Structures	KZ	2
Regulations and laws in project planning. Basic construction material and elements used in systems of structures. Loading of structures. Static function of basic structure elements. Construction systems. Concrete, steel and wooden constructions. Ground and foundation. Civil engineering and engineering structures. Transporting pipelines systems. Numerical analysis. of structures using computers.			
18Y1P1	Design of Structures 1	KZ	2
Deformations of beam elements, virtual work. Strength method. Frame analysis by strength method. Deformation method. Frame analysis by deformation method. Simple planar grid. Beam on elastic Winkler´s foundation. Calculation of beam on elastic foundation. Basics of the mathematical elasticity. Wall as a structural element. Plate as a structural member. Statical function of shells. Examples of calculations.			
12Y1PZ	Railway Lines Design	KZ	2
Lines' and stations' designing. Introduction to basic standards and regulations. Geometrical setting of track, longitudinal sections, cross sections. Stations and halts.			
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2
Methods of vehicle production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measurement. Transmission mechanism. General principles of engine diagnostics.			
12Y1PU	Organization Disposition of Railway Stations	KZ	2
Connecting station. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zone stations. Formation yards. Reserve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic railway network.			
16Y1PR	Industrial Design	KZ	2
15Y1PF	French as a foreign language, Improvers level	KZ	2
12Y1RS	Reconstruction and Maintenance of Roads	KZ	2
Sorting of roads, maintenance and reconstruction. Soil as building material. Construction of asphalt and concrete surface, its breakdowns. Road database. Tram trackss on the areal panels. Video recording.			
12Y1RZ	Railway Lines Reconstruction	KZ	2
Principles of track maintainance technology. Track maintainance machinery, superstructure and substructure building machinery and special rail vehicles. Degradation of track geometrical parameters - causes and elimination principles. Track sections and station tracks exclusion planning. Reconstruction timetable design of railway superstructure and substructure.			
15Y1RE	Oral Communication	KZ	2
16Y1RE	Control and Electronic Vehicle Systems	KZ	2
Elementary concepts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disadvantages, function. Conventional and hybrid drive control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control, safety, communication and comfort systems.			
16Y1RV	Railroad Vehicles Driving	KZ	2
Electric circuits in railroad vehicles. Railroad vehicle parametres regulation. Servicing and operation of the railroad vehicles. Rail traction technology. Solution of emergency situations. Searching and solving faults.			
21Y1RL	Air Traffic Control	KZ	2
Air traffic services and their distribution. Organization of air traffic, flow and capacity management. Airspace management. System support for aircraft flying through space. Flight plan, form, content. Separation of aircraft. Reports of air traffic services, form, content. Harmonization and integration of ATC. CFMU and its subsystems. Flexible use of airspace - FUA. RVSM, RNP. New trends in the area of ATC.			
12Y1SF	Road Software	KZ	2
20Y1SC	Sensors and Actuators	KZ	2
Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of mechanical, electro-magnetic, state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.			
15Y1SN	Sociology of Violence	KZ	2
11Y1SI	Transportation Software Engineering	KZ	2
Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implementation using formal techniques and practical usuage.			
12Y1SU	Road Management and Maintenance	KZ	2
Getting familiar with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented development of road network, short, medium and long-term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and repair methods are discussed in the classroom as well as investment activity in highway engineering.			
18Y1SN	Statically Nondeterminated Structures	KZ	2
Deformations of the beam element, virtual work. Strength method. Frame analysis by strength method. Deformation method. Frame analysis by deformation method. Simple planar grid. Beam on elastic Winkler´s foundation. Calculation beam on elastic foundation. Basement of the mathematical elasticity. Calculation of walls. Calculation of plates. Cylindrical shells. Examples of calculations.			
14Y1SP	Strategic Planning for E-Business	KZ	2

13Y1TC	Techniques of Travel Services	KZ	2
The aim, development and importance of tourism, outline of services in tourism with detailed analysis of transport services and means of transportation (air transport, waterway and sea, road and railway transport).			
16Y1TJ	Technological Quality Aspects	KZ	2
Certification and acreditation. Quality management. Standards of Quality Management and its application. Quality system creation. Tools and methods of quality improvement. Conformity verification. Environmental certification. Workplace certification. QMS integration. Classification, certification of products and producers.			
20Y1TE	Technology of Electronic Systems	KZ	2
Characteristics of the technological process, the relation of the design, construction and technology. General scheme of technological process. Principles and characteristics of basic electronic elements. Basic technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, diagnostics, reliability. Operational aspects of electronic systems.			
14Y1TD	Design Theory	KZ	2
In the course, the following aspects of design are treated: what are the characteristics of design problems; what is the structure of the design process; which forms of knowledge are used in design; which means of reasoning are used in design; what are the psychological structures used by designers; what is the role of external representations; and what is the nature and meaning of creativity in design? The theoretical background is based on two predominant notions of design: that of rational problem solving and reflection in action. Also, current trends in design theory (design as a social activity, design rationale, learning to design, computer support, and research by design) are treated in the course.			
11Y1TG	Graph Theory	KZ	2
Basic concepts and terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, minimum spanning tree, shortest path problem, Eulerian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence and optimization and algorithms for their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.			
18Y1TK	Theory of Structures	KZ	2
16Y1TR	Theory of Railroad Vehicle Driving	KZ	2
Legislation in railroad transportation. Technical condition of railroad vehicles and responsibility for their condition. Railroad traffic regulations. Railroad traffic safety. Signal systems. Radiocommunication system. Powering system. Power distribution.			
16Y1TZ	Transporting Devices	KZ	2
Flow of masses, material transport technology, loose material transport - conveyors with tractive elements, conveyors without tractive elements, transport of piece material - continual transport devices, cyclic transport devices, crane mechanisms, steel constructions. Vertical transport, transport in mines, long-distance conveyor belt transport.			
14Y1TI	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. Your own application programmed in PHP language.			
14Y1TF	Technical Documentation	KZ	2
In this course students will be introduced into photographic technique, photos editation and composition. In this course students will prepare 3 semestral projects, each of 10 - 20 photos, size 15 x 20 to 20 x 30 cm on given themas from the area of architektura, technical artefakt in its natural environment and still-life.			
21Y1ULE	Aircraft Maintenance	KZ	2
18Y1UK	Introduction of Rail Vehicles	KZ	2
Basic characteristics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion train and unit trains. Rolling and track resistance. Total running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle - hydromechanic, hydrodynamic and electric drive. Design concept rail vehicles and drive of wheel set.			
22Y1UN	Traffic Accidents Introduction	KZ	2
14Y1VB	Visual Basic	KZ	2
Applications developing for Visual Basic on MS-Windows .NET platform with use of .NET libraries or Visual Studio tools for graphic or console mode. Further, creation of installation utilities for these applications. Work with VBA at superstructures creation for MS-Windows applications supporting VBA.			
12Y1VC	Waterways and Shipping	KZ	2
Basic modes of transport. The position of water transport in the transport system of the Czech Republic and the EU. Advantages and disadvantages of water transport. Basic systems of waterways in Europe, 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, navigation rules of operation, navigation maps.			
12Y1VD	Water Transport and Transportation	KZ	2
Technologické možnosti vnitrozemské plavby. Základní rozdělení vnitrozemských plavidel a jejich základní parametry. Základy konstrukce a stavby plavidel. Efektivnost vodní dopravy a finanční náročnost výstavby infrastruktury vodní dopravy. Poptávka po vodní dopravě v České republice. Způsoby financování investičních a provozních nákladů infrastruktury vodní dopravy (vodní cesty, přístavy loděnice apod.). Námořní doprava obecně a v podmínkách ČR.			
18Y1VF	Numerical and Experimental Modelling in Transportation	KZ	2
Virtual work and variational principles in numerical modelling. Finite element method. Method of boundary elements and final strips. Application of programme systems for analysis of behaviour of structures in transport. Model similarity. Strain gauge measuring. Optical method. Mechanical properties and phenomena observed experimentally. Measuring of transport objects. Elaboration and processing of experimental values.			
14Y1VM	Development of Applications for Mobile Devices	KZ	2
Object oriented programming, Java programming language, development environment, operating system Android, development application - widgets, containers, threads, menu, permissions, services, GUI.			
15Y1VV	Origins and Development of Cars	KZ	2
Road development statistics in technical, economical, cultural, political and ecological context. Focus on vehicle technology, development of its technical level; history of different makes. Development of relevant legislature and transport infrastructure. Social and cultural aspects of transportation. History of unrealised or non-standard transportation solutions, alternative propulsion and fuels.			
21Y1ZT	ATM Systems	KZ	2
The course introduces classical and modern facilities, systems and technologies designed for ATS. Student obtains knowledge of technical principles and solutions of communication, navigation and surveillance systems used in aviation.			
17Y1ZC	Transportation in Tourism	KZ	2
Tourist trade - its branches and typology. Market and marketing. Transport services in terms of tourist trade, scheduled and other kinds of transport, relations between carriers and travel agencies. Specific transport services. Low cost airlines. Reservation and information systems. Modern kinds of transport and tourism. Rent a Car. Economical analysis.			
14Y1ZA	Basics of Animation and Visualization	KZ	2
3D Studio MAX environment, 2D and 3D primitives. Tools for transformation and transformation control, tools for figurative constructing, and primitives modifications. NURBS curves and surfaces, surface mapping and its types. Material editor, material of Standard kind, lights, cameras and their setup. Basic objects of Space Warp kind, creation of simple animation. Track View Editor. Output - rendering + rendering parameters setup.			

20Y1ZG	Fundamentals of Applied Computer Graphics	KZ	2
Creation of three-dimensional and two-dimensional scenes, working with professional and freeware software for creating 2D and 3D graphics. Learning and working with software for creation and processing of 2D and 3D graphics.			
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2
Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour schemes, models, principles of 2D and 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basics. Introduction to 2D and 3D graphics software.			
18Y1ZD	Basics of Two-Dimensional Design	KZ	2
The comprehensive teaching method includes primary creative principles and the introduction to the logic of free shapes in the plane. The "step-by-step"procedure passing from simple relatioships to more complex ones. The topics are closed by two-dimensional variations on basic conceptual elements and other tasks of the creative character.			
11Y1ZF	Introduction to Solid State Physics	KZ	2
Structure of solids, crystal lattice, Bloch function, Brillouin zones. Bend theory of solids. Dynamics of 1D lattice. Phonons. Thermodynamic properties of solids. Semiconductors. Magnetism.			
14Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2
Basics of work at products and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from 2D sketches. Import and export from and to another systems. Fundamentals of assemblies creation.			
16Y1ZR	Principles of Transportation Machinery Control	KZ	2
Combustion engine characteristics. Piston combustion engines - external and full- scale characteristics, factors affecting power and effectivenes. Regulation and control.			
18Y1ZT	Basics of Three-Dimensional Design	KZ	2
The design tasks focus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional elements and correct shape modelling.			
12Y1ZU	Principles of Urbanism	KZ	2
Survey on history of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial arrangement of settlements. Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.			
15Y1ZD	Radiation in Traffic	KZ	2
Health protection against radiation in traffic.			
16Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2
Vehicle, bus and motorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal cars, trucks, buses, motorbikes, legislation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical modelling in testing.			
12Y1ZV	Rail Vehicles	KZ	2

Name of the block: Jazyky
Minimal number of credits of the block: 8
The role of the block: J

Code of the group: J2B-B OD05/06 P+K
Name of the group: Jazyk 2.bl.bak.od 05/06 prez.+kombin.
Requirement credits in the group: In this group you have to gain 8 credits
Requirement courses in the group: In this group you have to complete at least 5 courses
Credits in the group: 8
Note on the group:

Code	**Name of the course / Name of the group of courses** ***(in case of groups of courses the list of codes of their members)*** *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
15JA2B	**Foreign Language - English (exam 2)**	ZK	0			J
15J1A5	**Foreign Language - English 5**	Z	2	0+2		J
15J1A6	**Foreign Language - English 6**	Z	2	0+2		J
15J1A7	**Foreign Language - English 7**	Z	2	0+2		J
15J1A8	**Foreign Language - English 8**	Z,ZK	2	0+2		J
15JF2B	**Foreign Language - French (exam 2)**	ZK	0			J
15J1F5	**Foreign Language - French 5**	Z	2	0+2		J
15J1F6	**Foreign Language - French 6**	Z	2	0+2		J
15J1F7	**Foreign Language - French 7**	Z	2	0+2		J
15J1F8	**Foreign Language - French 8**	Z,ZK	2	0+2		J
15JN2B	**Foreign Language - German (exam 2)**	ZK	0			J
15J1N5	**Foreign Language - German 5**	Z	2	0+2		J
15J1N6	**Foreign Language - German 6**	Z	2	0+2		J
15J1N7	**Foreign Language - German 7**	Z	2	0+2		J
15J1N8	**Foreign Language - German 8**	Z,ZK	2	0+2		J
15JR2B	**Foreign Language - Russian (exam 2)**	ZK	0			J

15J1R5	**Foreign Language - Russian 5**	Z	2	0+2		J
15J1R6	**Foreign Language - Russian 6**	Z	2	0+2		J
15J1R7	**Foreign Language - Russian 7**	Z	2	0+2		J
15J1R8	**Foreign Language - Russian 8**	Z,ZK	2	0+2		J
15JS2B	**Foreign Language - Spanish (exam 2)**	ZK	0			J
15J1S5	**Foreign Language - Spanish 5**	Z	2	0+2		J
15J1S6	**Foreign Language - Spanish 6**	Z	2	0+2		J
15J1S7	**Foreign Language - Spanish 7**	Z	2	0+2		J
15J1S8	**Foreign Language - Spanish 8**	Z,ZK	2	0+2		J

Characteristics of the courses of this group of Study Plan: Code=J2B-B OD05/06 P+K Name=Jazyk 2.bl.bak.od 05/06 prez.+kombin.

15JA2B	Foreign Language - English (exam 2)	ZK	0
15J1A5	Foreign Language - English 5	Z	2

The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
 Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
 Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.

15J1A6	Foreign Language - English 6	Z	2

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 Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
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15J1A7	Foreign Language - English 7	Z	2

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 Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
 Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.

15J1A8	Foreign Language - English 8	Z,ZK	2

The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
 Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
 Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.

15JF2B	Foreign Language - French (exam 2)	ZK	0
15J1F5	Foreign Language - French 5	Z	2

The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
 Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
 Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.

15J1F6	Foreign Language - French 6	Z	2

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15J1F7	Foreign Language - French 7	Z	2

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 Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
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15J1F8	Foreign Language - French 8	Z,ZK	2

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 Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
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15JN2B	Foreign Language - German (exam 2)	ZK	0

15J1N5	Foreign Language - German 5	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1N6	Foreign Language - German 6	Z	2
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15J1N7	Foreign Language - German 7	Z	2
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15J1N8	Foreign Language - German 8	Z,ZK	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15JR2B	Foreign Language - Russian (exam 2)	ZK	0
15J1R5	Foreign Language - Russian 5	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1R6	Foreign Language - Russian 6	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1R7	Foreign Language - Russian 7	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1R8	Foreign Language - Russian 8	Z,ZK	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15JS2B	Foreign Language - Spanish (exam 2)	ZK	0
15J1S5	Foreign Language - Spanish 5	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1S6	Foreign Language - Spanish 6	Z	2

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     Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
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15J1S7	Foreign Language - Spanish 7	Z	2

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    Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
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15J1S8	Foreign Language - Spanish 8	Z,ZK	2

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    Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
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List of courses of this pass:

Code	Name of the course	Completion	Credits
11MSAP	Modeling of Systems and Processes	Z,ZK	4
The course introduces mathematical methods and algorithms providing an essential tool for system analysis. Methods and algorithms represent context in which the systems are modelled and evaluated in continuous and discrete time domain. The Laplace transform, z-transform, and the recursive algorithms are introduced in order to understand solution of differential and difference equations, which are developed for system description. The course focuses on practical use of technical computing environment MATLAB.			
11MST	Mathematical Statistics	Z,ZK	2
Point estimation, properties of point estimators (consistency, unbiasedness, efficiency), methods of point estimation (method of moments, maximum likelihood metod). Bayes estimators. Testing of statistical hypothesis, critical values, choice of hypothesis and level of significance, observed level of significance (P-value). Goodness of fit test, independence test. Regression and correlation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linear regression, analysis of variance, multiple regression, the use of matrices in regression.			
11MZD	Measurement and Data Processing	KZ	2
General principles of detectors with special attention to traffic. Different technologies, data analysis, data preprocessing, analytical methods (decision trees, clustering or soft computing).			
11X15	Project 5	Z	2
11X16	Project 6	Z	2
11X17	Project 7	Z	6
11X18	Project 8	Z	10
11Y1LP	Linear Programming	KZ	2
Definition of the optimization problem of linear programming, application of the linear programming on economic and technical problems, normal traffic problems and traffic problems with constrains. Geometrical interpretation of linear programming problems, simplex method, duality principle.			
11Y1MM	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 program implementation. The outcom of the course is the ability to implement and solve basic tasks from the queue theory, graph theory and both free and constrained optimization.			
11Y1MS	Systems Modelling From Data	KZ	2
11Y1OS	Image systems	KZ	2
11Y1PE	Computer Controlled Experiments	KZ	2
Implementation of experiment consisting of designing, measurement method selection according to required results accuracy and available measurement devices, selection of computer-recorded parameters, data acquisition and results calculation. Evaluation of measurement method accuracy and result uncertainty.			
11Y1PV	Parametrical and Multicriterial Programming	KZ	2
Solution to the problem of linear programming with a parameter in objective function, on right sides and in the matrix of coeficients of linear constraints. Computation of efficient solution.			
11Y1SI	Transportation Software Engineering	KZ	2
Basic concepts of software engineering, ranging from domain analysis, requirement analysis and software architectures to analyses, design and implementation using formal techniques and practical usuage.			
11Y1TG	Graph Theory	KZ	2
Basic concepts and terminology of graph theory, graph representation. Problems of graph theory, problem instance. Graph search algorithms, trees, minimum spanning tree, shortest path problem, Eulerian path, bipartite graph matching, flow networks, circulations, critical path method, traveling salesman problem. Problem of existence and optimization and algorithms for their solving. Computational complexity, dealing with NP-complete problems, heuristic approach.			
11Y1ZF	Introduction to Solid State Physics	KZ	2
Structure of solids, crystal lattice, Bloch function, Brillouin zones. Bend theory of solids. Dynamics of 1D lattice. Phonons. Thermodynamic properties of solids. Semiconductors. Magnetism.			
12X15	Project 5	Z	2
12X16	Project 6	Z	2
12X17	Project 7	Z	6
12X18	Project 8	Z	10

12Y1C1	Designing Roads in Civil 3D I	KZ	2
The course is devoted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through the complete design of this particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The course also includes a basic explanation of the traffic building design in the real-life profession.			
12Y1C2	Designing Roads in Civil 3D II	KZ	2
The course is devoted to the traffic buildings design field, specifically the design of roads as such, by the means of a 3D software. Students go through the complete design of this particular linear building, from the initial situation, over the longitudinal section, to the model and work sections and the cubic capacity calculation. The previously acquired skills are improved and developed. Students learn to design intersections.			
12Y1DO	Transport Services of Settlements and Regions	KZ	2
12Y1HD	Traffic Noise	KZ	2
Acoustic introduction, basic terms, quantities. Basics of physiological acoustic, noise impacts on human body. Acoustic legislation, standarts, regulations. Creation acoustic climate in area, principles of urban acoustic, noise transmission, soundproofing. Types of noise sources in area. Determination of acoustic situation in the area of interest. Methodology of computing and measurement of transport noise. Acoustic studies, measuring protocol.			
12Y1HZ	Assesment of Impact of Investment Constructions on the Environment	KZ	2
Systematic research of the consequences of assumed intentions, projects , plans and political interests with regard to the environment; negative and undesirable effects in terms of E.I.A. (Environmental Impact Assessment) process.			
12Y1KB	Quality and Safety of Roads	KZ	2
12Y1KN	Combined Transportation	KZ	2
Combined transport strategy and legislation. Load units. Means of transport in combined transport. Combined transport systems. Transshipping areas. Multimodal logistic centres.			
12Y1MA	Marketing	KZ	2
12Y1PC	Pedestrian and Cycling Transport	KZ	2
Routes for pedestrians. Pedestrian crossings. Modifications for blind, dim-sighted and disabled people. Design of cycle routes network. Ways of cycle route layout and design parameters for cyclists. Separation of cyclists from other transport modes. Cycle tracks and its design - one way streets, reserved traffic lanes, bus stops, crossings with other transport modes, crossroads. Traffic signs and road marking for cyclists.			
12Y1PD	Assessment of Transport Structures	KZ	2
Assessment of transport structures, the EIA process. Multicriteria assessment methods, risk analysis, SWOT analysis. Landscape character, possibilities of its protection and assessment transport structures on the landscape. Rating fragmentation and landscape connectivity in the preparation of linear structures. Practical examples of assessment of traffic buildings on the environment.			
12Y1PJ	Road Planning in Civil 3D	KZ	2
Basic course for Autodesk Civil 3D. Work with fundamental commands, prezentation of differences between Civil and Autocad. Depiciton of terrain model, path, koridor, crossections.			
12Y1PM	Road Planning in MX Road Environment	KZ	2
Basic course of MX environment. Review of MX environment further to AutoCAD. Introduction to work with projects, standard procedures at design conduit. Model drawing, changes in database, triangulation, routing, design methods, grade line design, bottom layers and plain design, cross-sections editor.			
12Y1PN	Planning and design roads	KZ	2
12Y1PP	Road Planning in MX Road Environment - Project Processing	KZ	2
Design and analysis of cross-roads. MXRenew - design model preparation, data conversion (dwg, dxf, dgn). Loading of points ASCII file. Use of VBA techniques. Work on particular performance jobs in designer teams, processing of project documentation.			
12Y1PT	Road Planning in Civil 3D - Project	KZ	2
Advanced course for work with Autodesk Civil 3D. Enhancement of laying - out skills, count of cubage, latiny - out pipe lines in project, vizualization. Work with terrain and with its schneme, methods of terrain analyses. Team work on project.			
12Y1PU	Organization Disposition of Railway Stations	KZ	2
Connecting station. Passenger transport equipment. Freight transport equipment. Branch lines and railway traffic inside industrial company areas. Zone stations. Formation yards. Reserve stations. Technology of work in railway station with regard to its disposition. Railway station documentations in the Czech Republic railway network.			
12Y1PZ	Railway Lines Design	KZ	2
Lines' and stations' designing. Introduction to basic standards and regulations. Geometrical setting of track, longitudinal sections, cross sections. Stations and halts.			
12Y1RS	Reconstruction and Maintenance of Roads	KZ	2
Sorting of roads, maintenance and reconstruction. Soil as building material. Construction of asphalt and concrete surface, its breakdowns. Road database. Tram trackss on the areal panels. Video recording.			
12Y1RZ	Railway Lines Reconstruction	KZ	2
Principles of track maintainance technology. Track maintainance machinery, superstructure and substructure building machinery and special rail vehicles. Degradation of track geometrical parameters - causes and elimination principles. Track sections and station tracks exclusion planning. Reconstruction timetable design of railway superstructure and substructure.			
12Y1SF	Road Software	KZ	2
12Y1SU	Road Management and Maintenance	KZ	2
Getting familiar with ownership of roads in the Czech Republic and the administration of the road at the state and county level. It is presented development of road network, short, medium and long-term strategy of the Ministry of Transport. Maintenance of roads winter and summer, its requirements, specifics, possibilities and repair methods are discussed in the classroom as well as investment activity in highway engineering.			
12Y1VC	Waterways and Shipping	KZ	2
Basic modes of transport. The position of water transport in the transport system of the Czech Republic and the EU. Advantages and disadvantages of water transport. Basic systems of waterways in Europe, 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, navigation rules of operation, navigation maps.			
12Y1VD	Water Transport and Transportation	KZ	2
Technologické možnosti vnitrozemské plavby. Základní rozdělení vnitrozemských plavidel a jejich základní parametry. Základy konstrukce a stavby plavidel. Efektivnost vodní dopravy a finanční náročnost výstavby infrastruktury vodní dopravy. Poptávka po vodní dopravě v České republice. Způsoby financování investičních a provozních nákladů infrastruktury vodní dopravy (vodní cesty, přístavy loděnice apod.). Námořní doprava obecně a v podmínkách ČR.			
12Y1ZU	Principles of Urbanism	KZ	2
Survey on history of city and settlement building. Functional components and their mutual relations (working, living, recreation, transportation). Spacial arrangement of settlements. Types of towns or cities with a certain prevailing function, forms of their development. Brief overview of land-use planning.			
12Y1ZV	Rail Vehicles	KZ	2
13EFI	Enterprise Economics	Z,ZK	3
13PE	Operational Economy	Z,ZK	3

13X15	Project 5	Z	2
13X16	Project 6	Z	2
13X17	Project 7	Z	6
13X18	Project 8	Z	10
13Y1BC	Bourse, Stock, Investment Comanies	KZ	2
13Y1EA	Economic - Energetic Analysis of Land Transport	KZ	2
Vehicle traction systems, traction-energetic properties, laws of vehicle motion, assessment of energy demands, traction-energetic conceptions, technical, economical and social aspects.			
13Y1EP	Economics and Management of Postal Services	KZ	2
Special character of postal service and its impact on economic activity and company management. The position of the state as a regulator of liberalisation of postal service.			
13Y1EV	Public Sector Economy	KZ	2
Summary of basic economic findings, public goods - definition, public sector domains, state budget, taxes, public goods and externalities, externalities in transportation and their treatment, methods of assessment of public projects, transport projects and their funding, benefits of transport projects, the assessment of transport projects by the CBA method, HDM-4, CSHS.			
13Y1HG	Economic Geography	KZ	2
Basic concepts of economic geography. Economy and territorial relations. Rules of functioning and development of socio-economic spheres as the standpoint of understanding the world economy.			
13Y1KM	Crisis Management in Transportation	KZ	2
Crisis situations in transport. Risk of extraordinary events in relation to transport. Measures in the case of the state economic mobilisation in the sphere of transport and telecommunications. Organisation prerequisites for crisis solution in transportation. Technical means for liquidation of the consequences of extraordinary events in transport. Crisis management.			
13Y1MR	Managerial Decision-making	KZ	2
Solution of decision-making issues. Basic concepts of decision-making theory , rational logistics for solution of decision-making issues in organisations - from identification of decision-making problems to assesment of different variants. Procedures of multi-criteria decision-making, choice of decision-making methods under risk and uncertainty. Choice of a successful type of decision-making procedure.			
13Y1MS	Marketing Strategies	KZ	2
13Y1MZ	Management of the Environment	KZ	2
13Y1PD	The Participation of Transport in Tourist Trade Management	KZ	2
Tourist trade, transport, typology, market, marketing mix, transport service providers, contract cooperation, reservation systems, transport valuables, standard air carriers, low cost air carriers, IATA, ICAO, road, water, rail transport.			
13Y1PM	Personal Management	KZ	2
Basic overview of leadership issue from the viewpoint of an employee as well as a manager. The accent at the experience of basic situations through a simulation game. Systemic approach to the personal management, the assessment as a process, SWOT analysis, basic principles of personal management, theory and practice of motivation, managerial leadership styles.			
13Y1PM2	Personal Management 2	KZ	2
13Y1TC	Techniques of Travel Services	KZ	2
The aim, development and importance of tourism, outline of services in tourism with detailed analysis of transport services and means of transportation (air transport, waterway and sea, road and railway transport).			
14DAPS	Database and Presentation Systems	KZ	2
Database systems. E-R data model, relational data model, relational databases. Creation of a simple database application in the MS ACCESS environment. Creation of presentations by help of the PowerPoint environment - static snaps, simple animations, linking with other applications.			
14IFS	Information Systems	ZK	4
The subject is specialized in theoretic and practical design resources and principles and information systems (IS) creation and realization. Students get knowledge of various information systems terminology, classification and characterization (process, transaction, knowledge, metainformation, etc.), IS projecting procedures, data/information computer proceeding technology by help of data structures, database systems and models. They obtain view of IS and information technologies technical infrastructure trends, understand IS architecture principles and purposes, human role in IS and possibilities of IS evaluation. In brief, they acquaint themselves with creation principles, architecture and standards of the state information system.			
14IP1	Tutorial in Informatics 1	Z	2
The course involves introductory theoretical part (basic terminology from information technologies, information theory, computer terminology, data damage protection, theft and destruction, protection of computer network, security and legal problems relevant to information technologies, copyright and data protection law, computer criminality) and practical part according to the specialization.			
14IP2	Tutorial in Informatics 2	KZ	2
Knowledge systems. Expert systems and programmes based on knowledge, their architecture, knowledge representation, basic derivation and implementation methods. Interface for knowledge systems creation andt their design principles. Certainty and uncertainty in knowledge systems and different approaches to them. Common model of balances combination, fuzzy logics. Knowledge base design methods. Database and knowledge systems and their rules.			
14ISVD	Information Systems in Transportation	ZK	4
The subject's contents: information transmission processes, transmission security and reliability problems. Information protection, access control, authentification. Specification of database and expert systems in transportation and telecommunication. Problems of user comfort in relation to interaction human-machine security and reliability, optionally with functional properties of complex social and technical systems.			
14RD	Robotics in Transportation	ZK	3
The subject is focused on elementary components and their relations in robotics systems. Lessons starts with discussion of terms robot, industrial robot and follows acros terms of robot progress generations, mobile robots, robot kinematics, sensors, actuators, tactile recognition, transmissions, control systems, the role of arificial intellingence in robotics, robot groups.			
14SSS	Networks and Network Operating Systems	KZ	2
Acquaintance with operating and possibilities of computer networks and their services utilize is the subject target. Network topology, IP addressing, WAN networks, connection information (ping, trace route). Detailed familiarity with selected WIN NT, Novell, and Unix network environment in the second semester part. Introduction to server and workstations installation, users and groups creation, folder structure creation, disc mapping, users protection, folders security, network printing, network security.			
14TKMS	Telecommunication Systems	Z,ZK	4
14TLK	Telecommunications	Z,ZK	4
Telecommunication bases as cross-section branch create the subject's contents. During introduction, basic legislative conditions forming telecommunication market consistent with the EU rules (selected parts of legislative and sub legislative standards, regulation and regulation frame) and existing and perspective telecommunication services characteristics are lectured. In the second part, transmission and connecting system and terminal devices basic principles (analogue and digital systems, used modulations in view of PCM modulation			

and modulation predicative methods) and solution of modern connecting systems are explained. In the third part, network management principles from view of operational organization are briefly described.			
14X15	Project 5	Z	2
14X16	Project 6	Z	2
14X17	Project 7	Z	6
14X18	Project 8	Z	10
14Y1AP	Automatization in Mail	KZ	2
Technology of post shipment submission, transport, and delivery via physic and electronic way, virtual post operation. Technology of information transmission by electronic way, application of new information and communication technologies in an offer of permanent, mobile, and NGN e-communication networks, solutions to e-communication network interfaces, technological principles of end telecommunication devices.			
14Y1AV	Animation and Visualization	KZ	2
Advanced modifications and modeling of NURBS, Patch objects, selection of objects (according to filter and properties). 3D Studio MAX systems and Space Warp objects. Atmospheric and other effects, rendering filters, Motion blur, advanced animations, Motion panel. Modeling for morphing and animation, bone formation, animation using Inverse Kinematics.			
14Y1BE	Barrierless Transport	KZ	2
The issue of barrierless accessible public transportation in terms of architectural barriers and also for transportation-technological point of view. Students will gain theoretical knowledge of barrierless environment roads, railway stations, public transport stops, terminal buildings, vehicles, public transport, information and orientation systems and transportation technology. Theoretical knowledge will be supplemented by practical examples.			
14Y1GD	GIS and Maps Digitalization	KZ	2
Work with map sources and their creating. Maps digitalization and creation. Use and creation of other (non-graphic) information with use of databases. Interlinking external references with drawings containing maps.			
14Y1HW	Computer Hardware	KZ	2
Computer architecture, basics of logical circuits design and their realization using FPGA. In detail, description of computer architecture and separate parts designing - controllers, arithmetic and logical units, I/O subsystem.			
14Y1K2	Computer Aided Design 2 (AutoCAD, 3D, Map)	KZ	2
3D space handling, user setting creation, object sets creation, digitalization and filtering of map backgrounds, data work linked with external database and following map data analysis. Possibilities of raster backgrounds use.			
14Y1ND	Databases Design and Programming	KZ	2
Creation and sustaining of DB application, i.e. database design, basic graphical interface creation , and programming of requested application behaviour. Introduction to DB engine Jet, basics of programming in Visual Basic for Application language, DAO object models, and their use for programme-controlled database.			
14Y1NH	Databases Design and Programming	KZ	2
Students in this course will deepen their knowledge and skills in database design and learn the procedural extension of SQL, PL/SQL, which makes it possible to ensure data integrity on the level of the database engine.			
14Y1NP	Non-parametric 3D Modelling	KZ	2
Work in 3D non-parametricmodeller (AutoCAD) environment, scenes rendering, creation of planar and volumetric objects, user setup creation, object data creation, work with data connected with external database. Basic definition of work with lights, materials and reflexes. Models presentation.			
14Y1OL	Linux Operating System	KZ	2
Distributions. GNU/Linux system installation. X-window system. Rights - Users and Groups, ACL rights. Filesystems and file attributes. Programs and processes. Boot of OS, runlevels. Basic console commands. Configuration files. Managing SW system. Programs in graphic mode - tools for text, graphics, sound, video, communication. Services management. Principles of OS secure configuration. Remote administration.			
14Y1OS	Operating Systems	KZ	2
Operating systems, their function and architecture, process and memory management, virtual memory, threads, interprocess communication, synchronization, file systems, architecture of operating systems Win and Linux, start of PC and operating systems, networking, safety in OS, terminals in MS Win and Linux, batch files. Domains and workgroups in MS Win, users and their rights, configuration of networks, Windows registry, remote desktop.			
14Y1PG	Computer Graphics	KZ	2
Basic formats of graphic and possibilities of their editing and mutual conversion. Use of individual types according to character of work. Work with editing programs (within the user level scope) using layers, DPI, colors. Basics of digital photography, scanning and computer technology like monitors and graphics cards.			
14Y1PJ	C Programming Language	KZ	2
C programming language. Preprocessor, basics of the C language (data types, syntax, commands), functions, pointes, dynamical memory allocation, string, files, structures and unions. Implementations of abstract data types (FIFO, LIFO, list), programming techniques (sorting, searching, recursion), using bitwise oprerators.			
14Y1PM	Advanced Methods of Parametric Programming	KZ	2
Assemblies programming - tools and methodology of working subassemblies and assemblies, sheet metal parts modelling, welded assemblies, pipelines, and distribution lines. Photorealistic output rendering - physical and material properties, lighting sources. MKP - visual example.			
14Y1PVJ	Programming in Java	KZ	2
14Y1SP	Strategic Planning for E-Business	KZ	2
14Y1TD	Design Theory	KZ	2
In the course, the following aspects of design are treated: what are the characteristics of design problems; what is the structure of the design process; which forms of knowledge are used in design; which means of reasoning are used in design; what are the psychological structures used by designers; what is the role of external representations; and what is the nature and meaning of creativity in design? The theoretical background is based on two predominant notions of design: that of rational problem solving and reflection in action. Also, current trends in design theory (design as a social activity, design rationale, learning to design, computer support, and research by design) are treated in the course.			
14Y1TF	Technical Documentation	KZ	2
In this course students will be introduced into photographic technique, photos editation and composition. In this course students will prepare 3 semestral projects, each of 10 - 20 photos, size 15 x 20 to 20 x 30 cm on given themas from the area of architektura, technical artefakt in its natural environment and still-life.			
14Y1TI	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. Your own application programmed in PHP language.			
14Y1VB	Visual Basic	KZ	2
Applications developing for Visual Basic on MS-Windows .NET platform with use of .NET libraries or Visual Studio tools for graphic or console mode. Further, creation of installation utilities for these applications. Work with VBA at superstructures creation for MS-Windows applications supporting VBA.			

14Y1VM	Development of Applications for Mobile Devices	KZ	2
Object oriented programming, Java programming language, development environment, operating system Android, development application - widgets, containers, threads, menu, permissions, services, GUI.			
14Y1ZA	Basics of Animation and Visualization	KZ	2
3D Studio MAX environment, 2D and 3D primitives. Tools for transformation and transformation control, tools for figurative constructing, and primitives modifications. NURBS curves and surfaces, surface mapping and its types. Material editor, material of Standard kind, lights, cameras and their setup. Basic objects of Space Warp kind, creation of simple animation. Track View Editor. Output - rendering + rendering parameters setup.			
14Y1ZM	Fundamentals of parametric and adaptive modeling	KZ	2
Basics of work at products and parts creation. Sketch drawing by help of geometric relations, parametric dimensions, creation of adaptive models from 2D sketches. Import and export from and to another systems. Fundamentals of assemblies creation.			
15J1A5	Foreign Language - English 5	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1A6	Foreign Language - English 6	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1A7	Foreign Language - English 7	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1A8	Foreign Language - English 8	Z,ZK	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1F5	Foreign Language - French 5	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1F6	Foreign Language - French 6	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1F7	Foreign Language - French 7	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1F8	Foreign Language - French 8	Z,ZK	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1N5	Foreign Language - German 5	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			

15J1N6	Foreign Language - German 6	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1N7	Foreign Language - German 7	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1N8	Foreign Language - German 8	Z,ZK	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1R5	Foreign Language - Russian 5	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1R6	Foreign Language - Russian 6	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1R7	Foreign Language - Russian 7	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1R8	Foreign Language - Russian 8	Z,ZK	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1S5	Foreign Language - Spanish 5	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1S6	Foreign Language - Spanish 6	Z	2

The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
     Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
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15J1S7	Foreign Language - Spanish 7	Z	2

The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
     Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
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15J1S8	Foreign Language - Spanish 8	Z,ZK	2

The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
     Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
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15JA2B	Foreign Language - English (exam 2)	ZK	0
15JF2B	Foreign Language - French (exam 2)	ZK	0
15JN2B	Foreign Language - German (exam 2)	ZK	0
15JR2B	Foreign Language - Russian (exam 2)	ZK	0
15JS2B	Foreign Language - Spanish (exam 2)	ZK	0
15X15	Project 5	Z	2
15X16	Project 6	Z	2
15X17	Project 7	Z	6
15X18	Project 8	Z	10
15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
Fundamental legislative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health protection programmes, health insurance of home and foreign business trips, statistics, working practice.			
15Y1DP	Transportation Psychology	KZ	2
15Y1DU	History of Art and Society	KZ	2
History of art - definitions, terminology, division into periods. Architecture, fine arts, design. Situation in Central Europe, today in the Czech Republic. Stations, bridges, industrial buildings. Design of transport vehicles.			
15Y1DZ	History of Railway	KZ	2
Horse-drawn railways, steam railways, railway network development in the 2nd half of 19th century, regional railways epoch, railways of the "First Republic", electric traction, World War II railways, railway development in the 2nd half of 20th century, high-speed railway origins, railway lines closing, important long-distance train connections, railway lines construction, railway accidents, railway junctions. Excursions and projections.			
15Y1EH	European Integration within Historical Context	KZ	2
Versailles system, formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism. Little Entente, its principles and goals. Europe after Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and its consequences for Europe. New quality of French-German relationship - a driving power of starting European integration.			
15Y1FD	French Area Studies and Transportation	KZ	2
France - geography and regions, transport infrastructure. Paris and its sights, city public transport. Road traffic, motorways, railway traffic, TGV, air traffic, specialised terminology. French society and culture. Current political system. System of education, studying in France. Selected authors of French literature. French gastronomy.			
15Y1FJ	French as a foreign language	KZ	2
15Y1HD	History of City Mass Transport	KZ	2
History of city mass transport in the world, development of tram, bus and trolley-bus systems. History of transport networks in the world, current trends and developments 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 Slovakia.			
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
Basic knowledge of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these factors on health 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 a man. Practical examples from the field of transportation; relevant legislature.			
15Y1HL	History of Civil Aviation	KZ	2
Beginnings of flying, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of airports in the Czech Republic. World airports. Famous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era of aviation. Golden era of civil aviation. Modern era of civil aviation. Airline companies. Supersonic flying.			
15Y1IM	Intercultural management	KZ	2
15Y1LU	Logics of Engineer's Judgement	KZ	2
Logical structure of engineer's judgement, its propositional and predicative logical base. Solutions of logical tasks through the methods of truthfulness and semantic analysis charts. Venn's diagram method. Logical basis for network design for the solution of technical tasks.			
15Y1OC	Crucial Moments of Czechs	KZ	2
The contemporary view of crucial moments of the more than a thousand-year long history of western Slavs in Central Europe stressing the relations with bordering nations and with Europe as a whole. Formation and strengthening of the Přemysl state. The lands of the Czech Crown as a part of the Habsburgh monarchy. Political programmes in the 19th century and formation of Czechoslovakia. Disputes over the sense of Czech history. Changes of the power structure of Europe in the 20th century regarding the position of our lands.			
15Y1PF	French as a foreign language, Improvers level	KZ	2
15Y1RE	Oral Communication	KZ	2
15Y1SN	Sociology of Violence	KZ	2
15Y1VV	Origins and Development of Cars	KZ	2
Road development statistics in technical, economical, cultural, political and ecological context. Focus on vehicle technology, development of its technical level; history of different makes. Development of relevant legislature and transport infrastructure. Social and cultural aspects of transportation. History of unrealised or non-standard transportation solutions, alternative propulsion and fuels.			
15Y1ZD	Radiation in Traffic	KZ	2
Health protection against radiation in traffic.			
16X15	Project 5	Z	2
16X16	Project 6	Z	2
16X17	Project 7	Z	6
16X18	Project 8	Z	10
16Y1AV	Automobile Aerodynamics	KZ	2

16Y1KA	Vehicle and Motorcycle Design	KZ	2
Inputs for decission-making on vehicle concept type and character, description of project procedure. Vehicle construction and its computer back up. Possibilities of vehicle concepts, concept of power units. Legislative preconditions of vehicle projection, legislation. Preconditions of the construction of motorcycles, passenger vehicles, lorries, and buses.			
16Y1KJ	Railroad Vehicles	KZ	2
21st century mobility. Recent construction of railroad, city and intercity public vehicles, future and present situation, speed as a solution, maglev. From principle to design and construction; some realization in the world. Division and ways of drive, efficient electronics, changers, railroad traction, energetic calculation. Railroad safety signalling systems, railroad vehicle and infrastructure compliance (interference). Testing.			
16Y1KP	Car Body Design with Respect to Passive Safety of Vehicles	KZ	2
This subject concerns principles of car body design with respect to passve safety, deformation zones´ properties within accidents and legislative. Car body frames and integral body frame design, construction of apportionable body parts and their juncture, variation of forces in operation mode, bending and torsion, body dynamics, principles of controlled deformation, restraint systems, biomechanics of injury, injury mechanisms and injury seriousness.			
16Y1LZ	Vehicle Testing and Legislation	KZ	2
National and international legislation concerning technical roadworthiness of vehicles. Procedures of homologation. Types of testing according to the stage of development (prototype, type, homologation and operating life). Types of testing according to function (brakes, noise, exhalation, passive safety, driving properties, power). Types of testing according to compatibility (components, sets, units). Testing methodologies and ways of evaluation.			
16Y1MV	Material Application in Industry	KZ	2
16Y1NV	Configuration and Calculation of Vehicle Structures	KZ	2
16Y1PB	Vehicle Passive Safety	KZ	2
16Y1PD	Traction Elements of Vehicles	KZ	2
Principal characteristics of combustion engines. Principal characteristics of blade jet engines. Traction characteristics of surface devices output tranfer. Mechanical tranfer of output. Hydraulic transfer of output, hydrostatic, hydrodynamic with different coupling settings. Dieselelectric tranfer of output.			
16Y1PR	Industrial Design	KZ	2
16Y1PV	Operation, Construction and Maintenance of Vehicles	KZ	2
Methods of vehicle production. Vehicle maintenance. Vehicle diagnostics. Maintenence and repair plans. Engine maintenance and emission measurement. Transmission mechanism. General principles of engine diagnostics.			
16Y1RE	Control and Electronic Vehicle Systems	KZ	2
Elementary concepts of regulation. Tools for analytical solution, linear system description. Basic types of a regulator (PID), properties, advantages, disadvantages, function. Conventional and hybrid drive control. Electric drive. Vehicle communication bus (CAN, LIN, FlexRay, ISObus, KWP2000 protocole etc.). Vehicle electronic control, safety, communication and comfort systems.			
16Y1RV	Railroad Vehicles Driving	KZ	2
Electric circuits in railroad vehicles. Railroad vehicle parametres regulation. Servicing and operation of the railroad vehicles. Rail traction technology. Solution of emergency situations. Searching and solving faults.			
16Y1TJ	Technological Quality Aspects	KZ	2
Certification and acreditation. Quality management. Standards of Quality Management and its application. Quality system creation. Tools and methods of quality improvement. Conformity verification. Environmental certification. Workplace certification. QMS integration. Classification, certification of products and producers.			
16Y1TR	Theory of Railroad Vehicle Driving	KZ	2
Legislation in railroad transportation. Technical condition of railroad vehicles and responsibility for their condition. Railroad traffic regulations. Railroad traffic safety. Signal systems. Radiocommunication system. Powering system. Power distribution.			
16Y1TZ	Transporting Devices	KZ	2
Flow of masses, material transport technology, loose material transport - conveyors with tractive elements, conveyors without tractive elements, transport of piece material - continual transport devices, cyclic transport devices, crane mechanisms, steel constructions. Vertical transport, transport in mines, long-distance conveyor belt transport.			
16Y1ZG	Introduction into Applied Computer Graphics	KZ	2
Computer graphics, division and applications with emphasis on transport, including development and research. Colours, colour perception, colour schemes, models, principles of 2D and 3D generation, elementary algorithms for graphic data workout. Visualisation principles and tasks, technics, graphics and visualisation HW basics. Introduction to 2D and 3D graphics software.			
16Y1ZL	Vehicle Testing, Legislation and Construction	KZ	2
Vehicle, bus and motorbike costruction, aggregate computing, driving resistance, build and parameters of traction, constructional arrangement of personal cars, trucks, buses, motorbikes, legislation in the EU and in the world, technical legislation creation, testing methods, vehicle tests, accelerated tests, mathematical modelling in testing.			
16Y1ZR	Principles of Transportation Machinery Control	KZ	2
Combustion engine characteristics. Piston combustion engines - external and full- scale characteristics, factors affecting power and effectivenes. Regulation and control.			
17LGS	Logistics	Z,ZK	4
As an integrated managerial system of circular and transfer flows, logistics form new ways of partnership between production and business organization on one hand, and material and information carriers on the other hand. This subject is focused on: \r\n \r\n Concept of logistics, its development and principles\r\n Logistics systems units, logistics chain\r\n Logistics coupling, logistics methods and technologies, decision making in the logistics managerial systems\r\n Marketing as a basic tool in the logistics managerial systems, marketing survey, marketing offer, marketing evaluation techniques and completion marketing planning\r\n Status of transportation in the logistics system\r\n Information flows in the logistics chain\r\n			
17TEC	Technology of Transport	Z,ZK	4
Course deals with foundations of technology and management of transportation proceses. It is concerning mainly in way and organization transfer of persons and goods on the defined transport network by moving of transport means through the transport ways. It connects on knowledges of transport and handling tools from tke first period of study. \r\nStudy is concerning on these questions from technology of single sorts of transportation:\r\n \r\n most important terms of transfer process, particularities,and using indicators,\r\n making and using of basing technologic plans and tools,\r\n combination and integration of sorts of transportation into transport systems,\r\n using knowledges of system analyses and kybernetics in management of transportation process\r\n			
17X15	Project 5	Z	2
17X16	Project 6	Z	2
17X17	Project 7	Z	6
17X18	Project 8	Z	10
17Y1AF	Alternative Forms of Transportation Project Financing	KZ	2
There will be specifed such forms of financing in transportation, where the public sector body perform the final debtor, i. e. debtor payments come from its budget, but the final debtor is not a direct participant of the transaction and it is not the counterparty of the financial institute which provides the funding. Issue of securities as an alternative source of transportation project.			

17Y1BB	Banks and Banking	KZ	2
Banks and banking system. Balance sheet, income statement, bank's capital and its functions. Banking risks. Banking products. Interest types, pay-off and loan securing, financial loan products. Banking deposit products. Banking payment-clearing products. Financial intermediation, open-end and closed-end funds, collective investment schemes. Central bank and its role. Bank regulation and supervision. International banking.			
17Y1BC	Bourse, Stock and Investment Companies	KZ	2
17Y1DG	Transport Geography	KZ	2
Transport and reciprocal relations between economical development and the transport system. Arrangement of transport infrastructure as a result of long-term relationship. Railway, road, water, air and combined transportation, cooperatiom betwen them; services offered.			
17Y1DN	Transportation of Dangerous Goods	KZ	2
Classification, filling, packing, marking, sending, carrying and receiving dangerous goods, technical requirements and certification for transport means and drivers; safety requirements.			
17Y1DP	Transportation Policy and Strategy	KZ	2
Current state of transportation as a system; development of transport infrastructure, mobile technical platforms, transport law, transport financing, transport territory services, transport safety and security, social development and research - all in the context of EU.			
17Y1DZ	Transported Commodities Cognization	KZ	2
Useful features. Quality. Testing. Standardization. Features relevant for the transport. Packing. Stress. Protection of goods and damage prevention during the carriage. Optimization of the choice and effective transport means utility.			
17Y1HO	Heuristic Methods in Optimization Problems	KZ	2
Introduction and overview of heuristic methods, exact approaches for solving the Traveling Salesman Problem (TSP), Lagrangean approach, assignment problem, algorithm of Little, vehicle routing problem (VRP) - derivation from the TSP, classical heuristics solving the VRP, local search methods, Tabu Search method, genetic algorithms in location problems and its enhancements.			
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
Logistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transport process passengers and air cargo. Information systems in air transport. Global distribution systems.			
17Y1ND	Maritime Transportation	KZ	2
History and importance of the maritime transportation, theoretical discipline in maritime transportation, seafaring vessels, maritime ports and their utilization, inland logistic centre and maritime ports, transport corridors and link by maritime, river and rail transport I and II, global maritime corridors, logistics of maritime transportation, maritime transportation and smart containers, ITS in maritime transport.			
17Y1ZC	Transportation in Tourism	KZ	2
Tourist trade - its branches and typology. Market and marketing. Transport services in terms of tourist trade, scheduled and other kinds of transport, relations between carriers and travel agencies. Specific transport services. Low cost airlines. Reservation and information systems. Modern kinds of transport and tourism. Rent a Car. Economical analysis.			
17ZTD	Introduction to Theory of Transport	Z,ZK	4
18X15	Project 5	Z	2
18X16	Project 6	Z	2
18X17	Project 7	Z	6
18X18	Project 8	Z	10
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues. Anatomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation and nervous system. Structure and biomechanics of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured man and his treatment. Human joint prostheses. Protective means and traffic safety regulations.			
18Y1AN	Traffic Accidents Analysis	KZ	2
Analysis a road traffic accident as a physical process with its own regularities, quantities and applications. Basic types of accidents in terms of analytical approach. Preparing documents for analysis. Vehicle road-holding. Tyre adhesion. Conditions of car collisions. Analysis of wheel traces. Basic analysis of road traffic accident processes in space and time.			
18Y1D1	Dynamics of Routes and Vehicles 1	KZ	2
Theory and analysis of vibration of multimass systems. Dynamical model of vehicle and interaction with transport structure. Assessment of structure vibration and allowable criteria. Vibroisolation and absorbers of dynamical effects. Methods of experimental dynamics. FEM in structure dynamics.			
18Y1EM1	Experimental Methods 1	KZ	2
18Y1EM2	Experimental Methods 2	KZ	2
18Y1EV	Experimental Methods and Numerical Modelling	KZ	2
Physical properties measured in structural mechanics and dynamics. Principles of strain gauge measurement. Theory of photoelasticimetry, experimental methods in structural dynamics. Basic principles of numerical methods in structural mechanics and dynamics. Finite element method in statics and dynamics. Geometry development, discretization to elements, types of structural elements. Boundary conditions. Material models. Solution of problems.			
18Y1EZ	Experimental Methods and Testing of Constructions	KZ	2
18Y1MK	Finite Element Method and Its Application	KZ	2
Variational principles of solid mechanics used in finite element method. Types of finite elements and their applicability in different problems. Shape functions for selected elements. Direct generation, meshing of solid models. Boundary conditions and loads. Methods for solving large systems of algebraic equations. Preprocessor, solution pass, postprocessor.			
18Y1MT	Engineering Materials	KZ	2
Systematic overview of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and composites, attention is paid to biological materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's selection charts.			
18Y1NM	Numerical Modelling	KZ	2
Introduction to Finite Element Method computational software in general. Philosophy behind the ANSYS software package. Development of the model geometry. Modification and Boolean operations with basic geometrical primitives. Import and cleanup of geometry imported from other CAE systems. Definition of material properties. Element types. From geometrical model to finite element model (mesh generation). Loading and boundary conditions. Selected basic problems (statical analysis, mode shapes and frequency analysis). Introduction to nonlinear problems (contact analysis, plasticity).			
18Y1P1	Design of Structures 1	KZ	2
Deformations of beam elements, virtual work. Strength method. Frame analysis by strength method. Deformation method. Frame analysis by deformation method. Simple planar grid. Beam on elastic Winkler´s foundation. Calculation of beam on elastic foundation. Basics of the mathematical elasticity. Wall as a structural element. Plate as a structural member. Statical function of shells. Examples of calculations.			

18Y1PA	Computer Simulations and Road Traffic Accident Analysis	KZ	2
Analysis of traffic accidents by means of PC-Crash and Impulz Expert 2000 applications. Introduction to principles and mathematic models used in basic tasks solutions within computing systems. Vehicle movement simulation. Kinematic versus dynamic models. Basics of software use for analysis of road tolls and their reconstruction, model solutions of particular tasks, problems of boundary conditions.			
18Y1PK	Projection of Structures	KZ	2
Regulations and laws in project planning. Basic construction material and elements used in systems of structures. Loading of structures. Static function of basic structure elements. Construction systems. Concrete, steel and wooden constructions. Ground and foundation. Civil engineering and engineering structures. Transporting pipelines systems. Numerical analysis. of structures using computers.			
18Y1PN	Prevention of Road Traffic Accidents	KZ	2
Systematic accident causes with focus on education. Typical examples of unsuitable street pattern creating places of frequent road accidents. Car defects causing road accidents; possibilities to reduce the risk of accidents. Influence of speed. Pedestrians.Visibility.			
18Y1SN	Statically Nondeterminated Structures	KZ	2
Deformations of the beam element, virtual work. Strength method. Frame analysis by strength method. Deformation method. Frame analysis by deformation method. Simple planar grid. Beam on elastic Winkler´s foundation. Calculation beam on elastic foundation. Basement of the mathematical elasticity. Calculation of walls. Calculation of plates. Cylindrical shells. Examples of calculations.			
18Y1TK	Theory of Structures	KZ	2
18Y1UK	Introduction of Rail Vehicles	KZ	2
Basic characteristics and parameters rail transport systems - railway and urban transport. Basis driving mechanics rail vehicles - equation of motion train and unit trains. Rolling and track resistance. Total running resistance. Acceleration force. Analyzing driving cycle rail vehicle. Speed-power diagrams and characteristics rail vehicle - hydromechanic, hydrodynamic and electric drive. Design concept rail vehicles and drive of wheel set.			
18Y1VF	Numerical and Experimental Modelling in Transportation	KZ	2
Virtual work and variational principles in numerical modelling. Finite element method. Method of boundary elements and final strips. Application of programme systems for analysis of behaviour of structures in transport. Model similarity. Strain gauge measuring. Optical method. Mechanical properties and phenomena observed experimentally. Measuring of transport objects. Elaboration and processing of experimental values.			
18Y1ZD	Basics of Two-Dimensional Design	KZ	2
The comprehensive teaching method includes primary creative principles and the introduction to the logic of free shapes in the plane. The "step-by-step"procedure passing from simple relatioships to more complex ones. The topics are closed by two-dimensional variations on basic conceptual elements and other tasks of the creative character.			
18Y1ZT	Basics of Three-Dimensional Design	KZ	2
The design tasks focus first on the three-dimensional design in defined space. The next step is the synthesis of the internal space with three-dimensional elements and correct shape modelling.			
20BSS	Safety and Reliability of Systems	ZK	3
Basic theory of reliability and safety with special regard to information and automation equipments used in transportation safety systems. The aspects of reliability and safety systems analysis and synthesis are taken into account. A special interest is given to problems of human subject - artificial system (namely of the transportation nature) interaction reliability.			
20OPM	Optimization and Modeling	Z,ZK	3
The concept of decision making. Linear and non-linear optimization, Structural, dynamic and stochastic programming. Definition of optimization task, problems arising within the bodies of economics and technology that results in the task of linear programming, classical transportation problem, geometric interpretation of the tasks of linear programming, simplex method, their concept and techniques. Complex decision making based on the metodologies of the theory of games, decision making in the situation of uncertainty and risk, basic methods of the multicriteral decision making.			
20RSSD	Road Transportation Control Systems	Z,ZK	3
The content of the subject is the complex of the traffic knot, line or area control. In the introduction to this problem the basic conceptions from the branch are being introduced. The princip of control by means of light signalisation equipments, princip of signal picture proposal basic transport characteristic are being discussed. The technical means of knot control and the corresponding software, princips and properties of traffic detectors and models of transport flow, methods of line control of transport flow, specifications of areas control, central control, safety systems, modes of preferences in public transport and statistic component of transport (parking and parking systems etc) are always being gone through. The conception of the telematics is being introduced, its content and the spedific problems of traffic control in tunnels and their environment also discussed.			
20SANL	Systems Analysis	Z,ZK	4
Models and analyses of systemic features, means of detection of systemic characteristics, ways, decomposition, boundary and structure of systems, system behavior, decision-making processes, disgram characteristics, fuzzy sets/equations, formulation of states underindistinctly defined conditions, stability of systems.			
20SRDP	Vehicular Control Systems	ZK	3
The aim of the course is to introduce fundamental principles of feedback control and to demonstrate their applications in different transport systems. Students are acquainted with fundamental concepts of linear control theory and discrete control. The fundamentals of nonlinear, adaptive and optimal control and their applications in transportation are also explained.			
20TM	Telematics	Z,ZK	4
The subject Transport Telematics defines the basic principles of telematics in both theoretical and applicational areas. The user requirements are taking into account in telematics system decomposition into the subsystems, modules, functions and processes. By chaining of strong processes the telematics applications are defined. The system parameters for different telematics applications are determined e.g. on computer centers, telecommunication environment, etc. The main goal of subject Transport Telematics is to present the design methodology of telematics systems in such way that the user requirements are fullfiled and the solution in close to optimality.			
20X15	Project 5	Z	2
20X16	Project 6	Z	2
20X17	Project 7	Z	6
20X18	Project 8	Z	10
20Y1GI	Geographical Information Systems	KZ	2
Introduction to geographical information systems, creating real-world model, data models, storage of geographical data, methods of data entry, digitization, geographical coordinate systems, map projections, raster and vector representation, spatial algorithms and operations, and general transport roles in GIS.			
20Y1IC	Human Machine Interaction	KZ	2
Interaction of human-system. Methods and procedures for detecting decrease in attention. Used software and hardware tools. Bio-feedback, EEG measurements.			
20Y1K	Cybernetics	KZ	2
Fundamentals of information theory, dynamic systems, the principle of feedback, logical systems. Finite automata as a special case of dynamical systems. Relations between languages and automata.			
20Y1MK	Quality Tools in the Development Phase	KZ	2
20Y1NE	Designing and Evalution of Experiments in the Procedures and the Quality Operation of Vehicles	KZ	2

20Y1NS	Neural Networks	KZ	2
The basic structure and function of human brain and its main functional blocks and building elements - neurons. Models of neurons, modelling their networks and the basic paradigms of artificial neural networks.			
20Y1OI	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 components for users (timetables, maps, panels ...) and operators (cycles, location or current delay of vehicles, ...). The issue of tariff systems. Other examples of clearance systems (parking).			
20Y1SC	Sensors and Actuators	KZ	2
Principles of sensors and actuators. Basics of measuring theory and actuating influence. The respective technologies and construction principles. Sensors of mechanical, electro-magnetic, state (temperature, humidity), chemical and particle flow values. Electrical, pneumatic and hydraulic actuators and solid phase elements.			
20Y1TE	Technology of Electronic Systems	KZ	2
Characteristics of the technological process, the relation of the design, construction and technology. General scheme of technological process. Principles and characteristics of basic electronic elements. Basic technology of integrated circuits. Synthesis of integrated circuits. Higher levels of technology components. Measurement, diagnostics, reliability. Operational aspects of electronic systems.			
20Y1ZG	Fundamentals of Applied Computer Graphics	KZ	2
Creation of three-dimensional and two-dimensional scenes, working with professional and freeware software for creating 2D and 3D graphics. Learning and working with software for creation and processing of 2D and 3D graphics.			
20ZS	Railway Interlocking Systems	ZK	3
20ZT	Railway Interlocking	KZ	4
Monolitic end composite materials. Development of composite materials. Particular, fibre end laminar composite. Mechanics of composite materials.			
21X15	Project 5	Z	2
21X16	Project 6	Z	2
21X17	Project 7	Z	6
21X18	Project 8	Z	10
21Y1BLD	Safety in Aviation	KZ	2
21Y1L	Airports - Design and Operation	KZ	2
Introductory conditions for development of planning of runway systems and terminal facilities. Road construction, approximate analysis of RWY distance. Investment planning - operator activities. Certification of international airports - standard checking. Unexpected events and their handling.			
21Y1LC	Human Factor	KZ	2
Human performace & limitations, ability & competence, accident statistics, flight safety, basics of flight physiology, individuals & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & learning, theory & model of human error, biorhythms & sleep, stress, fatigue, working methods.			
21Y1LM	Aviation Meteorology	KZ	2
Structure of atmosphere. Vertical stratification. Pressures QNH, QFE, QFF, QME. Instability. Atmospherical fronts. Atmospherical precipitation, origin & categorisation. Turbulence. Forces producing wind. Cyclone and anticyclone. Gradient wind. Geostrofical and geocyclostrophical wind. Visibilities in air transport. Dangerous meteorological aspects. Meteorological maps. Climatology. Circulation.Intertropical front. Meteorological information.			
21Y1LP	Traffic and Requirements in Aviation	KZ	2
21Y1LR	Radio Technology in Aviation	KZ	2
Electric signals and the wave spectrum. Analog and digital modulations. Noises. Filters. Resonance circuits. Electromagnetic field. Electromagnetic wave propagation. Wave ranges in aviation, radiation and reception of electromagnetic field. Antennas in aviation, receivers and transmitters.			
21Y1PU	Aircraft Maintenance Technology	KZ	2
Basics of aircraft maintenance technology, legislation, aircraft release into operation, safety, equipment.			
21Y1RL	Air Traffic Control	KZ	2
Air traffic services and their distribution. Organization of air traffic, flow and capacity management. Airspace management. System support for aircraft flying through space. Flight plan, form, content. Separation of aircraft. Reports of air traffic services, form, content. Harmonization and integration of ATC. CFMU and its subsystems. Flexible use of airspace - FUA. RVSM, RNP. New trends in the area of ATC.			
21Y1ULE	Aircraft Maintenance	KZ	2
21Y1ZT	ATM Systems	KZ	2
The course introduces classical and modern facilities, systems and technologies designed for ATS. Student obtains knowledge of technical principles and solutions of communication, navigation and surveillance systems used in aviation.			
22X15		Z	2
22X16	Project 6	Z	2
22X17		Z	6
22X18	Project 8	Z	10
22Y1A1	Traffic Accidents Analysis 1	KZ	2
The subject analysis the road traffic accident as a physical process with its own regularities, quantities and their applications. Basic types of accidents in terms of analytical approach. How to prepare documents for analysis. Vehicle road-holding. Tyre adhesion. Conditions of car collision. Analysis of wheel traces. Basic analysis of road traffic accident processes in space and time. \r\n\r\nThis subject will be continued in the summer term by the "Prevention of road traffic accidents".			
22Y1A2	Traffic Accidents Analysis 2	KZ	2
The subject analysis the road traffic accident as a physical process with its own regularities, quantities and their applications. Basic types of accidents in terms of analytical approach. How to prepare documents for analysis. Vehicle road-holding. Tyre adhesion. Conditions of car collision. Analysis of wheel traces. Basic analysis of road traffic accident processes in space and time. \r\n\r\nThis subject will be continued in the summer term by the "Prevention of road traffic accidents".			
22Y1PN	Prevention of Road Traffic Accidents	KZ	2
Students will learn about systematic accident causes with emphasis on education, about typical examples of unsuitable street pattern creating places of frequent road accidents, about car defects causing road accidents and about possibilities to reduce the risk of accidents.\r\nThis course is an optional continuation of the subject "Analysis of road traffic accidents" in logical sequence: causes-analysis-prevention. That's why students who have completed the "Analysis of road accidents" in the winter term will be enrolled in preference.			
22Y1UN	Traffic Accidents Introduction	KZ	2

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