Study plan

Name of study plan: LO nav.prez.14/15

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Technology in Transportation and Telecommunications
Type of study: Follow-up master 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: 93
The role of the block: Z

Code of the group: XNDP 13/14
Name of the group: Diplomová práce (obory PL, DS, LA +[ID]) od 13/14
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 1 course
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
11XNDP	**Master Thesis** ***Evženie Uglickich***	KZ	18	0P+20C+70B	L	z
12XNDP	**Master Thesis**	KZ	18	0P+20C+70B	L	z
15XNDP	**Master Thesis**	KZ	18	0P+20C+70B	L	z
16XNDP	**Master Thesis**	KZ	18	0P+20C+70B	L	z
17XNDP	**Master Thesis**	KZ	18	0P+20C+70B	L	z
14XNDP	**Master Thesis**	KZ	18	0P+20C+70B	L	z
20XNDP	**Master Thesis**	KZ	18	0P+20C+70B	L	z
21XNDP	**Master Thesis** *Slobodan Stojić, Miloš Strouhal, Vladimír Socha, Peter Vittek, Iveta Kameníková, Petr Had, Petr Lukeš, Stanislav Pleninger, Petr Čeněk, ...*	KZ	18	0P+20C+70B	L	z
22XNDP	**Master Thesis** ***Luboš Nouzovský***	KZ	18	0P+20C+70B	L	z
23XNDP	**Master Thesis**	KZ	18	0P+20C+70B	L	z
18XNDP	**Master Thesis**	KZ	18	0P+20C+70B	L	z

Characteristics of the courses of this group of Study Plan: Code=XNDP 13/14 Name=Diplomová práce (obory PL, DS, LA +[ID]) od 13/14

11XNDP	Master Thesis	KZ	18
12XNDP	Master Thesis	KZ	18
15XNDP	Master Thesis	KZ	18
16XNDP	Master Thesis	KZ	18
17XNDP	Master Thesis	KZ	18
14XNDP	Master Thesis	KZ	18
20XNDP	Master Thesis	KZ	18
21XNDP	Master Thesis	KZ	18
22XNDP	Master Thesis	KZ	18
23XNDP	Master Thesis	KZ	18
18XNDP	Master Thesis	KZ	18

Code of the group: 4.S.NP 12/13

Name of the group: 4.sem.nav.prez.(obory DS, LA; [PL] + [ID]) od 12/13
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 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
15JBA4	**Language - English 4** *Barbora Horáčková, Markéta Musilová, Eva Rezlerová, Jan Feit, Jitka Heřmanová, Marie Michlová, Lenka Monková, Peter Morpuss, Markéta Vojanová*	ZK	2	0P+2C+10B	L	z

Characteristics of the courses of this group of Study Plan: Code=4.S.NP 12/13 Name=4.sem.nav.prez.(obory DS, LA; [PL] + [ID]) od 12/13

15JBA4	Language - English 4	ZK	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.Optional courses for certificates FCE, CAE.			

Code of the group: 1.S.NPLO 13/14
Name of the group: 1.sem.LO nav.prez.13/14
Requirement credits in the group: In this group you have to gain 26 credits
Requirement courses in the group: In this group you have to complete 10 courses
Credits in the group: 26
Note on the group:

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
17DLOG	**Transport Logistics**	Z,ZK	3	2+1	Z	z
15J2A1	**Language - English 1** *Barbora Horáčková, Markéta Musilová, Eva Rezlerová, Jan Feit, Jitka Heřmanová, Marie Michlová, Lenka Monková, Peter Morpuss, Markéta Vojanová, ...*	Z	2	0P+2C+10B	Z	z
17LOGR	**Logistics Chains**	Z,ZK	5	2+2	Z	z
17MAFI	**Principles of Managerial Finance**	KZ	3	2+1	Z	z
17MP	**International Carriage**	ZK	3	2+0	Z	z
17SIR	**System Analysis and Decision Making**	KZ	2	2+0	Z	z
17TSI	**Technology of Road Transport** *Michal Drábek*	KZ	2	2P+0C+8B	Z	z
17TZE	**Technology of Railway Transport**	ZK	2	2P+0C	Z	z
17TZEC	**Technology of Railway Transport - Exercise**	Z	2	0+2	Z	z
11TER	**Game Theory and Optimal Decision-Making** *Magdalena Hykšová* ***Magdalena Hykšová*** *Magdalena Hykšová (Gar.)*	ZK	2	2P+0C+8B	Z	z

Characteristics of the courses of this group of Study Plan: Code=1.S.NPLO 13/14 Name=1.sem.LO nav.prez.13/14

17DLOG	Transport Logistics	Z,ZK	3
Transport policy of European Union, Czech Republic, counties and municipalities. Vehicles, transport infrastructure and technology, management and information systems in transport and logistics, legal framework and the people in the transport system. Transport service, transport logistics optimization methodology, progressive transportation systems and the use of telematics applications in transport logistics.			
15J2A1	Language - English 1	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.			
17LOGR	Logistics Chains	Z,ZK	5
Logistics chain. Logistics system. Horizontal and vertical dimensions of logistics integration. The types of logistics chains. Logistics chain with continual flows, with interrupted flows, with synchronous flows. Management based on an independent method of planning. Management based on planing in closed circle with information feedback. Possible position of the decoupling point in a logistics chain. Chain effects. Case studies.			
17MAFI	Principles of Managerial Finance	KZ	3
Introduction of finance. Present value and alternative cost of capital. Investment efficienty evaluation. NPV, IRR. Capital assets pricing models, basics of portfolio theory. Bonds and stock price. Model with constant growth. Expected return and standard deviation of portfolio. Risk free return. Market portfolio. Securities line. Portfolio with maximal return. Short term finance. Cash flow management.			
17MP	International Carriage	ZK	3
The international transport organizations at government level, at enterprise level, implementation of international relations. Mission east-west UIC. Agreement on international carriage by rail SMPS and SMGS. Vienna convention on the law for the road, the Budapest convention on the contract of carriage, the UN convention on maritime transport of goods, international multimodal transport, the charter on transport, the foundations of EU law.			

17SIR	System Analysis and Decision Making	KZ	2
System approach, phases of solution. Decision processes, basic terms, classification, scales. Decision under risk and uncertainty, methods, applications. Decision with multiple objectives, weight determination. Multiple objective evaluation of variants. Vector optimization. Stochastic programming - active and passive methods. Expert methods, organisation, assessment. Advanced decision methods - fuzzy logic, genetic algorithms, chaos theory.			
17TSI	Technology of Road Transport	KZ	2
Legislative, operational, technical, logistic and safety conditions of road transport, basic transport technologies, special transport, international agreements, requirements on the parameters and specialization of transport, handling and loading/unloading means, maintenance, service and repairs of road vehicles, safety of road transport and choice of optimal transport unit.			
17TZE	Technology of Railway Transport	ZK	2
Track line capacity assesment, model operational situation with a system running time between IPT-nodes, calculation of traction energy savings compared with infrastructure costs for designing of fleeting crossing station, solving of capacity problem and blocking time in relation to train protection system, robustness of timetable, system concept of freight train paths, guidelines for centralised operational traffic control and management.			
17TZEC	Technology of Railway Transport - Exercise	Z	2
Modeling operational situation with a system running time between IPT-nodes, calculation of operation costs for diferent timetable concepts (operational costs, traction energy, engine and personal rosters).			
11TER	Game Theory and Optimal Decision-Making	ZK	2
Decision-making theory, utility theory. Explicit form games, backward induction. Normal form games. Antagonistic conflict, matrix games. Repeated games, evolutionary game theory. Cooperative games without transferable payoffs. Cooperative games with transferable payoffs (imputation, core, Shapley value, nucleolus). Applications of game theory above all in economics and transportation.			

Code of the group: 2.S.NPLO 13/14
Name of the group: 2.sem.nav.prez.LO 13/14
Requirement credits in the group: In this group you have to gain 22 credits
Requirement courses in the group: In this group you have to complete 8 courses
Credits in the group: 22
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
15JBA2	**Language - English 2** *Barbora Horáčková, Markéta Musilová, Eva Rezlerová, Jan Feit, Jitka Heřmanová, Marie Michlová, Lenka Monková, Peter Morpuss, Markéta Vojanová, ...*	Z	2	0P+2C+10B	L	z
17KVAD	**Quantitative Methods in Transport**	Z,ZK	4	2+1	L	z
23MAR	**Risk Analysis and Management**	Z,ZK	3	2P+1C+10B	L	z
17MGD	**Management of Transport Systems**	Z,ZK	3	2P+1C+8B	L	z
14MTSY	**Telecommunications Systems Management**	KZ	2	2+0	L	z
17MIS	**Managerial Information Systems in Transportation**	ZK	3	2+0	L	z
20SYDO	**System Transport Strategy**	KZ	3	2+1	L	z
11THRO	**Queuing Theory** *Šárka Voráčová* ***Šárka Voráčová*** *Šárka Voráčová (Gar.)*	ZK	2	2P+0C+8B	L	z

Characteristics of the courses of this group of Study Plan: Code=2.S.NPLO 13/14 Name=2.sem.nav.prez.LO 13/14

15JBA2	Language - English 2	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.			
17KVAD	Quantitative Methods in Transport	Z,ZK	4
Distribution tasks, models, methods, comparison, assignment tasks, models, methods, comparison, location tasks, discrete and continuous location, allocation, routing of vehicles, VRP, TSP, design fo networks and subnetworks in transportation systems, methods of network analysis in technology of transportation and logistics systems, principles of modelling.			
23MAR	Risk Analysis and Management	Z,ZK	3
Concept of risks and terms. Risk sources, definition of hazard, impacts and risks. Methods for identification, analysis, assessment and management of risks. Risk engineering targets and good engineering practice. Methods, tools and techniques for risk engineering. System of systems risk. Application of strategic and system approach for benefit of security and development. Territorial, emergency and crisis planning. Human factor - its role.			
17MGD	Management of Transport Systems	Z,ZK	3
Functions, processes and systems of management in transport, organisational structures, strategy, social responsibility, soft skills.			
14MTSY	Telecommunications Systems Management	KZ	2
New trends in the area of e-communication services and relevant ecommunications networks, conditions and tools to provide optional set of services of required parameters based on hierarchal architecture of service management system (TMN). Positioning of broadband services, convergence trends leading to NGN. Financial criteria and tools as an integral part of providing service.			
17MIS	Managerial Information Systems in Transportation	ZK	3
Communication and information as a base of managerial skills. Information technology and their influence to managerial, communication and information porcess in trasport company. Obtaining of processing and transmission information. Information systems security. Possible threats to information systems. Create students design of transport company information portal.			
20SYDO	System Transport Strategy	KZ	3
Complet overview of system sciences, system approach to information engineering, definition of system strategy, connections with scientific methodological base pf transportation; porccoesses of strategical thinkig, system of strategical management, application space of strategies with link to sustainable development, tools for mastering of strategies with support of geoinformatical enegineer technologies.			

11THRO	Queuing Theory	ZK	2
Discrete event process, definition, random distribution, and probability. Basic processes, process of revitalisation. Markov process, Markov models, Kendall classification, model M/M/1, models M/M/n. Non-markovian models, model M/C/n, models G/G/n. Models with continuous flow. Service net, examples of Petri net. Computer simulation.			

Code of the group: 3.S.NPLO 13/14
Name of the group: 3.sem.LO nav.prez.13/14
Requirement credits in the group: In this group you have to gain 25 credits
Requirement courses in the group: In this group you have to complete 7 courses
Credits in the group: 25
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
12DZP	**Transport and Environment**	Z	2	2P+0C	Z	z
17EDO	**Economics of Transport**	Z,ZK	6	2+2	Z	z
15JBA3	**Language - English 3** *Barbora Horáčková, Markéta Musilová, Eva Rezlerová, Jitka Heřmanová, Marie Michlová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Dana Boušová*	Z	2	0P+2C+10B	Z	z
23KRIO	**Crisis Management for Engineering Branches**	KZ	3	2P+0C	Z	z
14PPRP	**Computer Aided Project Management** *Marek Kalika Marek Kalika (Gar.)*	KZ	2	0P+2C	L	z
17PMD	**Project Management in Transportation**	Z,ZK	6	3+1	Z	z
11STS	**Stochastic Systems** *Šárka Voráčová, Evženie Uglickich, Natálie Blahitka, Michal Matowicki, Pavla Pecherková* ***Pavla Pecherková*** *Šárka Voráčová (Gar.)*	Z,ZK	4	2P+2C+14B	Z	z

Characteristics of the courses of this group of Study Plan: Code=3.S.NPLO 13/14 Name=3.sem.LO nav.prez.13/14

12DZP	Transport and Environment	Z	2
This course aims the impact of transport on environment. The accent is put mainly on noise and vibration, emission, barrier effect and energy demands. The noise measury is part and parcel of this course.			
17EDO	Economics of Transport	Z,ZK	6
Transport in the CR in the European and world context, transport funding in the CR, specifics of costing, legislation, functional efficiency of transport system, technical - economic characteristics of transport modes - forwarding ability, forwarding speed, economics of transport enterprise (microeconomics) - indicators according to modes of transport, economic approach.			
15JBA3	Language - English 3	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.Optional courses for certificates FCE, CAE.			
23KRIO	Crisis Management for Engineering Branches	KZ	3
Human system. Assets, terms, concept and safety management aims. Causes and consequences of disasters. Safety management. Crisis management-its aims, demands, roles, principles, specifics and comparidon with the EU and NATO. Organisational, personal, legislative, finance, material and technical provision. The IZS role. Planning. Protection of public and critical infrastructure. Problem solving.			
14PPRP	Computer Aided Project Management	KZ	2
What is the project? The basic terms a concepts of project management. Life cycle of the project and its phased approach. Analysis and specification of the assignment, activity definition, stages, objectives and measurability. Risk events and risk planning. Project change management during implementation. Preparation of the project outline (activities, restrictions, assignments, calendars etc.) Project planning and optimization - time, resources.			
17PMD	Project Management in Transportation	Z,ZK	6
Projects and project management, content and project leading, project process organization. Assessment criteria decision, technical and economical criteria. Criteria function and fulfillment of its components. Spatial development and decision making, building act. Financial instruments in project management, funding models, payment instruments. Spatial plans, EIA, selection proces, public commision.			
11STS	Stochastic Systems	Z,ZK	4
The subject deals with the problems of mathematical modelling of dynamical systems, estimation od these models and their utilization for prediction. The results are illustrated on practical transportation tasks. Mathematical theory roots from probability and mathematical statistics and they use the methods of the Bayesian probabilistic approach.			

Name of the block: Semestrální projekt
Minimal number of credits of the block: 13
The role of the block: ZP

Code of the group: XN1-4 14/15
Name of the group: Projekty nav.prez.1.-4.sem (obory PL + DS, LA, [BT]) od 14/15
Requirement credits in the group: In this group you have to gain 13 credits
Requirement courses in the group: In this group you have to complete 4 courses
Credits in the group: 13
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
11XN1	**Master Project 1**	Z	2	0P+2C+4B	Z	ZP
12XN1	**Master Project 1** *Zuzana Čarská, Dagmar Kočárková, Iva Šturmová, Kristýna Neubergová, Martin Jacura, Jan Kruntorád, Ondřej Trešl, David Vodák, Tomáš Javořík, ...*	Z	2	0P+2C+4B	Z	ZP
14XN1	**Master Project 1**	Z	2	0P+2C+4B	Z	ZP
15XN1	**Master Project 1**	Z	2	0P+2C+4B	Z	ZP
16XN1	**Master Project 1** *Přemysl Toman*	Z	2	0P+2C+4B	Z	ZP
17XN1	**Master Project 1** *Michal Drábek, Václav Baroch, Alexandra Dvořáčková, Veronika Faifrová, Eliška Glaserová, Rudolf F. Heidu, Tomáš Horák, Vít Janoš, Milan Kříž, ...*	Z	2	0P+2C+4B	Z	ZP
18XN1	**Master Project 1** *Václav Rada, Nela Krčmářová*	Z	2	0P+2C+4B	Z	ZP
20XN1	**Master Project 1** *Jiří Růžička*	Z	2	0P+2C+4B	Z	ZP
21XN1	**Master Project 1** *Slobodan Stojić, Vladimír Socha, Peter Vittek, Jakub Steiner, Terézia Pilmannová, Jakub Kraus, Andrej Lališ, Jakub Hospodka, Lenka Hanáková, ...*	Z	2	0P+2C+4B	Z	ZP
22XN1	**Master Project 1** *Michal Frydrýn, Karel Kocián, Luboš Nouzovský, Zdeněk Svatý, Jakub Nováček*	Z	2	0P+2C+4B	Z	ZP
23XN1	**Master Project 1**	Z	2	0P+2C+4B	Z	ZP
11XN2	**Master Project 2**	Z	2	0P+2C+8B	L	ZP
12XN2	**Master Project 2** *Zuzana Čarská, Dagmar Kočárková, Kristýna Neubergová, Martin Jacura, Jan Kruntorád, Ondřej Trešl, David Vodák, Tomáš Javořík, Pavel Purkart, ...*	Z	2	0P+2C+8B	L	ZP
14XN2	**Master Project 2**	Z	2	0P+2C+8B	L	ZP
15XN2	**Master Project 2**	Z	2	0P+2C+8B	L	ZP
16XN2	**Master Project 2** *Přemysl Toman, Josef Mík*	Z	2	0P+2C+8B	L	ZP
17XN2	**Master Project 2** *Michal Drábek, Václav Baroch, Alexandra Dvořáčková, Veronika Faifrová, Rudolf F. Heidu, Tomáš Horák, Vít Janoš, Milan Kříž, Olga Mertlová, ...* ***Vít Janoš*** *(Gar.)*	Z	2	0P+2C+8B	L	ZP
18XN2	**Master Project 2** ***Daniel Kytýř***	Z	2	0P+2C+8B	L	ZP
20XN2	**Master Project 2** *Jiří Růžička, Patrik Horažďovský*	Z	2	0P+2C+8B	L	ZP
21XN2	**Master Project 2**	Z	2	0P+2C+8B	L	ZP
22XN2	**Master Project 2** *Michal Frydrýn, Karel Kocián, Luboš Nouzovský, Zdeněk Svatý, Jakub Nováček*	Z	2	0P+2C+8B	L	ZP
23XN2	**Master Project 2**	Z	2	0P+2C+8B	L	ZP
11XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
12XN3	**Master Project 3** *Zuzana Čarská, Dagmar Kočárková, Martin Jacura, Jan Kruntorád, Ondřej Trešl, David Vodák, Tomáš Javořík, Pavel Purkart, Lukáš Týfa, ...*	Z	1	0P+4C	Z	ZP
14XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
15XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
16XN3	**Master Project 3** *Přemysl Toman, Josef Mík, Michal Cenkner, Josef Svoboda*	Z	1	0P+4C	Z	ZP
17XN3	**Master Project 3** *Michal Drábek, Václav Baroch, Alexandra Dvořáčková, Veronika Faifrová, Eliška Glaserová, Rudolf F. Heidu, Tomáš Horák, Vít Janoš, Milan Kříž, ...*	Z	1	0P+4C	Z	ZP
18XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
20XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
21XN3	**Master Project 3** *Miloš Strouhal, Terézia Pilmannová*	Z	1	0P+4C	Z	ZP
22XN3	**Master Project 3** *Michal Frydrýn, Karel Kocián, Luboš Nouzovský, Zdeněk Svatý, Tomáš Mičunek*	Z	1	0P+4C	Z	ZP
23XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
11XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
12XN4	**Master Project 4** *Zuzana Čarská, Dagmar Kočárková, Kristýna Neubergová, Martin Jacura, Jan Kruntorád, Ondřej Trešl, David Vodák, Tomáš Javořík, Pavel Purkart, ...*	Z	8	0P+4C	L	ZP
14XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
15XN4	**Master Project 4**	Z	8	0P+4C	L	ZP

16XN4	**Master Project 4** *Josef Mík, Michal Cenkner*	Z	8	0P+4C	L	ZP
17XN4	**Master Project 4** *Michal Drábek, Václav Baroch, Alexandra Dvořáčková, Veronika Faifrová, Rudolf F. Heidu, Tomáš Horák, Vít Janoš, Milan Kříž, Olga Mertlová, ... Václav Baroch (Gar.)*	Z	8	0P+4C	L	ZP
18XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
20XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
21XN4	**Master Project 4** *Slobodan Stojić, Miloš Strouhal, Vladimír Socha, Peter Vittek, Iveta Kameníková, Petr Had, Petr Lukeš, Stanislav Pleninger, Jakub Steiner, ...*	Z	8	0P+4C	L	ZP
22XN4	**Master Project 4** *Michal Frydrýn, Karel Kocián, Luboš Nouzovský, Zdeněk Svatý*	Z	8	0P+4C	L	ZP
23XN4	**Master Project 4**	Z	8	0P+4C	L	ZP

Characteristics of the courses of this group of Study Plan: Code=XN1-4 14/15 Name=Projekty nav.prez.1.-4.sem (obory PL + DS, LA, [BT]) od 14/15

11XN1	Master Project 1	Z	2
12XN1	Master Project 1	Z	2
14XN1	Master Project 1	Z	2
15XN1	Master Project 1	Z	2
16XN1	Master Project 1	Z	2
17XN1	Master Project 1	Z	2
18XN1	Master Project 1	Z	2
20XN1	Master Project 1	Z	2
21XN1	Master Project 1	Z	2
22XN1	Master Project 1	Z	2
23XN1	Master Project 1	Z	2
11XN2	Master Project 2	Z	2
12XN2	Master Project 2	Z	2
14XN2	Master Project 2	Z	2
15XN2	Master Project 2	Z	2
16XN2	Master Project 2	Z	2
17XN2	Master Project 2	Z	2
18XN2	Master Project 2	Z	2
20XN2	Master Project 2	Z	2
21XN2	Master Project 2	Z	2
22XN2	Master Project 2	Z	2
23XN2	Master Project 2	Z	2
11XN3	Master Project 3	Z	1
12XN3	Master Project 3	Z	1
14XN3	Master Project 3	Z	1
15XN3	Master Project 3	Z	1
16XN3	Master Project 3	Z	1
17XN3	Master Project 3	Z	1
18XN3	Master Project 3	Z	1
20XN3	Master Project 3	Z	1
21XN3	Master Project 3	Z	1
22XN3	Master Project 3	Z	1
23XN3	Master Project 3	Z	1
11XN4	Master Project 4	Z	8
12XN4	Master Project 4	Z	8
14XN4	Master Project 4	Z	8
15XN4	Master Project 4	Z	8
16XN4	Master Project 4	Z	8
17XN4	Master Project 4	Z	8
18XN4	Master Project 4	Z	8
20XN4	Master Project 4	Z	8
21XN4	Master Project 4	Z	8
22XN4	Master Project 4	Z	8
23XN4	Master Project 4	Z	8

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 6
The role of the block: PV

Code of the group: Y2-NP 14/15
Name of the group: PVP nav.prez.(DS,ID,LO) 14/15
Requirement credits in the group: In this group you have to gain 6 credits
Requirement courses in the group: In this group you have to complete 3 courses
Credits in the group: 6
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
23Y2AE	**Acoustics and Electroacoustics in Transportation**	KZ	2	2+0	Z	PV
12Y2BM	**Safety on The Local Roads**	KZ	2	2P+0C	Z	PV
23Y2BP	**Security Class** *Zuzana Kosová*	KZ	2	2P+0C	Z	PV
14Y2C1	**CATIA I**	KZ	2	2P+0C	L	PV
14Y2C2	**CATIA II**	KZ	2	2P+0C	Z	PV
14Y2CS	**Sensitivity of Systems**	KZ	2	2P+0C	L	PV
15Y2DN	**Transportation Psychology in German Speaking Countries**	KZ	2	2P+0C	L	PV
18Y2D2	**Dynamics of Transport Routes and Vehicles 2**	KZ	2	2+0	L	PV
17Y2FM	**Financing in Urban Mass Transportation** *Václav Baroch*	KZ	2	2P+0C	Z	PV
11Y2FX	**Functions of Complex Variable**	KZ	2	2P+0C	Z	PV
23Y2FB	**Physics for Security Branches**	KZ	2	2P+0C	Z	PV
18Y2FZ	**Physical foundation of materials' properties** *Jaroslav Valach*	KZ	2	2P+0C	L	PV
15Y2HS	**Road Transport History** *Eva Rezlerová, Zuzana Čarská*	KZ	2	2P+0C	L	PV
16Y2HP	**Vehicle Hygiene**	KZ	2	2P+0C	L	PV
12Y2IS	**Urban Networks**	KZ	2	2P+0C	Z	PV
14Y2JM	**One-Chip Controllers**	KZ	2	2P+0C	Z	PV
15Y2JH	**Job Hunting in English** *Lenka Monková*	KZ	2	2P+0C	Z	PV
17Y2KI	**Capital Investment in Transportation and Telecommunications**	KZ	2	2+0	L	PV
16Y2KV	**Car Body Design**	KZ	2	2P+0C	L	PV
12Y2KS	**Rail Transport in Settlements and Regions** *Miroslav Veliš*	KZ	2	2P+0C	Z	PV
12Y2KE	**Landscape Ecology** *Kristýna Neubergová*	KZ	2	2P+0C	Z	PV
21Y2LS	**Air Traffic Services**	KZ	2	2P+0C+8B	L	PV
11Y2LG	**Logics of Engineer's Judgement**	KZ	2	2P+0C	L	PV
15Y2MS	**Sociology for Managers** *Martina Šmidochová*	KZ	2	2P+0C	Z	PV
21Y2MK	**Marketing of Air Transport** *Peter Vittek* ***Peter Vittek***	KZ	2	2P+0C+8B	Z	PV
12Y2MH	**Measurement and Modeling of Traffic Noise**	KZ	2	2P+0C	L	PV
18Y2MP	**Finite Element Method And Its Application** *Radek Kolman*	KZ	2	2P+0C	L	PV
16Y2MK	**Quality Methods for Vehicles**	KZ	2	2P+0C	L	PV
12Y2MD	**Methods of Traffic Regulation and Prediction** *Zuzana Čarská*	KZ	2	2P+0C	L	PV
17Y2MS	**Microsimulation of Railway Operation** *Zdeněk Michl*	KZ	2	2P+0C	Z	PV
17Y2MM	**Mobility of Small Towns**	KZ	2	2+0	L	PV
21Y2MS	**Aerospace Engineering Simulation and Modelling**	KZ	2	2P+0C	Z	PV
12Y2MZ	**Modernization of Railway Lines and Stations** *Dagmar Kočárková, Miroslav Veliš*	KZ	2	2P+0C	L	PV
17Y2NU	**Cost and Benefits of Transport Systems**	KZ	2	2+0	L	PV
23Y2NE	**Design of Electronic Equipments**	KZ	2	2+0	L	PV
14Y2OP	**Object Oriented Programming in Transport**	KZ	2	2P+0C	L	PV
15Y2OZ	**Health Protection in Transportation and EU** *Eva Rezlerová, Petr Musil*	KZ	2	2P+0C	Z	PV
15Y2OF	**Specialised French for Transportation and Telecommunications**	KZ	2	2P+0C	Z	PV

16Y2PG	**Computer Graphics and Virtual Reality** *Stanislav Novotný, Petr Bouchner*	KZ	2	2P+0C	Z	PV
22Y2PS	**Traffic Accidents Computer Simulation and Analysis**	KZ	2	2P+0C	L	PV
15Y2PT	**Food in Transportation** *Eva Rezlerová, Petr Musil*	KZ	2	2P+0C	L	PV
15Y2PS	**Practical Spanish for Transportation, Management and Business**	KZ	2	2+0	Z	PV
21Y2PP	**Law and Operation in Air Transport** *Radoslav Zozuľák*	KZ	2	2P+0C+8B	L	PV
20Y2PR	**Prediction of time series**	KZ	2	2P+0C	L	PV
14Y2PI	**Process Information Systems in Transportation**	KZ	2	2P+0C	Z	PV
14Y2PJ	**C++ Programming Language**	KZ	2	2P+0C	L	PV
14Y2PH	**CAD Interface Programming**	KZ	2	2P+0C	L	PV
11Y2PM	**Programming in MATLAB** ***Šárka Voráčová***	KZ	2	2P+0C	L	PV
21Y2PL	**Operational Aspects of Aerodromes**	KZ	2	2P+0C	Z	PV
17Y2PR	**Carriage Processes**	KZ	2	2+0	Z	PV
17Y2PS	**Case Studies in Transportation**	KZ	2	2P+0C	Z	PV
15Y2PU	**Publications and Their Creation**	KZ	2	2P+0C	Z	PV
12Y2RD	**Realization of Transport Buildings** *Dagmar Kočárková, Martin Höfler, Tomáš Honc*	KZ	2	2P+0C	L	PV
17Y2RS	**Regional Transport - Mobility of Small Towns**	KZ	2	2+0	Z	PV
17Y2RZ	**Control of Transport Processes**	KZ	2	2P+0C	Z	PV
15Y2SP	**Seminar on Political Philosophy**	KZ	2	2P+0C	Z	PV
17Y2SJ	**Network Timetabling on the Railway** *Vít Janoš Vít Janoš (Gar.)*	KZ	2	2P+0C	L	PV
16Y2ST	**Special Technologies in Transport and Telecommunications**	KZ	2	2P+0C	L	PV
18Y2SD	**Reliability and Diagnostics, Experimental Methods** *Daniel Kytýř*	KZ	2	2P+0C	Z	PV
15Y2SR	**Stylistics and Rhetorics**	KZ	2	2P+0C	Z	PV
17Y2SG	**Systematic Creating of Railway Timetables**	KZ	2	2+0	Z	PV
17Y2SK	**Urban and Regional Rail Transport System**	KZ	2	2P+0C	L	PV
15Y2TS	**Technician and Contemporary Society** *Eva Rezlerová, Jan Feit*	KZ	2	2P+0C	L	PV
17Y2TP	**Technological Prognoses in Transportation and Telecommunication**	KZ	2	2+0	L	PV
20Y2TE	**Technology of Electronic Systems**	KZ	2	2P+0C	Z	PV
14Y2TU	**Telecommunications Systems and Multimedia**	KZ	2	2P+0C	Z	PV
16Y2TT	**Transportation and Building Technology and Equipment**	KZ	2	2P+0C	Z	PV
21Y2TL	**Development Trends of Aircraft Construction**	KZ	2	2+0	Z	PV
12Y2UD	**Sustainable Transportation**	KZ	2	2P+0C	L	PV
14Y2UI	**Artificial Intelligence**	KZ	2	2P+0C+8B	Z,L	PV
20Y2UA	**Artificial Neural Networks, Realization and Applications**	KZ	2	2P+0C	Z	PV
18Y2UB	**Accident Biomechanics and Safety**	KZ	2	2P+0C	L	PV
23Y2VZ	**Leadership and Human Resource Development**	KZ	2	2P+0C	L	PV
21Y2VA	**Selected Chapters of Aerodynamics**	KZ	2	2P+0C+8B	L	PV
23Y2VS	**Negotiation and Cooperation**	KZ	2	2+0	Z	PV
18Y2VC	**Computational Mechanics in Transportation** *Radek Kolman*	KZ	2	2P+0C	L	PV
23Y2VR	**Cope with Risks in Engineering Branches** *Danuše Procházková*	KZ	2	2P+0C		PV
12Y2VT	**High Speed Railways**	KZ	2	2P+0C	Z	PV
12Y2ZK	**Traffic Calming** *Zuzana Čarská*	KZ	2	2P+0C	Z	PV
23Y2ZM	**Intelligence Means and Methods** *Miloslav Kučera*	KZ	2	2P+0C	Z	PV

Characteristics of the courses of this group of Study Plan: Code=Y2-NP 14/15 Name=PVP nav.prez.(DS,ID,LO) 14/15

23Y2AE	Acoustics and Electroacoustics in Transportation	KZ	2

Basic acoustic quantities, properties of acoustic signals. Basic equations in acoustics, method of equivalent circuits. Acoustic impedance, damping. Acoustic actuators, loudspeakers. Acoustic sensors, microphones. Fundamentals of acoustic signal processing. Acoustics of closed spaces. Fundamentals of acoustics in solids. Acoustic problems in transport and their solutions.

12Y2BM	Safety on The Local Roads	KZ	2
Classification of road accidents rates, social looses. Collision points, diagrams. Tools and methods for safer road transportation. Crossroads from the point of view of safety. Psychological right of way. Roundabouts. Pedestrian transport, cyclists. Traffic lights coordination. Transport control and regulation.			
23Y2BP	Security Class	KZ	2
The most prevalent topics include data management, data and text mining applications, terrorism informatics, deception and intent detection, terrorist and criminal social network analysis, crime analysis, cyber-infrastructure protection, transportation infrastructure security, and information assurance, among others.			
14Y2C1	CATIA I	KZ	2
Fundaments of working with CATIA, making basic parts and bodies. Making 2D sketches, geometric stucture, parametric linking, making adaptive models from 2D sketches. Import and export of made parts and bodies. Making assemble and visualization.			
14Y2C2	CATIA II	KZ	2
Extension of basic course. Modeling compound bodies. Possibility of enumeration, comunications with other systems. Surface x solid bodies. Kinematic mechanism. Project making and project cooperation. Outputs of projects.			
14Y2CS	Sensitivity of Systems	KZ	2
Design of systems with defined reliability. The impact of changing parameters and subsystems within a system. System sensitivity computing, definition of sensitivity functions and matrices and their usability in system design.			
15Y2DN	Transportation Psychology in German Speaking Countries	KZ	2
Introduction into broader view of traffic problems with regard to the work with texts (Physics for drivers, abusing alcohol during driving, exhaustion, getting of driving licence, children in traffic, traffic accident, traffic psychology in the internet etc.)			
18Y2D2	Dynamics of Transport Routes and Vehicles 2	KZ	2
Analysis of forces in the vehicle and transport routes and their influence on the stress and strain components of the vehicle structure or behavior of traffic routes. Creation of dynamic models of vehicles and transport routes. Vibration of systems with a finite number of degrees of freedom. Methods of constant stiffness and constant compliance. Dynamic calculations of structural systems. Criteria for the admissibility of oscillation.			
17Y2FM	Financing in Urban Mass Transportation	KZ	2
UMT history and development in Prague and other cities in the world. Building and operation of public tram, bus, and trolleybus networks. Underground building and operation. Other UMT types. UMT development in small towns. Particularities of investment and operation financing of individual UMT types. Historic and present models of UMT financing. Transport inspection and blind passengers. Tourism & UMT. UMT typology & choice of optimum financing.			
11Y2FX	Functions of Complex Variable	KZ	2
Derivation of complex function, holomorphic function, complex exponential series, integration, Cauchy theorem. Taylor series, Laurent series of complex variable function. Basics of Laplace and Z-transformation.			
23Y2FB	Physics for Security Branches	KZ	2
Grounds of physics of substances and phenomena at extreme conditions. Grounds of rheology. Physics of Earth´s interior. Geophysics. Physics of atmosphere. Applications in dengineering branches directed to safety.			
18Y2FZ	Physical foundation of materials' properties	KZ	2
Atomistic models, lattice defects influence on properties of materials, stiffness, plasticity, strength, fracture, fatigue, creep, corrosion, effects of environment and loading on materials' behavior are the main discussed topics.			
15Y2HS	Road Transport History	KZ	2
Roads and road traffic in the Ancient Age, corridors of main mediveal pathways. Development of road traffic in the modern period, acceleration of road transport development during 1st part of 20th century. Development of road layout, geometric and construction layers. Beginning of modern road civil engineering. Development of road travelling in modern period. History of road intercections, bridges and traffic control, development of road signs.			
16Y2HP	Vehicle Hygiene	KZ	2
Emissions and ergonomy of vehicles and the influence on man and nature. National and international law related to the hygiene. Noise and vibrations - sources, creation, propagation, physical values, ways of measuring, prevention, elimination. Exhausts - creation, measurement, reduction, non-regular fuels and drives. Ergonomy - sitting, standing, control, operational reach. Condition - heating, ventilation, air-conditioning, filtration, tiredom.			
12Y2IS	Urban Networks	KZ	2
The importance and the position of UN as public and technical infrastructure / utillities, metodology of the UN master planning, of UN design, UN coordination, UN installation and UN operation (basic technical standards of UN, trenchless technologies for UN).			
14Y2JM	One-Chip Controllers	KZ	2
One-chip controllers architecture, embedded peripherals (counters, timers, converters, ports) and their utilisation. Practical tasks are programmed with the aid of AVR chips.			
15Y2JH	Job Hunting in English	KZ	2
The course provides a practical guide to applying for a job in English. The interview process is mapped out, with the course including skills practise for all the stages of this process, including specifics for job-hunting in English. Students will also be introduced to the English vocabulary and phraseology necessary for a successful interview.			
17Y2KI	Capital Investment in Transportation and Telecommunications	KZ	2
Financial market, investment desicion making - long term goals and investment strategies, long temr financing.			
16Y2KV	Car Body Design	KZ	2
Personal cars body, high-load car body, bus car body, and motorcycle as a construction set. Principles of design, production, testing and operation. Materials used for car body construction. Active and passive safety parts. Ergonomics, HMI, view out of the vehicle, operational extent, view behind the car. Conditioning tools, signaling function. Aerodynamics of the car body. Design and artistic design principles. Practical training.			
12Y2KS	Rail Transport in Settlements and Regions	KZ	2
Modernization and development of railway infrastructure in Czech Republic. Arrangement of railway networks and junctions. Suburban railway services. Network configuration and operation of metro systems. Network configuration and operation of tram systems. Special thematic lectures (rail transport in selected countries / regions).			
12Y2KE	Landscape Ecology	KZ	2
Landscape ecology. Landscape - definition, types, evolution. Landscape systems. Anthropogenic impacts on landscape. Methods using for evaluating landscape. Fractal geometry and its potential applications in landscape ecology. Landscape planning.			
21Y2LS	Air Traffic Services	KZ	2
Airspace structure in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, APP a ACC control. History of ATS at USA and Czechoslovakia. ATS - Model of financing. Training Systém of Air Traffic Controllers. Future development of ATS.			
11Y2LG	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.			
15Y2MS	Sociology for Managers	KZ	2
Sociological approach to a corporation. Corporation and its organization. Corporation and its running - human role and communication. Corporation, its culture and social system. Human's work position in free market economy. Corporate directorship, work groups, adaptation, strife, different roles and positions in corporation.			

21Y2MK	Marketing of Air Transport	KZ	2
The content of the course "Marketing in air transport" is the management of activities and processes using available marketing tools and processes for analysis, strategy development and implementation of sales of goods and services in the aviation industry. In addition to the theoretical foundations of marketing, the lectures present systems of market, competition and product analysis, creation of marketing strategies and planning.			
12Y2MH	Measurement and Modeling of Traffic Noise	KZ	2
Theoretical introduction to noise from traffic. Noise from rail transport. Noise from road traffic. Measurement and calculation of noise from rail traffic. Measurement and calculation of noise from road traffic. Modelling of traffic noise in the CADNA A.			
18Y2MP	Finite Element Method And Its Application	KZ	2
Basic mathematical formulation of the Finite Element Method. Direct Stiffness Method used in structural mechanics. Evaluation of stiffness matrices for the basic elements using variational principles. Element formulation (bar and beam elements, CST, LST, quadrilateral, tetrahedral and brick elements). Natural coordinates, natural shape functions and isoparametric representation. Numerical integration. Introduction to dynamics. FEM programming.			
16Y2MK	Quality Methods for Vehicles	KZ	2
Quality management methods list, customer data acquisition and analysis of customer requirements, QFD, DFM, DFA, DFS. FMEA (Failure mode effect analysis). Elements of parallel (team) design.			
12Y2MD	Methods of Traffic Regulation and Prediction	KZ	2
Basic ways of traffic prognosis, traffic prognosis for large area (calculation of future traffic volumes, calculation of future traffic volumes between areas (analogical and synthetic methods, modal split, traffic distribution to road network). Shock wave in traffic flow. Service levels and their traffic volumes. Acceleration noise.			
17Y2MS	Microsimulation of Railway Operation	KZ	2
Introduction to the characteristics of simulation tools, creation of a simulation model of railway infrastructure, verification of a specific operational concept on the given infrastructure, adaptation of the infrastructure model and modification to the infrastructure to allow the implementation of the proposed operational concept. Stability tests and evaluations. Evaluation of sensitivity of the operational concept to delays.			
17Y2MM	Mobility of Small Towns	KZ	2
Basic terms, networks of railway and bus lines, alternative forms of regional transport, influence in regional transport in vicinity of big cities, solutions of passenger and freight transport in regions, activities related to regional transport, passenger transport safety in regions.			
21Y2MS	Aerospace Engineering Simulation and Modelling	KZ	2
The course is designed as a set of exemplary tasks and problems based on practical aviation issues. The university degree mathematic skills and software applications usage will be necessary for successful figuring out. Both simple tasks, where students create own model themselves (e.g. in Matlab), and more complicated problems where professional developed tools will be applied.			
12Y2MZ	Modernization of Railway Lines and Stations	KZ	2
Line speed increasing. AGC and AGTC Agreement. AGC and AGTC railway network. Principles of modernization (conceptual papers, definitions of basic concepts, individual principles). Track geometrical characteristics on modernized railway lines. Superstructure and substructure on upgraded lines. Designing of railway stations. Bridges and tunnels. Development and realization of projects. Technical description of the tranzit corridors.			
17Y2NU	Cost and Benefits of Transport Systems	KZ	2
Transport systems and their history, externalities and their internalization, public goods, transport funding, assessment of transport constructions and systems by the methods CBA, MCA, CA, transport taxation, influence of transport constructions on public budgets, relation of transport and economic growth, importance of transport in area, spatial economy.			
23Y2NE	Design of Electronic Equipments	KZ	2
Characteristics and realization of semiconductor electronic components, basic electronic devices division. Sources, input and output elements, process elements. Realization of basic circuits - amplifiers, data converters. Analog electronic systems, analog computing. Switching elements, logic circuits, FPGA implementation. Single chip microcomputers and microcontrollers. Design (ORCAD), construction of electronic devices.			
14Y2OP	Object Oriented Programming in Transport	KZ	2
Class, object, encapsulation, inheritance, polymorphism, templates, retyping, stream, exceptions, repository, collections, virtual methods and classes. Problem cases wil be chosen from microscopic simulation system, discrete event simulation, celular automata simulation and virtual life area.			
15Y2OZ	Health Protection in Transportation and EU	KZ	2
Health protection in transportation in CR in the past and present. Conditions before 1989 and after, current legislature, future prospects. Harmonisation of legislation with other EU members. Fundamental principles of health protection and support in selected EU countries.			
15Y2OF	Specialised French for Transportation and Telecommunications	KZ	2
Basic transportation (public transport, railway, air, road and ship transport) and telecommunications terminology. Special focus on independent speaking and writing skills.			
16Y2PG	Computer Graphics and Virtual Reality	KZ	2
Principles of creation and processing of bitmap and vector 2D graphics, 3D virtual scenes and algorithms used for their computerized processing. Adopting skills of work with professional and freeware tools for creation and processing of 2D, 3D and interactive graphics, and basics of programming language VRML and graphic libraries (OpenGL).			
22Y2PS	Traffic Accidents Computer Simulation and Analysis	KZ	2
Vehicle dynamics simulation, multi body systems and vehicle active safety systems, vehicle slipping, external influence on virtual model, crash tests evaluation, single-track vehicle, vehicle passangers, pedestrian, traffic accident simulation and analysis.			
15Y2PT	Food in Transportation	KZ	2
The nutrition policy. Interaction transportation and foodstuffs. The health risks. Hygienic safeguard. The practical examples from the Czech Republic and from the world. The issues of dining cars, work trains and other railroad equipment. Legislation.			
15Y2PS	Practical Spanish for Transportation, Management and Business	KZ	2
Development of communication skills, training of correct written expression of formal character, basic technical vocabulary, cultural specifics of the Spanish speaking countries. Terminology of transport and commerce, business letter.			
21Y2PP	Law and Operation in Air Transport	KZ	2
Development of aviation law. International conventions on civil aviation. International organisations and including of the Czech Republic in these organisations. EU legislation and civil aviation. Execution of state administration and state supervision in matters of civil aviation, in accordance with Act No. 49/1997 Col. Facilitation. Responsibilities of air carriers for passengers, luggage and cargo. The safe transport of dangerous goods.			
20Y2PR	Prediction of time series	KZ	2
Introduction to time series prediction, meaning of prediction, basics of quantitative prediction. Methods for predictive quality evaluation, descriptive statistics, MAE, MAPE, RMSE, naive prediction, prediction for general formula of loss function. Calculation and programming environment R. Regression models, basics of linear regression, simple regression. Multiple regression, statistical tests of linear dependence, selection of input variables.			
14Y2PI	Process Information Systems in Transportation	KZ	2
Introduction and detailed usage of transport information systems, e.g. EFC, ePurse and transport check-in systems for public transport with focus on architecture of this system and SOA (Service Oriented Architecture). Inforamtion systems implementation and operations description in the Czech Republic (technical and process) included lectures and visits.			

14Y2PJ	C++ Programming Language	KZ	2
OOP philosophy and basics of C++ programming language. Class, object, constructor, destructor, inheritance, abstract class, virtual methods, exceptions, streams, method and operator overloading, abstract data type implementation in C++.			
14Y2PH	CAD Interface Programming	KZ	2
Introduction to CAD interface programming techniques with the help of LIST and VBA programming languages. Possibilities of proper objects (commands), dialogues, interfaces, and applications creation in CAD systems. Programming of cooperation with other applications (databases, spread-sheets).			
11Y2PM	Programming in MATLAB	KZ	2
To explain the principle of modelling and simulation, description of Matlab environment and its settings, optimization and program code debugging, data fitting and designing GUI in Matlab.			
21Y2PL	Operational Aspects of Aerodromes	KZ	2
Operational aspects of aerodromes. Location of aerodrome and orientation of runways. Requirements for apron. Capacity of airports runways and terminals. Operation under winter conditions. Firefighting units. Protection against unlawful interference. Local transport connection. Environmental protection.			
17Y2PR	Carriage Processes	KZ	2
Carrier´s commercial liability. Ordering and contracting of carriage. Intergovernmental conventions on international carriage. Contract on passenger carriage. Contract on freight carriage. Forwarding contract. Liability and rights based on carrying contract. Contractual carrying conditions. Guarantee of carrying contract by more operators. Internationally accepted commercial terms (INCOTERMS). Tariff and calculation of prices.			
17Y2PS	Case Studies in Transportation	KZ	2
Simulation expert discussions on the topics - the impact of transport on the environment and the economy, energy, construction of transport infrastructure etc. The students will each lesson presented one current and the real issue, which solutions will have to think of each other. Each of them will be represent another role (public authorities, investors, carrier representative interest groups, residents, etc.).			
15Y2PU	Publications and Their Creation	KZ	2
Scientific texts types. Footnotes and references. Exploration of facts. Quotations. Formal document layout. Working with information databases. Typographic principles. Typographic editors - MS Word, Tex/LaTeX. Practical creation of simple scientific documents.			
12Y2RD	Realization of Transport Buildings	KZ	2
Transport Buildings Types. Project Documentation Types. Building Code. Land Permission and Building Permission Process. Building Process. Project Economics. Project Management.			
17Y2RS	Regional Transport - Mobility of Small Towns	KZ	2
Basic terms, networks of railway and bus lines, alternative forms of regional transport, influence in regional transport in vicinity of big cities, solutions of passenger and freight transport in regions, activities related to regional transport, passenger transport safety in regions.			
17Y2RZ	Control of Transport Processes	KZ	2
Theoretical bases, transport system, decomposition, factors influencing control, quality diagnosis, methods of control, systems for decision making support, risk of decision making, telematics.			
15Y2SP	Seminar on Political Philosophy	KZ	2
Interpreting of philosophical texts, view of society, state and their system of government.			
17Y2SJ	Network Timetabling on the Railway	KZ	2
Timetable samples. Capacity allocation, technological intervals in railway operation. Rules and regulations of train paths, running times, time adds and supplements. Rolling stock circulation planning. Rules of train-diagramm creating. Timetables for more service-levels on the line. Construction slot conflicts between passenger- and freight transport. Network line relations and waiting times, timetables for lines under construction.			
16Y2ST	Special Technologies in Transport and Telecommunications	KZ	2
Micro, nano and special technologies, electric arc and its applications, plasma technologies, dipping, beam technologies, electron beams technology in roduction and mending of vehicles, laser and laser technologies, soldering, gluing, ultrasound, diffusion, friction and explosion technologies, micro stoves, gas.			
18Y2SD	Reliability and Diagnostics, Experimental Methods	KZ	2
The course is focused on theoretical background and practical experience in the field of reliability of constructions, implementation of diagnostic procedures for the detection of material defects and determination of residual life of structures. For this purpose, non-destructive methods of experimental mechanics (e. g. strain-gauge measurement, photoelasticimetry) and optical methods, including electron microscopy, will be used.			
15Y2SR	Stylistics and Rhetorics	KZ	2
Basic skills of oral and written expression as a means of human communication. Basic information about speech, articulation, oral and written language. Teaching to speak well-vocal organs, voice training. Language semantics, language syntactic and the pragmatic aspect. Creative thought and its oral and written expression. Practice - cultivating the skills of speech.			
17Y2SG	Systematic Creating of Railway Timetables	KZ	2
Timetable samples. Capacity allocation, technological intervals in railway operation. Rules and regulations of train paths, running times, time adds and supplements. Rolling stock and crew circulation planning. Rules of train-diagramm creating. Train-diagramm construction in case of more service-levels on the line.			
17Y2SK	Urban and Regional Rail Transport System	KZ	2
Factors influencing transport demand, modal-split, traffic flows distribution on public transit network. Line network optimization and configuration. Timetable designing and evaluation accenting integrated periodic timetable. Rolling stock circulation, staff and crew services optimization and their order to rosters. Framework legislation, non-barrier effects and preference of public transport. Marketing.			
15Y2TS	Technician and Contemporary Society	KZ	2
Why to take off a hat in a room and open a door for a lady, are there simple solutions, science vs belief, do we need to know or is it enough to turn on a PC, it must be true - it´s on the Internet and in newspapers, what are the sights for, interest in public affairs - a hangover from the past?			
17Y2TP	Technological Prognoses in Transportation and Telecommunication	KZ	2
The students will be analysing both the general forecasting studies (NASA, CIA) and forecasting in the segment of transport and telecommunications.			
20Y2TE	Technology of Electronic Systems	KZ	2
Principle technologies for an effective operation of electronically controlled systems. Maintaining, meassuring, optimization of safety and reliability of complex systems. Semiconductor technologies, printed circuits, assembly operations, interconnection and repairs technologiesusers and operators.			
14Y2TU	Telecommunications Systems and Multimedia	KZ	2
New trends in telecommunications namely applied in transport solutions, identification and quantification of telecommunications networks and services performance based on redundant architecture, provissioning of guaranteed service quality, two generations of the handover principles.			
16Y2TT	Transportation and Building Technology and Equipment	KZ	2
Transportation and building technology and equipment.Transport of solid and mass material, soil and rock above all. Highway and underground constructions. Transport surface vehicles, description and construction features, delivered mass calculation, economy of operation. Technics and technology of underground constructions. Terrestrial vehicles operation management methodology (ultrasound, laser, GPS, total stations).			
21Y2TL	Development Trends of Aircraft Construction	KZ	2
Historical and nowadays trends. Future scenarios. Space industry. Economy.			

12Y2UD	Sustainable Transportation	KZ	2
Sustainable development, definition, history, legal framework. Sustainable development indicators. Sustainable transportation, definition, history, legal framework. Practical application of sustainable development theory, case study.			
14Y2UI	Artificial Intelligence	KZ	2
History of artificial intelligence, knowledge, its representation including frames, state space search, constraints, genetic algorithms, machine learning.			
20Y2UA	Artificial Neural Networks, Realization and Applications	KZ	2
History of neural networks. Basic principles. Comparing the structure of a natural and an artificial neuron. Neural classificators, predictors, compresors, expanders and other specialised functional blocs and systems. Modelling of neurons. Grossberg's equations. Learning principles. Leyered and Hopfield's nets.			
18Y2UB	Accident Biomechanics and Safety	KZ	2
Anatomy of man. Methods of Medical Diagnostics - RTG, CT, MRI, US. Dynamics of traumatic events. Factors influencing the severity of an accident and the extent of a traffic accident. Injuries in road traffic. Pedestrian injuries. Injury in railway and air traffic accidents. Analysis of biomechanical events in accidents and their computational modeling. Principles of treatment and rehabilitation. Protective elements and safety measures in transport.			
23Y2VZ	Leadership and Human Resource Development	KZ	2
Introduction to the study of human resources, human resources management, corporate goals, strategies, cultural and ethical aspects. Team management, communication in teams, strategy and planning in human resources, ethics and corporate culture, cross-cultural differences. The labor code. Introduction into protocols.			
21Y2VA	Selected Chapters of Aerodynamics	KZ	2
Physical properties of real gases, atmosphere, aeronautical applications of external and internal aerodynamics, compressible internal flow, inlet nozzles and drive nozzles, compressible external flow, supercritical wings and profiles, vertical and oblique shock wave, energy losses, aeronautical aerodynamic profiles of wings, propellers, blades gratings, lift, drag, polar, viscosity, laminar and turbulent flow, boundary layer.			
23Y2VS	Negotiation and Cooperation	KZ	2
Negotiation principles. Negotiation sense, base, essence. Business and crisis negotiation differences. The "Win-Win" principle. Specification. Credibility. Negotiation behavior principles. Negotiation and command. Team variability. Formal and informal team roles.			
18Y2VC	Computational Mechanics in Transportation	KZ	2
Principle of virtual work and variational principles in FEM. Bar shaped, planar and three - dimensional structures in FEM. FEM in statics and in dynamics of transportational systems. Elastic, elastoplastic and viscoelastic material. FEM in problems of biomechanics. Numerical analysis of structural parts with programme ANSYS on instances.			
23Y2VR	Cope with Risks in Engineering Branches	KZ	2
Types of engineering branches directed to risks, procedures used in risk engineering, ensuring the secured systems, ensuring the safe systems, ensuring the safe systems of systems.			
12Y2VT	High Speed Railways	KZ	2
High speed rail (HSR) transport characteristics and position in transportation system. HSR vehicles types and characteristics and control-command and signalling system. HSR system interoperability. Non-adhesion HSR systems. City traffic service by HSR. HSR operating points. HSR worldwide network. HSR routing and traffic conception. Specifics of HSR track construction and geometrical characteristics.			
12Y2ZK	Traffic Calming	KZ	2
Principles of traffic calming. Solution of road network organization. Urban road layouts. Psychological and physical obstacles (measures of traffic calming) and their combinations. Traffic calming measures in crossroads. Pedestrian zones. Residential streets and zones.			
23Y2ZM	Intelligence Means and Methods	KZ	2
History and the present of intelligence services and their role in the modern world. How intelligence services handle with information. Methods and procedures of collecting and evaluating information. Means of intelligence services. Internal and external intelligence, military intelligence. The means and methods of state security services. Cooperation among Intelligence services within NATO, EU. The organization of the intelligence services.			

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

Code of the group: JZ-N-14/15
Name of the group: Jazyk nav.1.-4.sem. od 14/15 (pro obory v N3710)
Requirement credits in the group: In this group you have to gain 8 credits
Requirement courses in the group: In this group you have to complete 4 courses
Credits in the group: 8
Note on the group:

Code	**Name of the course / Name of the group of courses** ***(in case of groups of courses the list of codes of their members)*** *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
15J2F1	**Language - French 1** *Eva Rezlerová, Irena Veselková*	Z	2	0P+2C+10B	Z	J
15J2I1	**Language - Italian 1** *Eva Rezlerová, Irena Veselková*	Z	2	0P+2C+10B	Z	J
15J2N1	**Language - German 1** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	Z	2	0P+2C+10B	Z	J
15J2R1	**Language - Russian 1** *Eva Rezlerová, Marie Michlová*	Z	2	0P+2C+10B	Z	J
15J2S1	**Language - Spanish 1** *Eva Rezlerová, Nina Hricsina Puškinová*	Z	2	0P+2C+10B	Z	J
15JBF2	**Language - French 2** *Eva Rezlerová, Irena Veselková*	Z	2	0P+2C+10B	L	J
15JBI2	**Language - Italian 2** *Eva Rezlerová*	Z	2	0P+2C+10B	L	J
15JBN2	**Language - German 2** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	Z	2	0P+2C+10B	L	J

15JBR2	**Language - Russian 2** *Eva Rezlerová, Marie Michlová*	Z	2	0P+2C+10B	L	J
15JBS2	**Language - Spanish 2** *Eva Rezlerová, Nina Hricsina Puškinová*	Z	2	0P+2C+10B	L	J
15JBF3	**Language - French 3** *Eva Rezlerová, Irena Veselková*	Z	2	0P+2C+10B	Z	J
15JBI3	**Language - Italian 3** *Eva Rezlerová, Irena Veselková*	Z	2	0P+2C+10B	Z	J
15JBN3	**Language - German 3** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	Z	2	0P+2C+10B	Z	J
15JBR3	**Language - Russian 3** *Eva Rezlerová, Marie Michlová*	Z	2	0P+2C+10B	Z	J
15JBS3	**Language - Spanish 3** *Eva Rezlerová, Nina Hricsina Puškinová*	Z	2	0P+2C+10B	Z	J
15JBF4	**Language - French 4** *Eva Rezlerová, Irena Veselková*	ZK	2	0P+2C+10B	L	J
15JBI4	**Language - Italian 4** *Eva Rezlerová*	ZK	2	0P+2C+10B	L	J
15JBN4	**Language - German 4** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	ZK	2	0P+2C+10B	L	J
15JBR4	**Language - Russian 4** *Eva Rezlerová, Marie Michlová*	ZK	2	0P+2C+10B	L	J
15JBS4	**Language - Spanish 4** *Eva Rezlerová, Nina Hricsina Puškinová*	ZK	2	0P+2C+10B	L	J

Characteristics of the courses of this group of Study Plan: Code=JZ-N-14/15 Name=Jazyk nav.1.-4.sem. od 14/15 (pro obory v N3710)

15J2F1	Language - French 1	Z	2

Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.

15J2I1	Language - Italian 1	Z	2

Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.

15J2N1	Language - German 1	Z	2

Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.

15J2R1	Language - Russian 1	Z	2

Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.

15J2S1	Language - Spanish 1	Z	2

Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.

15JBF2	Language - French 2	Z	2

Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.

15JBI2	Language - Italian 2	Z	2

Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.

15JBN2	Language - German 2	Z	2

Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.

15JBR2	Language - Russian 2	Z	2

Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.

15JBS2	Language - Spanish 2	Z	2

Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.

15JBF3	Language - French 3	Z	2

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.

15JBI3	Language - Italian 3	Z	2

Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.

15JBN3	Language - German 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBR3	Language - Russian 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBS3	Language - Spanish 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBF4	Language - French 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBI4	Language - Italian 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBN4	Language - German 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBR4	Language - Russian 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBS4	Language - Spanish 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
11STS	Stochastic Systems	Z,ZK	4
The subject deals with the problems of mathematical modelling of dynamical systems, estimation od these models and their utilization for prediction. The results are illustrated on practical transportation tasks. Mathematical theory roots from probability and mathematical statistics and they use the methods of the Bayesian probabilistic approach.			
11TER	Game Theory and Optimal Decision-Making	ZK	2
Decision-making theory, utility theory. Explicit form games, backward induction. Normal form games. Antagonistic conflict, matrix games. Repeated games, evolutionary game theory. Cooperative games without transferable payoffs. Cooperative games with transferable payoffs (imputation, core, Shapley value, nucleolus). Applications of game theory above all in economics and transportation.			
11THRO	Queuing Theory	ZK	2
Discrete event process, definition, random distribution, and probability. Basic processes, process of revitalisation. Markov process, Markov models, Kendall classification, model M/M/1, models M/M/n. Non-markovian models, model M/C/n, models G/G/n. Models with continuous flow. Service net, examples of Petri net. Computer simulation.			
11XN1	Master Project 1	Z	2
11XN2	Master Project 2	Z	2
11XN3	Master Project 3	Z	1
11XN4	Master Project 4	Z	8
11XNDP	Master Thesis	KZ	18
11Y2FX	Functions of Complex Variable	KZ	2
Derivation of complex function, holomorphic function, complex exponential series, integration, Cauchy theorem. Taylor series, Laurent series of complex variable function. Basics of Laplace and Z-transformation.			
11Y2LG	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.			
11Y2PM	Programming in MATLAB	KZ	2
To explain the principle of modelling and simulation, description of Matlab environment and its settings, optimization and program code debugging, data fitting and designing GUI in Matlab.			
12DZP	Transport and Environment	Z	2
This course aims the impact of transport on environment. The accent is put mainly on noise and vibration, emission, barrier effect and energy demands. The noise measury is part and parcel of this course.			
12XN1	Master Project 1	Z	2
12XN2	Master Project 2	Z	2

12XN3	Master Project 3	Z	1
12XN4	Master Project 4	Z	8
12XNDP	Master Thesis	KZ	18
12Y2BM	Safety on The Local Roads	KZ	2
Classification of road accidents rates, social looses. Collision points, diagrams. Tools and methods for safer road transportation. Crossroads from the point of view of safety. Psychological right of way. Roundabouts. Pedestrian transport, cyclists. Traffic lights coordination. Transport control and regulation.			
12Y2IS	Urban Networks	KZ	2
The importance and the position of UN as public and technical infrastructure / utillities, metodology of the UN master planning, of UN design, UN coordination, UN installation and UN operation (basic technical standards of UN, trenchless technologies for UN).			
12Y2KE	Landscape Ecology	KZ	2
Landscape ecology. Landscape - definition, types, evolution. Landscape systems. Anthropogenic impacts on landscape. Methods using for evaluating landscape. Fractal geometry and its potential applications in landscape ecology. Landscape planning.			
12Y2KS	Rail Transport in Settlements and Regions	KZ	2
Modernization and development of railway infrastructure in Czech Republic. Arrangement of railway networks and junctions. Suburban railway services. Network configuration and operation of metro systems. Network configuration and operation of tram systems. Special thematic lectures (rail transport in selected countries / regions).			
12Y2MD	Methods of Traffic Regulation and Prediction	KZ	2
Basic ways of traffic prognosis, traffic prognosis for large area (calculation of future traffic volumes, calculation of future traffic volumes between areas (analogical and synthetic methods, modal split, traffic distribution to road network). Shock wave in traffic flow. Service levels and their traffic volumes. Acceleration noise.			
12Y2MH	Measurement and Modeling of Traffic Noise	KZ	2
Theoretical introduction to noise from traffic. Noise from rail transport. Noise from road traffic. Measurement and calculation of noise from rail traffic. Measurement and calculation of noise from road traffic. Modelling of traffic noise in the CADNA A.			
12Y2MZ	Modernization of Railway Lines and Stations	KZ	2
Line speed increasing. AGC and AGTC Agreement. AGC and AGTC railway network. Principles of modernization (conceptual papers, definitions of basic concepts, individual principles). Track geometrical characteristics on modernized railway lines. Superstructure and substructure on upgraded lines. Designing of railway stations. Bridges and tunnels. Development and realization of projects. Technical description of the tranzit corridors.			
12Y2RD	Realization of Transport Buildings	KZ	2
Transport Buildings Types. Project Documentation Types. Building Code. Land Permission and Building Permission Process. Building Process. Project Economics. Project Management.			
12Y2UD	Sustainable Transportation	KZ	2
Sustainable development, definition, history, legal framework. Sustainable development indicators. Sustainable transportation, definition, history, legal framework. Practical application of sustainable development theory, case study.			
12Y2VT	High Speed Railways	KZ	2
High speed rail (HSR) transport characteristics and position in transportation system. HSR vehicles types and characteristics and control-command and signalling system. HSR system interoperability. Non-adhesion HSR systems. City traffic service by HSR. HSR operating points. HSR worldwide network. HSR routing and traffic conception. Specifics of HSR track construction and geometrical characteristics.			
12Y2ZK	Traffic Calming	KZ	2
Principles of traffic calming. Solution of road network organization. Urban road layouts. Psychological and physical obstacles (measures of traffic calming) and their combinations. Traffic calming measures in crossroads. Pedestrian zones. Residential streets and zones.			
14MTSY	Telecommunications Systems Management	KZ	2
New trends in the area of e-communication services and relevant ecommunications networks, conditions and tools to provide optional set of services of required parameters based on hierarchal architecture of service management system (TMN). Positioning of broadband services, convergence trends leading to NGN. Financial criteria and tools as an integral part of providing service.			
14PPRP	Computer Aided Project Management	KZ	2
What is the project? The basic terms a concepts of project management. Life cycle of the project and its phased approach. Analysis and specification of the assignment, activity definition, stages, objectives and measurability. Risk events and risk planning. Project change management during implementation. Preparation of the project outline (activities, restrictions, assignments, calendars etc.) Project planning and optimization - time, resources.			
14XN1	Master Project 1	Z	2
14XN2	Master Project 2	Z	2
14XN3	Master Project 3	Z	1
14XN4	Master Project 4	Z	8
14XNDP	Master Thesis	KZ	18
14Y2C1	CATIA I	KZ	2
Fundaments of working with CATIA, making basic parts and bodies. Making 2D sketches, geometric stucture, parametric linking, making adaptive models from 2D sketches. Import and export of made parts and bodies. Making assemble and visualization.			
14Y2C2	CATIA II	KZ	2
Extension of basic course. Modeling compound bodies. Possibility of enumeration, comunications with other systems. Surface x solid bodies. Kinematic mechanism. Project making and project cooperation. Outputs of projects.			
14Y2CS	Sensitivity of Systems	KZ	2
Design of systems with defined reliability. The impact of changing parameters and subsystems within a system. System sensitivity computing, definition of sensitivity functions and matrices and their usability in system design.			
14Y2JM	One-Chip Controllers	KZ	2
One-chip controllers architecture, embedded peripherals (counters, timers, converters, ports) and their utilisation. Practical tasks are programmed with the aid of AVR chips.			
14Y2OP	Object Oriented Programming in Transport	KZ	2
Class, object, encapsulation, inheritance, polymorphism, templates, retyping, stream, exceptions, repository, collections, virtual methods and classes. Problem cases wil be chosen from microscopic simulation system, discrete event simulation, celular automata simulation and virtual life area.			
14Y2PH	CAD Interface Programming	KZ	2
Introduction to CAD interface programming techniques with the help of LIST and VBA programming languages. Possibilities of proper objects (commands), dialogues, interfaces, and applications creation in CAD systems. Programming of cooperation with other applications (databases, spread-sheets).			
14Y2PI	Process Information Systems in Transportation	KZ	2
Introduction and detailed usage of transport information systems, e.g. EFC, ePurse and transport check-in systems for public transport with focus on architecture of this system and SOA (Service Oriented Architecture). Inforamtion systems implementation and operations description in the Czech Republic (technical and process) included lectures and visits.			

14Y2PJ	C++ Programming Language	KZ	2
OOP philosophy and basics of C++ programming language. Class, object, constructor, destructor, inheritance, abstract class, virtual methods, exceptions, streams, method and operator overloading, abstract data type implementation in C++.			
14Y2TU	Telecommunications Systems and Multimedia	KZ	2
New trends in telecommunications namely applied in transport solutions, identification and quantification of telecommunications networks and services performance based on redundant architecture, provisioning of guaranteed service quality, two generations of the handover principles.			
14Y2UI	Artificial Intelligence	KZ	2
History of artificial intelligence, knowledge, its representation including frames, state space search, constraints, genetic algorithms, machine learning.			
15J2A1	Language - English 1	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.			
15J2F1	Language - French 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
15J2I1	Language - Italian 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
15J2N1	Language - German 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
15J2R1	Language - Russian 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
15J2S1	Language - Spanish 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
15JBA2	Language - English 2	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.			
15JBA3	Language - English 3	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.Optional courses for certificates FCE, CAE.			
15JBA4	Language - English 4	ZK	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.Optional courses for certificates FCE, CAE.			
15JBF2	Language - French 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
15JBF3	Language - French 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBF4	Language - French 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBI2	Language - Italian 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
15JBI3	Language - Italian 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBI4	Language - Italian 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBN2	Language - German 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
15JBN3	Language - German 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			

15JBN4	Language - German 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBR2	Language - Russian 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
15JBR3	Language - Russian 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBR4	Language - Russian 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBS2	Language - Spanish 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
15JBS3	Language - Spanish 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JBS4	Language - Spanish 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15XN1	Master Project 1	Z	2
15XN2	Master Project 2	Z	2
15XN3	Master Project 3	Z	1
15XN4	Master Project 4	Z	8
15XNDP	Master Thesis	KZ	18
15Y2DN	Transportation Psychology in German Speaking Countries	KZ	2
Introduction into broader view of traffic problems with regard to the work with texts (Physics for drivers, abusing alcohol during driving, exhaustion, getting of driving licence, children in traffic, traffic accident, traffic psychology in the internet etc.)			
15Y2HS	Road Transport History	KZ	2
Roads and road traffic in the Ancient Age, corridors of main mediveal pathways. Development of road traffic in the modern period, acceleration of road transport development during 1st part of 20th century. Development of road layout, geometric and construction layers. Beginning of modern road civil engineering. Development of road travelling in modern period. History of road intercections, bridges and traffic control, development of road signs.			
15Y2JH	Job Hunting in English	KZ	2
The course provides a practical guide to applying for a job in English. The interview process is mapped out, with the course including skills practise for all the stages of this process, including specifics for job-hunting in English. Students will also be introduced to the English vocabulary and phraseology necessary for a successful interview.			
15Y2MS	Sociology for Managers	KZ	2
Sociological approach to a corporation. Corporation and its organization. Corporation and its running - human role and communication. Corporation, its culture and social system. Human's work position in free market economy. Corporate directorship, work groups, adaptation, strife, different roles and positions in corporation.			
15Y2OF	Specialised French for Transportation and Telecommunications	KZ	2
Basic transportation (public transport, railway, air, road and ship transport) and telecommunications terminology. Special focus on independent speaking and writing skills.			
15Y2OZ	Health Protection in Transportation and EU	KZ	2
Health protection in transportation in CR in the past and present. Conditions before 1989 and after, current legislature, future prospects. Harmonisation of legislation with other EU members. Fundamental principles of health protection and support in selected EU countries.			
15Y2PS	Practical Spanish for Transportation, Management and Business	KZ	2
Development of communication skills, training of correct written expression of formal character, basic technical vocabulary, cultural specifics of the Spanish speaking countries. Terminology of transport and commerce, business letter.			
15Y2PT	Food in Transportation	KZ	2
The nutrition policy. Interaction transportation and foodstuffs. The health risks. Hygienic safeguard. The practical examples from the Czech Republic and from the world. The issues of dining cars, work trains and other railroad equipment. Legislation.			
15Y2PU	Publications and Their Creation	KZ	2
Scientific texts types. Footnotes and references. Exploration of facts. Quotations. Formal document layout. Working with information databases. Typographic principles. Typographic editors - MS Word, Tex/LaTeX. Practical creation of simple scientific documents.			
15Y2SP	Seminar on Political Philosophy	KZ	2
Interpreting of philosophical texts, view of society, state and their system of government.			
15Y2SR	Stylistics and Rhetorics	KZ	2
Basic skills of oral and written expression as a means of human communication. Basic information about speech, articulation, oral and written language. Teaching to speak well-vocal organs, voice training. Language semantics, language syntactic and the pragmatic aspect. Creative thought and its oral and written expression. Practice - cultivating the skills of speech.			
15Y2TS	Technician and Contemporary Society	KZ	2
Why to take off a hat in a room and open a door for a lady, are there simple solutions, science vs belief, do we need to know or is it enough to turn on a PC, it must be true - it´s on the Internet and in newspapers, what are the sights for, interest in public affairs - a hangover from the past?			
16XN1	Master Project 1	Z	2
16XN2	Master Project 2	Z	2

16XN3	Master Project 3	Z	1
16XN4	Master Project 4	Z	8
16XNDP	Master Thesis	KZ	18
16Y2HP	Vehicle Hygiene	KZ	2
Emissions and ergonomy of vehicles and the influence on man and nature. National and international law related to the hygiene. Noise and vibrations - sources, creation, propagation, physical values, ways of measuring, prevention, elimination. Exhausts - creation, measurement, reduction, non-regular fuels and drives. Ergonomy - sitting, standing, control, operational reach. Condition - heating, ventilation, air-conditioning, filtration, tiredom.			
16Y2KV	Car Body Design	KZ	2
Personal cars body, high-load car body, bus car body, and motorcycle as a construction set. Principles of design, production, testing and operation. Materials used for car body construction. Active and passive safety parts. Ergonomics, HMI, view out of the vehicle, operational extent, view behind the car. Conditioning tools, signaling function. Aerodynamics of the car body. Design and artistic design principles. Practical training.			
16Y2MK	Quality Methods for Vehicles	KZ	2
Quality management methods list, customer data acquisition and analysis of customer requirements, QFD, DFM, DFA, DFS. FMEA (Failure mode effect analysis). Elements of parallel (team) design.			
16Y2PG	Computer Graphics and Virtual Reality	KZ	2
Principles of creation and processing of bitmap and vector 2D graphics, 3D virtual scenes and algorithms used for their computerized processing. Adopting skills of work with professional and freeware tools for creation and processing of 2D, 3D and interactive graphics, and basics of programming language VRML and graphic libraries (OpenGL).			
16Y2ST	Special Technologies in Transport and Telecommunications	KZ	2
Micro, nano and special technologies, electric arc and its applications, plasma technologies, dipping, beam technologies, electron beams technology in roduction and mending of vehicles, laser and laser technologies, soldering, gluing, ultrasound, diffusion, friction and explosion technologies, micro stoves, gas.			
16Y2TT	Transportation and Building Technology and Equipment	KZ	2
Transportation and building technology and equipment.Transport of solid and mass material, soil and rock above all. Highway and underground constructions. Transport surface vehicles, description and construction features, delivered mass calculation, economy of operation. Technics and technology of underground constructions. Terrestrial vehicles operation management methodology (ultrasound, laser, GPS, total stations).			
17DLOG	Transport Logistics	Z,ZK	3
Transport policy of European Union, Czech Republic, counties and municipalities. Vehicles, transport infrastructure and technology, management and information systems in transport and logistics, legal framework and the people in the transport system. Transport service, transport logistics optimization methodology, progressive transportation systems and the use of telematics applications in transport logistics.			
17EDO	Economics of Transport	Z,ZK	6
Transport in the CR in the European and world context, transport funding in the CR, specifics of costing, legislation, functional efficiency of transport system, technical - economic characteristics of transport modes - forwarding ability, forwarding speed, economics of transport enterprise (microeconomics) - indicators according to modes of transport, economic approach.			
17KVAD	Quantitative Methods in Transport	Z,ZK	4
Distribution tasks, models, methods, comparison, assignment tasks, models, methods, comparison, location tasks, discrete and continuous location, allocation, routing of vehicles, VRP, TSP, design fo networks and subnetworks in transportation systems, methods of network analysis in technology of transportation and logistics systems, principles of modelling.			
17LOGR	Logistics Chains	Z,ZK	5
Logistics chain. Logistics system. Horizontal and vertical dimensions of logistics integration. The types of logistics chains. Logistics chain with continual flows, with interrupted flows, with synchronous flows. Management based on an independent method of planning. Management based on planing in closed circle with information feedback. Possible position of the decoupling point in a logistics chain. Chain effects. Case studies.			
17MAFI	Principles of Managerial Finance	KZ	3
Introduction of finance. Present value and alternative cost of capital. Investment efficienty evaluation. NPV, IRR. Capital assets pricing models, basics of portfolio theory. Bonds and stock price. Model with constant growth. Expected return and standard deviation of portfolio. Risk free return. Market portfolio. Securities line. Portfolio with maximal return. Short term finance. Cash flow management.			
17MGD	Management of Transport Systems	Z,ZK	3
Functions, processes and systems of management in transport, organisational structures, strategy, social responsibility, soft skills.			
17MIS	Managerial Information Systems in Transportation	ZK	3
Communication and information as a base of managerial skills. Information technology and their influence to managerial, communication and information porcess in trasport company. Obtaining of processing and transmission information. Information systems security. Possible threats to information systems. Create students design of transport company information portal.			
17MP	International Carriage	ZK	3
The international transport organizations at government level, at enterprise level, implementation of international relations. Mission east-west UIC. Agreement on international carriage by rail SMPS and SMGS. Vienna convention on the law for the road, the Budapest convention on the contract of carriage, the UN convention on maritime transport of goods, international multimodal transport, the charter on transport, the foundations of EU law.			
17PMD	Project Management in Transportation	Z,ZK	6
Projects and project management, content and project leading, project process organization. Assessment criteria decision, technical and economical criteria. Criteria function and fulfillment of its components. Spatial development and decision making, building act. Financial instruments in project management, funding models, payment instruments. Spatial plans, EIA, selection proces, public commision.			
17SIR	System Analysis and Decision Making	KZ	2
System approach, phases of solution. Decision processes, basic terms, classification, scales. Decision under risk and uncertainty, methods, applications. Decision with multiple objectives, weight determination. Multiple objective evaluation of variants. Vector optimization. Stochastic programming - active and passive methods. Expert methods, organisation, assessment. Advanced decision methods - fuzzy logic, genetic algorithms, chaos theory.			
17TSI	Technology of Road Transport	KZ	2
Legislative, operational, technical, logistic and safety conditions of road transport, basic transport technologies, special transport, international agreements, requirements on the parameters and specialization of transport, handling and loading/unloading means, maintenance, service and repairs of road vehicles, safety of road transport and choice of optimal transport unit.			
17TZE	Technology of Railway Transport	ZK	2
Track line capacity assesment, model operational situation with a system running time between IPT-nodes, calculation of traction energy savings compared with infrastructure costs for designing of fleeting crossing station, solving of capacity problem and blocking time in relation to train protection system, robustness of timetable, system concept of freight train paths, guidelines for centralised operational traffic control and management.			

17TZEC	Technology of Railway Transport - Exercise	Z	2
Modeling operational situation with a system running time between IPT-nodes, calculation of operation costs for diferent timetable concepts (operational costs, traction energy, engine and personal rosters).			
17XN1	Master Project 1	Z	2
17XN2	Master Project 2	Z	2
17XN3	Master Project 3	Z	1
17XN4	Master Project 4	Z	8
17XNDP	Master Thesis	KZ	18
17Y2FM	Financing in Urban Mass Transportation	KZ	2
UMT history and development in Prague and other cities in the world. Building and operation of public tram, bus, and trolleybus networks. Underground building and operation. Other UMT types. UMT development in small towns. Particularities of investment and operation financing of individual UMT types. Historic and present models of UMT financing. Transport inspection and blind passengers. Tourism & UMT. UMT typology & choice of optimum financing.			
17Y2KI	Capital Investment in Transportation and Telecommunications	KZ	2
Financial market, investment desicion making - long term goals and investment strategies, long temr financing.			
17Y2MM	Mobility of Small Towns	KZ	2
Basic terms, networks of railway and bus lines, alternative forms of regional transport, influence in regional transport in vicinity of big cities, solutions of passenger and freight transport in regions, activities related to regional transport, passenger transport safety in regions.			
17Y2MS	Microsimulation of Railway Operation	KZ	2
Introduction to the characteristics of simulation tools, creation of a simulation model of railway infrastructure, verification of a specific operational concept on the given infrastructure, adaptation of the infrastructure model and modification to the infrastructure to allow the implementation of the proposed operational concept. Stability tests and evaluations. Evaluation of sensitivity of the operational concept to delays.			
17Y2NU	Cost and Benefits of Transport Systems	KZ	2
Transport systems and their history, externalities and their internalization, public goods, transport funding, assessment of transport constructions and systems by the methods CBA, MCA, CA, transport taxation, influence of transport constructions on public budgets, relation of transport and economic growth, importance of transport in area, spatial economy.			
17Y2PR	Carriage Processes	KZ	2
Carrier´s commercial liability. Ordering and contracting of carriage. Intergovernmental conventions on international carriage. Contract on passenger carriage. Contract on freight carriage. Forwarding contract. Liability and rights based on carrying contract. Contractual carrying conditions. Guarantee of carrying contract by more operators. Internationally accepted commercial terms (INCOTERMS). Tariff and calculation of prices.			
17Y2PS	Case Studies in Transportation	KZ	2
Simulation expert discussions on the topics - the impact of transport on the environment and the economy, energy, construction of transport infrastructure etc. The students will each lesson presented one current and the real issue, which solutions will have to think of each other. Each of them will be represent another role (public authorities, investors, carrier representative interest groups, residents, etc.).			
17Y2RS	Regional Transport - Mobility of Small Towns	KZ	2
Basic terms, networks of railway and bus lines, alternative forms of regional transport, influence in regional transport in vicinity of big cities, solutions of passenger and freight transport in regions, activities related to regional transport, passenger transport safety in regions.			
17Y2RZ	Control of Transport Processes	KZ	2
Theoretical bases, transport system, decomposition, factors influencing control, quality diagnosis, methods of control, systems for decision making support, risk of decision making, telematics.			
17Y2SG	Systematic Creating of Railway Timetables	KZ	2
Timetable samples. Capacity allocation, technological intervals in railway operation. Rules and regulations of train paths, running times, time adds and supplements. Rolling stock and crew circulation planning. Rules of train-diagramm creating. Train-diagramm construction in case of more service-levels on the line.			
17Y2SJ	Network Timetabling on the Railway	KZ	2
Timetable samples. Capacity allocation, technological intervals in railway operation. Rules and regulations of train paths, running times, time adds and supplements. Rolling stock circulation planning. Rules of train-diagramm creating. Timetables for more service-levels on the line. Construction slot conflicts between passenger- and freight transport. Network line relations and waiting times, timetables for lines under construction.			
17Y2SK	Urban and Regional Rail Transport System	KZ	2
Factors influencing transport demand, modal-split, traffic flows distribution on public transit network. Line network optimization and configuration. Timetable designing and evaluation accenting integrated periodic timetable. Rolling stock circulation, staff and crew services optimization and their order to rosters. Framework legislation, non-barrier effects and preference of public transport. Marketing.			
17Y2TP	Technological Prognoses in Transportation and Telecommunication	KZ	2
The students will be analysing both the general forecasting studies (NASA, CIA) and forecasting in the segment of transport and telecommunications.			
18XN1	Master Project 1	Z	2
18XN2	Master Project 2	Z	2
18XN3	Master Project 3	Z	1
18XN4	Master Project 4	Z	8
18XNDP	Master Thesis	KZ	18
18Y2D2	Dynamics of Transport Routes and Vehicles 2	KZ	2
Analysis of forces in the vehicle and transport routes and their influence on the stress and strain components of the vehicle structure or behavior of traffic routes. Creation of dynamic models of vehicles and transport routes. Vibration of systems with a finite number of degrees of freedom. Methods of constant stiffness and constant compliance. Dynamic calculations of structural systems. Criteria for the admissibility of oscillation.			
18Y2FZ	Physical foundation of materials' properties	KZ	2
Atomistic models, lattice defects influence on properties of materials, stiffness, plasticity, strength, fracture, fatigue, creep, corrosion, effects of environment and loading on materials' behavior are the main discussed topics.			
18Y2MP	Finite Element Method And Its Application	KZ	2
Basic mathematical formulation of the Finite Element Method. Direct Stiffness Method used in structural mechanics. Evaluation of stiffness matrices for the basic elements using variational principles. Element formulation (bar and beam elements, CST, LST, quadrilateral, tetrahedral and brick elements). Natural coordinates, natural shape functions and isoparametric representation. Numerical integration. Introduction to dynamics. FEM programming.			

18Y2SD	Reliability and Diagnostics, Experimental Methods	KZ	2
The course is focused on theoretical background and practical experience in the field of reliability of constructions, implementation of diagnostic procedures for the detection of material defects and determination of residual life of structures. For this purpose, non-destructive methods of experimental mechanics (e. g. strain-gauge measurement, photoelasticimetry) and optical methods, including electron microscopy, will be used.			
18Y2UB	Accident Biomechanics and Safety	KZ	2
Anatomy of man. Methods of Medical Diagnostics - RTG, CT, MRI, US. Dynamics of traumatic events. Factors influencing the severity of an accident and the extent of a traffic accident. Injuries in road traffic. Pedestrian injuries. Injury in railway and air traffic accidents. Analysis of biomechanical events in accidents and their computational modeling. Principles of treatment and rehabilitation. Protective elements and safety measures in transport.			
18Y2VC	Computational Mechanics in Transportation	KZ	2
Principle of virtual work and variational principles in FEM. Bar shaped, planar and three - dimensional structures in FEM. FEM in statics and in dynamics of transportational systems. Elastic, elastoplastic and viscoelastic material. FEM in problems of biomechanics. Numerical analysis of structural parts with programme ANSYS on instances.			
20SYDO	System Transport Strategy	KZ	3
Complet overview of system sciences, system approach to information engineering, definition of system strategy, connections with scientific methodological base pf transportation; porccoesses of strategical thinkig, system of strategical management, application space of strategies with link to sustainable development, tools for mastering of strategies with support of geoinformatical enegineer technologies.			
20XN1	Master Project 1	Z	2
20XN2	Master Project 2	Z	2
20XN3	Master Project 3	Z	1
20XN4	Master Project 4	Z	8
20XNDP	Master Thesis	KZ	18
20Y2PR	Prediction of time series	KZ	2
Introduction to time series prediction, meaning of prediction, basics of quantitative prediction. Methods for predictive quality evaluation, descriptive statistics, MAE, MAPE, RMSE, naive prediction, prediction for general formula of loss function. Calculation and programming environment R. Regression models, basics of linear regression, simple regression. Multiple regression, statistical tests of linear dependence, selection of input variables.			
20Y2TE	Technology of Electronic Systems	KZ	2
Principle technologies for an effective operation of electronically controlled systems. Maintaining, meassuring, optimization of safety and reliability of complex systems. Semiconductor technologies, printed circuits, assembly operations, interconnection and repairs technologiesusers and operators.			
20Y2UA	Artificial Neural Networks, Realization and Applications	KZ	2
History of neural networks. Basic principles. Comparing the structure of a natural and an artificial neuron. Neural classificators, predictors, compresors, expanders and other specialised functional blocs and systems. Modelling of neurons. Grossberg's equations. Learning principles. Leyered and Hopfield's nets.			
21XN1	Master Project 1	Z	2
21XN2	Master Project 2	Z	2
21XN3	Master Project 3	Z	1
21XN4	Master Project 4	Z	8
21XNDP	Master Thesis	KZ	18
21Y2LS	Air Traffic Services	KZ	2
Airspace structure in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, APP a ACC control. History of ATS at USA and Czechoslovakia. ATS - Model of financing. Training Systém of Air Traffic Controllers. Future development of ATS.			
21Y2MK	Marketing of Air Transport	KZ	2
The content of the course "Marketing in air transport" is the management of activities and processes using available marketing tools and processes for analysis, strategy development and implementation of sales of goods and services in the aviation industry. In addition to the theoretical foundations of marketing, the lectures present systems of market, competition and product analysis, creation of marketing strategies and planning.			
21Y2MS	Aerospace Engineering Simulation and Modelling	KZ	2
The course is designed as a set of exemplary tasks and problems based on practical aviation issues. The university degree mathematic skills and software applications usage will be necessary for successful figuring out. Both simple tasks, where students create own model themselves (e.g. in Matlab), and more complicated problems where professional developed tools will be applied.			
21Y2PL	Operational Aspects of Aerodromes	KZ	2
Operational aspects of aerodromes. Location of aerodrome and orientation of runways. Requirements for apron. Capacity of airports runways and terminals. Operation under winter conditions. Firefighting units. Protection against unlawful interference. Local transport connection. Environmental protection.			
21Y2PP	Law and Operation in Air Transport	KZ	2
Development of aviation law. International conventions on civil aviation. International organisations and including of the Czech Republic in these organisations. EU legislation and civil aviation. Execution of state administration and state supervision in matters of civil aviation, in accordance with Act No. 49/1997 Col. Facilitation. Responsibilities of air carriers for passengers, luggage and cargo. The safe transport of dangerous goods.			
21Y2TL	Development Trends of Aircraft Construction	KZ	2
Historical and nowadays trends. Future scenarios. Space industry. Economy.			
21Y2VA	Selected Chapters of Aerodynamics	KZ	2
Physical properties of real gases, atmosphere, aeronautical applications of external and internal aerodynamics, compressible internal flow, inlet nozzles and drive nozzles, compressible external flow, supercritical wings and profiles, vertical and oblique shock wave, energy losses, aeronautical aerodynamic profiles of wings, propellers, blades gratings, lift, drag, polar, viscosity, laminar and turbulent flow, boundary layer.			
22XN1	Master Project 1	Z	2
22XN2	Master Project 2	Z	2
22XN3	Master Project 3	Z	1
22XN4	Master Project 4	Z	8
22XNDP	Master Thesis	KZ	18
22Y2PS	Traffic Accidents Computer Simulation and Analysis	KZ	2
Vehicle dynamics simulation, multi body systems and vehicle active safety systems, vehicle slipping, external influence on virtual model, crash tests evaluation, single-track vehicle, vehicle passangers, pedestrian, traffic accident simulation and analysis.			

23KRIO	Crisis Management for Engineering Branches	KZ	3
Human system. Assets, terms, concept and safety management aims. Causes and consequences of disasters. Safety management. Crisis management-its aims, demands, roles, principles, specifics and comparidon with the EU and NATO. Organisational, personal, legislative, finance, material and technical provision. The IZS role. Planning. Protection of public and critical infrastructure. Problem solving.			
23MAR	Risk Analysis and Management	Z,ZK	3
Concept of risks and terms. Risk sources, definition of hazard, impacts and risks. Methods for identification, analysis, assessment and management of risks. Risk engineering targets and good engineering practice. Methods, tools and techniques for risk engineering. System of systems risk. Application of strategic and system approach for benefit of security and development. Territorial, emergency and crisis planning. Human factor - its role.			
23XN1	Master Project 1	Z	2
23XN2	Master Project 2	Z	2
23XN3	Master Project 3	Z	1
23XN4	Master Project 4	Z	8
23XNDP	Master Thesis	KZ	18
23Y2AE	Acoustics and Electroacoustics in Transportation	KZ	2
Basic acoustic quantities, properties of acoustic signals. Basic equations in acoustics, method of equivalent circuits. Acoustic impedance, damping. Acoustic actuators, loudspeakers. Acoustic sensors, microphones. Fundamentals of acoustic signal processing. Acoustics of closed spaces. Fundamentals of acoustics in solids. Acoustic problems in transport and their solutions.			
23Y2BP	Security Class	KZ	2
The most prevalent topics include data management, data and text mining applications, terrorism informatics, deception and intent detection, terrorist and criminal social network analysis, crime analysis, cyber-infrastructure protection, transportation infrastructure security, and information assurance, among others.			
23Y2FB	Physics for Security Branches	KZ	2
Grounds of physics of substances and phenomena at extreme conditions. Grounds of rheology. Physics of Earth´s interior. Geophysics. Physics of atmosphere. Applications in dengineering branches directed to safety.			
23Y2NE	Design of Electronic Equipments	KZ	2
Characteristics and realization of semiconductor electronic components, basic electronic devices division. Sources, input and output elements, process elements. Realization of basic circuits - amplifiers, data converters. Analog electronic systems, analog computing. Switching elements, logic circuits, FPGA implementation. Single chip microcomputers and microcontrollers. Design (ORCAD), construction of electronic devices.			
23Y2VR	Cope with Risks in Engineering Branches	KZ	2
Types of engineering branches directed to risks, procedures used in risk engineering, ensuring the secured systems, ensuring the safe systems, ensuring the safe systems of systems.			
23Y2VS	Negotiation and Cooperation	KZ	2
Negotiation principles. Negotiation sense, base, essence. Business and crisis negotiation differences. The "Win-Win" principle. Specification. Credibility. Negotiation behavior principles. Negotiation and command. Team variability. Formal and informal team roles.			
23Y2VZ	Leadership and Human Resource Development	KZ	2
Introduction to the study of human resources, human resources management, corporate goals, strategies, cultural and ethical aspects. Team management, communication in teams, strategy and planning in human resources, ethics and corporate culture, cross-cultural differences. The labor code. Introduction into protocols.			
23Y2ZM	Intelligence Means and Methods	KZ	2
History and the present of intelligence services and their role in the modern world. How intelligence services handle with information. Methods and procedures of collecting and evaluating information. Means of intelligence services. Internal and external intelligence, military intelligence. The means and methods of state security services. Cooperation among Intelligence services within NATO, EU. The organization of the intelligence services.			

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