Study plan

Name of study plan: DS nav.prez.12/13

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: 1.S.NPDS 11/12
Name of the group: 1.sem.nav.prez.DS od 11/12
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 9 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
12IKOD	**Rail Transport Infrastructure**	Z,ZK	5	3P+2C	Z	z
12TKV	**The Theory of Pavement Layers in Highway Engineering**	Z,ZK	3	2P+1C	Z	z
17TZE	**Technology of Railway Transport**	ZK	2	2P+0C	Z	z
18GES	**Geomechanics and Foundation Engineering**	Z,ZK	4	2P+1C	Z	z
18TIK	**Theory of Engineering Structures** *Petr Koudelka, Petr Zlámal, Ondřej Jiroušek*	Z,ZK	4	2P+1C	Z	z
14GISS	**Geographical Information Systems** *František Kekula, Tomáš Janata, Zuzana Purkrábková Tomáš Janata (Gar.)*	KZ	2	0P+2C+8B	Z	z
22SKM	**Vehicle Kinematic Modelling and Simulation**	KZ	2	0P+2C	Z	z
12DZP	**Transport and Environment**	Z	2	2P+0C	Z	z
15J2A1	**Language - English 1** *Barbora Horáčková, Jitka Heřmanová, Dana Boušová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Marek Tomeček, Markéta Musilová, ...*	Z	2	0P+2C+10B	Z	z

Characteristics of the courses of this group of Study Plan: Code=1.S.NPDS 11/12 Name=1.sem.nav.prez.DS od 11/12

12IKOD	Rail Transport Infrastructure	Z,ZK	5
Non-compensated lateral acceleration, Parameters eduction for transition curve and cant transition, curves without straight, track spacing change. Railway, subway and tramway track detailed construction. Continuous welded rail theory. Substructure, slab track. Tram-train. Interoperability. Noise precautions. Railway lines rationalisation, dispositional layout of operating points trackages, passenger buildings and forecourts. Sidings, terminals.			
12TKV	The Theory of Pavement Layers in Highway Engineering	Z,ZK	3
Function of transportations in highway engineering - material aspects of roads and highways. The course covers evolution of highway engineering since the begining of the 20th century with the emphasis of material aspects.			
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.			
18GES	Geomechanics and Foundation Engineering	Z,ZK	4
Basic soil behaviour, water flow in the soil, basic of the soil mechanic, mechanic of the soil mass, stress in the soil, landslide and their rehabilitation, mechanics of the rock mass, type of the foundations and their design, abutment walls, breast walls, sheeting structures, improvement of the soil, modern method of the subsoil bearing capacity and slope stability improvement (geotextile, geogrids, anchored prefabticated elements), EN 1997-2.			

18TIK	Theory of Engineering Structures	Z,ZK	4
The course builds upon the knowledge gained in basic mechanics courses in bachelor study (especially Statics and Elasticity) in the field of mathematical theory of elasticity. Emphasis is placed on plane and axisymmetric problems, as well as on the calculation of stress and strain in plates and shells. Students are further acquainted with methods of modeling the behavior of subsoil used in the design of line structures.			
14GISS	Geographical Information Systems	KZ	2
Construction of saving format of space-oriented information land-survey and cartography minimum basic tasks of spatial operations principles of territorial identification			
22SKM	Vehicle Kinematic Modelling and Simulation	KZ	2
Principles and posibilities of simulation tools with regards to vehicle movement analysis and vehicle crash analysis. Kinematic modelling of vehicle / vehicle train movement. View conditions. Proposed road space passage.			
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.			
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.			

Code of the group: 3.S.NPDS 12/13
Name of the group: 3.sem.nav.prez.DS od 12/13
Requirement credits in the group: In this group you have to gain 23 credits
Requirement courses in the group: In this group you have to complete 6 courses
Credits in the group: 23
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
11STS	**Stochastic Systems** *Evženie Uglickich, Šárka Voráčová, Natálie Blahitka, Michal Matowicki, Pavla Pecherková* ***Pavla Pecherková*** *Šárka Voráčová (Gar.)*	Z,ZK	4	2P+2C+14B	Z	z
12IDOS	**Integrated Transport Systems** *Martin Jareš, Petr Chmela*	ZK	3	2P+0C	Z	z
12TEPR	**Theory of Road Traffic Operation**	Z,ZK	8	4P+2C	Z	z
20DTEL	**Road´s Traffic Telematics**	ZK	4	2P+0C	Z	z
12BA	**Road Safety Audit**	KZ	2	2P+0C	Z	z
15JBA3	**Language - English 3** *Barbora Horáčková, Jitka Heřmanová, Dana Boušová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Markéta Musilová, Eva Rezlerová*	Z	2	0P+2C+10B	Z	z

Characteristics of the courses of this group of Study Plan: Code=3.S.NPDS 12/13 Name=3.sem.nav.prez.DS od 12/13

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.			
12IDOS	Integrated Transport Systems	ZK	3
Reasons for building of integrated transport systems, principle of integration, dividing of integration methods, traffic, infrastructure, technical, organizational methods, integration of tariff, sales systems, information systems, marketing of system, examples of non-integration.			
12TEPR	Theory of Road Traffic Operation	Z,ZK	8
Basic transport parameters and their measurement, traffic sensors. The concept of capacity analysis. Theoretical foundations and application of simulation models, macroscopic and statistical models. Theory of traffic management of intersections, urban areas and highways. Green Wave and priority of public transport. Identification and management of accidents. Principles and methods of evaluation of roads maintenance.			
20DTEL	Road´s Traffic Telematics	ZK	4
Traffic management in cities and on highways, information and navigation systems, electronic fee collection, safe and intelligent vehicle and safety systems.			
12BA	Road Safety Audit	KZ	2
Schedules of applications of safety assessments during the process of preparations, and of the particular realization of the road network that should minimize traffic accident risks for all those who take part in road traffic. Road safety survey. Application of European Directive 2008/96/EC on road safety infrastructure management.			
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.			

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, Jitka Heřmanová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Markéta Musilová, Jan Feit, Eva Rezlerová*	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: 2.S.NPDS 11/12
Name of the group: 2.sem.nav.prez.DS od 11/12
Requirement credits in the group: In this group you have to gain 24 credits
Requirement courses in the group: In this group you have to complete 9 courses
Credits in the group: 24
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
22AMM	**Measuring Methods Applied to Transportation**	KZ	2	0+2	L	z
12DVUP	**Transport and Land - Use Planning**	KZ	2	1+1	L	z
14DSIM	**Traffic Microsimulation**	Z	3	0P+2C	L	z
15JBA2	**Language - English 2** *Barbora Horáčková, Jitka Heřmanová, Dana Boušová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Marek Tomeček, Markéta Musilová, ...*	Z	2	0P+2C+10B	L	z
13MGD	**Management of Transportation Systems**	Z,ZK	3	2+1	L	z
17MGD	**Management of Transport Systems**	Z,ZK	3	2P+1C+8B	L	z
12NAP	**Design and Operation of Traffic Engineering Facilities**	Z,ZK	6	3P+2C	L	z
16PDP	**Principles of Vehicle Design** *Jaroslav Machan, David Lehet Jaroslav Machan (Gar.)*	ZK	2	2P+0C+8B	L	z
18TAM	**Theoretical and Applied Mechanics**	ZK	2	2P+0C	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.NPDS 11/12 Name=2.sem.nav.prez.DS od 11/12

22AMM	Measuring Methods Applied to Transportation	KZ	2
Geodetic location and technical processing of traffic route with geodetic total station, GPS and photogrammetry, 3D scanning. Transport corridor setting out usány geodetic methods. Detection and technical processing of several vehicle dynamic characteristics using high-speed cameras, accelerometers and radar device.			
12DVUP	Transport and Land - Use Planning	KZ	2
Explanation of fundamental relation and connection between transport and territory, fundamentals of traffic layout. Land - use planning. Influence of traffic on area and shape of town, solving principles of different transport modes including pedestrian traffic and cycling transport. Traffic calming, parking. Complex transport study.			
14DSIM	Traffic Microsimulation	Z	3
Basic overview of traffic microsimulation models. Introduction to the working environment application. Project processing microsimulation model in urban area - creating a transport network, capacity assessment of level intersections, light coordination of level intersections, creating a network of public transport, parking lots, pedestrian and bicycle paths.			
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.			
13MGD	Management of Transportation Systems	Z,ZK	3
Manager and his team, choice of team members, teamwork, leadership, training of communication and presentation skills of modern, operative and strategic planning and decision making, conflicts, motivation, decision support methods, organizing, organization structures, organization welfare, control, project management (focused on PPP), decision support systems in transportation (Highway Development and Management Tools).			
17MGD	Management of Transport Systems	Z,ZK	3
Functions, processes and systems of management in transport, organisational structures, strategy, social responsibility, soft skills.			
12NAP	Design and Operation of Traffic Engineering Facilities	Z,ZK	6
Past and present of the tunnel construction and design, technological systems at bridges and tunnels and its design, traffic and safety system, risk analysis,bridges and tunnels operation, durability of facilities.			
16PDP	Principles of Vehicle Design	ZK	2
Design of transportation vehicle according to its usage and function. Marketing and user demands. Vehicle dynamics. Propulsion systems. Design process, functional design and vehicle structure. Evaluation of variant concepts. Design phases. Realiability, technological aspects etc.			
18TAM	Theoretical and Applied Mechanics	ZK	2
Fundamentals of theory of plasticity. Plasticity conditions. Elastoplastic and plastic state of body. Reliability and durability of structures. The stress and strain state around the notch. Stress intensity factor. Fracture toughness. Energy methods of linear fracture mechanics. Crack driving force. Opening the crack. Fatigue properties of the material. Fatigue process. Dimensioning of fatigue.			
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.			

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 12/13
Name of the group: Projekty nav. 1.-4.sem.DS,ID,LO,PL
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
22XN1	**Master Project 1** *Michal Frydrýn, Karel Kocián, Luboš Nouzovský, Zdeněk Svatý, Jakub Nováček*	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
20XN1	**Master Project 1** *Jiří Růžička*	Z	2	0P+2C+4B	Z	ZP
18XN1	**Master Project 1** *Václav Rada, Nela Krčmářová*	Z	2	0P+2C+4B	Z	ZP
17XN1	**Master Project 1** *Václav Baroch, Michal Drábek, Alexandra Dvořáčková, Veronika Faifrová, Eliška Glaserová, Rudolf F. Heidu, Tomáš Horák, Vít Janoš, Milan Kříž, ...*	Z	2	0P+2C+4B	Z	ZP
23XN1	**Master Project 1**	Z	2	0P+2C+4B	Z	ZP
15XN1	**Master Project 1**	Z	2	0P+2C+4B	Z	ZP
14XN1	**Master Project 1**	Z	2	0P+2C+4B	Z	ZP
13XN1	**Master Project 1**	Z	2	0+2	Z	ZP
12XN1	**Master Project 1** *Martin Jareš, Petr Chmela, Zuzana Čarská, Dagmar Kočárková, Iva Šturmová, Kristýna Neubergová, Martin Jacura, Jan Kruntorád, Ondřej Trešl, ...*	Z	2	0P+2C+4B	Z	ZP
11XN1	**Master Project 1**	Z	2	0P+2C+4B	Z	ZP
16XN1	**Master Project 1** *Přemysl Toman*	Z	2	0P+2C+4B	Z	ZP
22XN2	**Master Project 2** *Michal Frydrýn, Karel Kocián, Luboš Nouzovský, Zdeněk Svatý, Jakub Nováček*	Z	2	0P+2C+8B	L	ZP
21XN2	**Master Project 2**	Z	2	0P+2C+8B	L	ZP
20XN2	**Master Project 2** *Jiří Růžička, Patrik Horažďovský*	Z	2	0P+2C+8B	L	ZP
18XN2	**Master Project 2** ***Daniel Kytýř***	Z	2	0P+2C+8B	L	ZP
17XN2	**Master Project 2** *Václav Baroch, Michal Drábek, 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
16XN2	**Master Project 2** *Přemysl Toman, Josef Mík*	Z	2	0P+2C+8B	L	ZP
15XN2	**Master Project 2**	Z	2	0P+2C+8B	L	ZP
14XN2	**Master Project 2**	Z	2	0P+2C+8B	L	ZP
13XN2	**Master Project 2**	Z	2	0+2	L	ZP
12XN2	**Master Project 2** *Martin Jareš, Petr Chmela, Zuzana Čarská, Dagmar Kočárková, Kristýna Neubergová, Martin Jacura, Jan Kruntorád, Ondřej Trešl, David Vodák, ...*	Z	2	0P+2C+8B	L	ZP
11XN2	**Master Project 2**	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** *Martin Jareš, Petr Chmela, Zuzana Čarská, Dagmar Kočárková, Martin Jacura, Jan Kruntorád, Ondřej Trešl, David Vodák, Tomáš Javořík, ...*	Z	1	0P+4C	Z	ZP
23XN3	**Master Project 3**	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
21XN3	**Master Project 3** *Miloš Strouhal, Terézia Pilmannová*	Z	1	0P+4C	Z	ZP
20XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
18XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
17XN3	**Master Project 3** *Václav Baroch, Michal Drábek, Alexandra Dvořáčková, Veronika Faifrová, Eliška Glaserová, Rudolf F. Heidu, Tomáš Horák, Vít Janoš, Milan Kříž, ...*	Z	1	0P+4C	Z	ZP
16XN3	**Master Project 3** *Přemysl Toman, Josef Mík, Michal Cenkner, Josef Svoboda*	Z	1	0P+4C	Z	ZP
15XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
14XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
13XN3	**Master Project 3**	Z	1	0+4	Z	ZP
11XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
22XN4	**Master Project 4** *Michal Frydrýn, Karel Kocián, Luboš Nouzovský, Zdeněk Svatý*	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
20XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
18XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
23XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
16XN4	**Master Project 4** *Josef Mík, Michal Cenkner*	Z	8	0P+4C	L	ZP
15XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
14XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
13XN4	**Master Project 4**	Z	8	0+4	L	ZP
12XN4	**Master Project 4** *Martin Jareš, Petr Chmela, Zuzana Čarská, Dagmar Kočárková, Kristýna Neubergová, Martin Jacura, Jan Kruntorád, Ondřej Trešl, David Vodák, ...*	Z	8	0P+4C	L	ZP
17XN4	**Master Project 4** *Václav Baroch, Michal Drábek, Alexandra Dvořáčková, Veronika Faifrová, Rudolf F. Heidu, Tomáš Horák, Vít Janoš, Milan Kříž, Olga Mertlová, ... Václav Baroch (Gar.)*	Z	8	0P+4C	L	ZP

Characteristics of the courses of this group of Study Plan: Code=XN1-4 12/13 Name=Projekty nav. 1.-4.sem.DS,ID,LO,PL

22XN1	Master Project 1	Z	2
21XN1	Master Project 1	Z	2
20XN1	Master Project 1	Z	2
18XN1	Master Project 1	Z	2
17XN1	Master Project 1	Z	2
23XN1	Master Project 1	Z	2
15XN1	Master Project 1	Z	2
14XN1	Master Project 1	Z	2
13XN1	Master Project 1	Z	2
12XN1	Master Project 1	Z	2
11XN1	Master Project 1	Z	2
16XN1	Master Project 1	Z	2
22XN2	Master Project 2	Z	2
21XN2	Master Project 2	Z	2
20XN2	Master Project 2	Z	2
18XN2	Master Project 2	Z	2
17XN2	Master Project 2	Z	2
16XN2	Master Project 2	Z	2
15XN2	Master Project 2	Z	2
14XN2	Master Project 2	Z	2
13XN2	Master Project 2	Z	2
12XN2	Master Project 2	Z	2
11XN2	Master Project 2	Z	2
23XN2	Master Project 2	Z	2
11XN3	Master Project 3	Z	1
12XN3	Master Project 3	Z	1
23XN3	Master Project 3	Z	1
22XN3	Master Project 3	Z	1
21XN3	Master Project 3	Z	1
20XN3	Master Project 3	Z	1
18XN3	Master Project 3	Z	1
17XN3	Master Project 3	Z	1
16XN3	Master Project 3	Z	1
15XN3	Master Project 3	Z	1
14XN3	Master Project 3	Z	1
13XN3	Master Project 3	Z	1
11XN4	Master Project 4	Z	8
22XN4	Master Project 4	Z	8
21XN4	Master Project 4	Z	8
20XN4	Master Project 4	Z	8
18XN4	Master Project 4	Z	8
23XN4	Master Project 4	Z	8
16XN4	Master Project 4	Z	8
15XN4	Master Project 4	Z	8
14XN4	Master Project 4	Z	8
13XN4	Master Project 4	Z	8

12XN4	Master Project 4	Z	8
17XN4	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-N 11/12
Name of the group: PVP nav.prez. od 11/12
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
20Y2AP	**Computer Systems Architecture**	KZ	2	2+0	L	PV
12Y2BM	**Safety on The Local Roads**	KZ	2	2P+0C	Z	PV
17Y2BU	**Stock Market and Investment Companies**	KZ	2	2+0	L	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
13Y2DT	**Taxes and Fees in Transport and Telecommunications**	KZ	2	2+0	L	PV
17Y2DT	**Taxes and Fees in Transport and Telecommunications**	KZ	2	2+0	L	PV
17Y2DL	**Transportation Logistics**	KZ	2	2+0	Z	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
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
13Y2IM	**Investment and Insurance Mathematics**	KZ	2	2+0	L	PV
12Y2IS	**Urban Networks**	KZ	2	2P+0C	Z	PV
14Y2JM	**One-Chip Controllers**	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
21Y2LZ	**Human Recources and Projects in Aviation**	KZ	2	2+0	L	PV
11Y2LG	**Logics of Engineer's Judgement**	KZ	2	2P+0C	L	PV
17Y2LS	**Logistic Systems**	KZ	2	2+0		PV
13Y2MC	**Management of Travel Services Transportation**	KZ	2	2+0	Z	PV
13Y2MV	**Management of Transportation Quality**	KZ	2	2+0	L	PV
13Y2MZ	**Environmental Management**	KZ	2	2+0	Z	PV
15Y2MS	**Sociology for Managers** *Martina Šmidochová*	KZ	2	2P+0C	Z	PV
12Y2MH	**Measurement and Modeling of Traffic Noise**	KZ	2	2P+0C	L	PV
12Y2MD	**Methods of Traffic Regulation and Prediction** *Zuzana Čarská*	KZ	2	2P+0C	L	PV
20Y2MK	**Quality Tools in the Development Phase**	KZ	2	2+0	L	PV

17Y2MS	**Microsimulation of Railway Operation** *Zdeněk Michl*	KZ	2	2P+0C	Z	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
13Y2NU	**Cost and Benefits of Transport Systems**	KZ	2	2+0	L	PV
21Y2NR	**Navigation and Flight Control Systems**	KZ	2	2+0	L	PV
20Y2NE	**Design of Experiments in the Development Phase**	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
12Y2OO	**Protection of the Nature and Waste Management**	KZ	2	2+0	L	PV
15Y2OZ	**Health Protection in Transportation and EU** *Eva Rezlerová, Petr Musil*	KZ	2	2P+0C	Z	PV
21Y2OU	**Organizations Licenced for A/C Maintenance**	KZ	2	2+0		PV
12Y2PB	**Navigation, Waterway Transport and Facilities**	KZ	2	2+0	L	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
17Y2P	**Insurance Bussiness**	KZ	2	2+0	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
16Y2PU	**Principles of Vehicle Design**	KZ	2	2+0	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
21Y2PL	**Operational Aspects of Aerodromes**	KZ	2	2P+0C	Z	PV
17Y2PR	**Carriage Processes**	KZ	2	2+0	Z	PV
13Y2PS	**Case Studies in Transportation**	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
13Y2RK	**Crisis Management**	KZ	2	2+0		PV
15Y2SP	**Seminar on Political Philosophy**	KZ	2	2P+0C	Z	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** *Jan Feit, Eva Rezlerová*	KZ	2	2P+0C	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
13Y2VZ	**Leadership of Human Resources**	KZ	2	2+0		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
12Y2VT	**High Speed Railways**	KZ	2	2P+0C	Z	PV
12Y2ZK	**Traffic Calming** *Zuzana Čarská*	KZ	2	2P+0C	Z	PV

Characteristics of the courses of this group of Study Plan: Code=Y2-N 11/12 Name=PVP nav.prez. od 11/12

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.

20Y2AP	Computer Systems Architecture	KZ	2

Description of computer architecture principles, e.g. von Neumann's model, pipelining, different coupling of systems, transmission protocols, systolic systems, parallel systems classification, etc. The Amdahl's law, effectiveness of parallel systems performance measurement, RISC and CICS architectures, superscalar architectures, mass parallel architectures and symmetric multiprocessing explained on many examples.

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.

17Y2BU	Stock Market and Investment Companies	KZ	2

The course will teach the students to understand the financial and capital markets, especially the financial system, market determination of discount rates, money-market analysis and valuation of securities. Investor liquidity. Investment companies, its types, management and performance measuring of a portfolio, agiotage and arbitrage. The investment instruments, volatility and risks.

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.

13Y2DT	Taxes and Fees in Transport and Telecommunications	KZ	2

System of taxes and fees of the Czech Republic, comparison with customs in the EU. Purpose and kinds of taxes, fundamental terms and tax categories. National budget, duties, state, local and court fees. Historic development of rates of taxation of natural individual, legal entity, VAT, consumption tax.

17Y2DT	Taxes and Fees in Transport and Telecommunications	KZ	2

System of taxes and fees of the Czech Republic, comparison with customs in the EU. Purpose and kinds of taxes, fundamental terms and tax categories. National budget, duties, state, local and court fees. Historic development of rates of taxation of natural individual, legal entity, VAT, consumption tax.

17Y2DL	Transportation Logistics	KZ	2

Position of the transportation in logistic systems. Methods of optimal management and allocation of the material flows. Decision processes in material and information flows management. Quality of transportation in logistic system, optimization of the quality level in view of shipment affinity. Role and function of information flows in logistic systems. Projection of information, diagnostic and decision systems in logistics.

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.

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.

13Y2IM	Investment and Insurance Mathematics	KZ	2

Interest rata nominal, efficient and real. Annuity, cash flow, present and future value. Debt amortization. Investment assessment. Security pricing. Basic notions and principles of insurance. Casualty insurance - risks, tariff groups, drivers, premium. Basics of demography, life tables, commutation functions. Capital life insurance, endowment, whole life. Annuity insurance. Current premium, gross premium, premium reserves.

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.			
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.			
21Y2LZ	Human Recources and Projects in Aviation	KZ	2
Human resource strategy and policy, the HR specifics in aviation, managers´ and specialists´ competence in HR development, management and development of HR performance, the corporate culture, HR in the conditions of global market and competition, new trends and approaches to HR development. Project management as a current practice in the current conditions of corporate management. The philosophy and principles, of project management.			
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.			
17Y2LS	Logistic Systems	KZ	2
Logistics systems create a set of specific activities that are interconnected by interactive links. The base of these systems forms: stock control and inventory management, integrated transportation systems, management systems and logistics partnership formation and logistic alliances formation.			
13Y2MC	Management of Travel Services Transportation	KZ	2
Global importance of the tourist trade, transport services, accomodation services, catering services, guide sevices, spa services, organization and services of travel agencies, marketing and specifics of services in the tourist trade.			
13Y2MV	Management of Transportation Quality	KZ	2
Quality management, standards and quality standardization, quality management systems, quality management in transport and logistics, marketing and transport quality, quality costs, quality measurement and monitoring, statistics in quality management, improving, focus on the customer.			
13Y2MZ	Environmental Management	KZ	2
Delimitation of basic concepts (difference between the environment and ecology, ecosystems, sustatinable development). Main ways of environment deterioration with local, regional and global impact. Ways of environment protection, the development of the environmental policy, its strategy and instruments. Voluntary instruments, their importance and classification. Application of the most important voluntary instruments in the practice.			
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.			
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.			
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.			
20Y2MK	Quality Tools in the Development Phase	KZ	2
Overview of quality management methods, data acquisition and analysis of customer requirements, methods, QFD, DFM, DFA, DFS. FMEA (Analysis of defects and their consequences). Introduction to concurrent (team) design.			
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.			
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.			
13Y2NU	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.			
21Y2NR	Navigation and Flight Control Systems	KZ	2
Navigtion (ANP/RNP), area navigation, FMS, FMC, A/P, A/T, FD, MCDU, GPWS.			
20Y2NE	Design of Experiments in the Development Phase	KZ	2
The role of experiment in the development of cars. A detailed overview of their own methods. Applied Statistics. Laboratory tests of durability, performance, road tests, climatic tests, acoustic tests, vibration, corrosion testing, analysis of customer satisfaction, specific expert system for the VDS, the relationship with FMEA (failure mode and effect analysis).			

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.			
12Y2OO	Protection of the Nature and Waste Management	KZ	2
History of nature protection, its evaluating. Protected species, protected zones. Legislation. Landscape planning. Waste management. Production of waste and its types. Domestic waste, industrial waste, dangerous waste, toxic waste. Solid waste disposal and sorted waste. Composting. Nuclear waste and nuclear waste dump. Legislation.			
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.			
21Y2OU	Organizations Licenced for A/C Maintenance	KZ	2
12Y2PB	Navigation, Waterway Transport and Facilities	KZ	2
Characterization of water transport, water transport facilities and principals of their construction. Lock chambers, lifts and ports. Vessels and waterways navigation. Legal order related to inland navigation and its integration to European norms. International relations in inland navigation and waterways.			
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.			
17Y2P	Insurance Bussiness	KZ	2
Insurance bussiness - history and progress. Insurance company, insurance - sorts. Risks and damages. Reinsurance company, principle of reinsurance.			
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.			
16Y2PU	Principles of Vehicle Design	KZ	2
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).			
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.			
13Y2PS	Case Studies in Transportation	KZ	2
Definition of basic concepts in transport, traffic impacts on the environment and national economy, problems of energy and transport sustainability from an energy standpoint, the relationship of transport and macroeconomic development, investments in transport, the individual chapters will be presented to students through case studies and subsequent discussions, the lectures using practitioners.			
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.			
13Y2RK	Crisis Management	KZ	2
The subject is connected with solution of the following problems: \r\n<ul type="disc"> - crisis situations and crisis of state - crisis risk management - economic mobilisation - social psychology aspects - acts and other legislative activities - subjects of economic mobilisation and planning process			
15Y2SP	Seminar on Political Philosophy	KZ	2
Interpreting of philosophical texts, view of society, state and their system of government.			
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?			
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.			
13Y2VZ	Leadership of Human Resources	KZ	2
The aim of the course is to provide a basic overview of issues in human resources, as an aspect of all kinds of management. This is an introduction to personnel management, embracing the whole breadth of HR management and taking into account the aims, strategy and culture of companies. The course deals with basic concepts of HR management and directing working teams; communication in teams; planning and strategy for HR; and, finally, ethics related to human resources and company culture (as well as trancultural differencies). A presentation of current amendments to the Labour Code. The course includes training exercises and simulation games, oriented toward feedback and experience.			
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.			

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.			

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-11/12
Name of the group: Jazyk nav.1.- 4.sem. 11/12
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
15JBF2	**Language - French 2** *Eva Rezlerová, Irena Veselková*	Z	2	0P+2C+10B	L	J
15JBF3	**Language - French 3** *Eva Rezlerová, Irena Veselková*	Z	2	0P+2C+10B	Z	J
15JBF4	**Language - French 4** *Eva Rezlerová, Irena Veselková*	ZK	2	0P+2C+10B	L	J
15J2N1	**Language - German 1** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	Z	2	0P+2C+10B	Z	J
15JBN2	**Language - German 2** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	Z	2	0P+2C+10B	L	J
15JBN3	**Language - German 3** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	Z	2	0P+2C+10B	Z	J
15JBN4	**Language - German 4** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	ZK	2	0P+2C+10B	L	J
15J2R1	**Language - Russian 1** *Marie Michlová, Eva Rezlerová*	Z	2	0P+2C+10B	Z	J
15JBR2	**Language - Russian 2** *Marie Michlová, Eva Rezlerová*	Z	2	0P+2C+10B	L	J
15JBR3	**Language - Russian 3** *Marie Michlová, Eva Rezlerová*	Z	2	0P+2C+10B	Z	J
15JBR4	**Language - Russian 4** *Marie Michlová, Eva Rezlerová*	ZK	2	0P+2C+10B	L	J
15J2S1	**Language - Spanish 1** *Eva Rezlerová, Nina Hricsina Puškinová*	Z	2	0P+2C+10B	Z	J
15JBS2	**Language - Spanish 2** *Eva Rezlerová, Nina Hricsina Puškinová*	Z	2	0P+2C+10B	L	J
15JBS3	**Language - Spanish 3** *Eva Rezlerová, Nina Hricsina Puškinová*	Z	2	0P+2C+10B	Z	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-11/12 Name=Jazyk nav.1.- 4.sem. 11/12

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.			
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.			

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.			
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.			
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.			
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.			
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.			
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.			

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.			
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.			
12BA	Road Safety Audit	KZ	2
Schedules of applications of safety assessments during the process of preparations, and of the particular realization of the road network that should minimize traffic accident risks for all those who take part in road traffic. Road safety survey. Application of European Directive 2008/96/EC on road safety infrastructure management.			
12DVUP	Transport and Land - Use Planning	KZ	2
Explanation of fundamental relation and connection between transport and territory, fundamentals of traffic layout. Land - use planning. Influence of traffic on area and shape of town, solving principles of different transport modes including pedestrian traffic and cycling transport. Traffic calming, parking. Complex transport study.			
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.			
12IDOS	Integrated Transport Systems	ZK	3
Reasons for building of integrated transport systems, principle of integration, dividing of integration methods, traffic, infrastructure, technical, organizational methods, integration of tariff, sales systems, information systems, marketing of system, examples of non-integration.			
12IKOD	Rail Transport Infrastructure	Z,ZK	5
Non-compensated lateral acceleration, Parameters eduction for transition curve and cant transition, curves without straight, track spacing change. Railway, subway and tramway track detailed construction. Continuous welded rail theory. Substructure, slab track. Tram-train. Interoperability. Noise precautions. Railway lines rationalisation, dispositional layout of operating points trackages, passenger buildings and forecourts. Sidings, terminals.			
12NAP	Design and Operation of Traffic Engineering Facilities	Z,ZK	6
Past and present of the tunnel construction and design, technological systems at bridges and tunnels and its design, traffic and safety system, risk analysis,bridges and tunnels operation, durability of facilities.			
12TEPR	Theory of Road Traffic Operation	Z,ZK	8
Basic transport parameters and their measurement, traffic sensors. The concept of capacity analysis. Theoretical foundations and application of simulation models, macroscopic and statistical models. Theory of traffic management of intersections, urban areas and highways. Green Wave and priority of public transport. Identification and management of accidents. Principles and methods of evaluation of roads maintenance.			
12TKV	The Theory of Pavement Layers in Highway Engineering	Z,ZK	3
Function of transportations in highway engineering - material aspects of roads and highways. The course covers evolution of highway engineering since the begining of the 20th century with the emphasis of material aspects.			
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.			
12Y2OO	Protection of the Nature and Waste Management	KZ	2
History of nature protection, its evaluating. Protected species, protected zones. Legislation. Landscape planning. Waste management. Production of waste and its types. Domestic waste, industrial waste, dangerous waste, toxic waste. Solid waste disposal and sorted waste. Composting. Nuclear waste and nuclear waste dump. Legislation.			
12Y2PB	Navigation, Waterway Transport and Facilities	KZ	2
Characterization of water transport, water transport facilities and principals of their construction. Lock chambers, lifts and ports. Vessels and waterways navigation. Legal order related to inland navigation and its integration to European norms. International relations in inland navigation and waterways.			
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.			
13MGD	Management of Transportation Systems	Z,ZK	3
Manager and his team, choice of team members, teamwork, leadership, training of communication and presentation skills of modern, operative and strategic planning and decision making, conflicts, motivation, decision support methods, organizing, organization structures, organization welfare, control, project management (focused on PPP), decision support systems in transportation (Highway Development and Management Tools).			
13XN1	Master Project 1	Z	2
13XN2	Master Project 2	Z	2
13XN3	Master Project 3	Z	1
13XN4	Master Project 4	Z	8
13Y2DT	Taxes and Fees in Transport and Telecommunications	KZ	2
System of taxes and fees of the Czech Republic, comparison with customs in the EU. Purpose and kinds of taxes, fundamental terms and tax categories. National budget, duties, state, local and court fees. Historic development of rates of taxation of natural individual, legal entity, VAT, consumption tax.			
13Y2IM	Investment and Insurance Mathematics	KZ	2
Interest rata nominal, efficient and real. Annuity, cash flow, present and future value. Debt amortization. Investment assessment. Security pricing. Basic notions and principles of insurance. Casualty insurance - risks, tariff groups, drivers, premium. Basics of demography, life tables, commutation functions. Capital life insurance, endowment, whole life. Annuity insurance. Current premium, gross premium, premium reserves.			
13Y2MC	Management of Travel Services Transportation	KZ	2
Global importance of the tourist trade, transport services, accomodation services, catering services, guide sevices, spa services, organization and services of travel agencies, marketing and specifics of services in the tourist trade.			
13Y2MV	Management of Transportation Quality	KZ	2
Quality management, standards and quality standardization, quality management systems, quality management in transport and logistics, marketing and transport quality, quality costs, quality measurement and monitoring, statistics in quality management, improving, focus on the customer.			
13Y2MZ	Environmental Management	KZ	2
Delimitation of basic concepts (difference between the environment and ecology, ecosystems, sustatinable development). Main ways of environment deterioration with local, regional and global impact. Ways of environment protection, the development of the environmental policy, its strategy and instruments. Voluntary instruments, their importance and classification. Application of the most important voluntary instruments in the practice.			
13Y2NU	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.			
13Y2PS	Case Studies in Transportation	KZ	2
Definition of basic concepts in transport, traffic impacts on the environment and national economy, problems of energy and transport sustainability from an energy standpoint, the relationship of transport and macroeconomic development, investments in transport, the individual chapters will be presented to students through case studies and subsequent discussions, the lectures using practitioners.			
13Y2RK	Crisis Management	KZ	2
The subject is connected with solution of the following problems: \r\n<ul type="disc"> - crisis situations and crisis of state - crisis risk management - economic mobilisation - social psychology aspects - acts and other legislative activities - subjects of economic mobilisation and planning process			
13Y2VZ	Leadership of Human Resources	KZ	2
The aim of the course is to provide a basic overview of issues in human resources, as an aspect of all kinds of management. This is an introduction to personnel management, embracing the whole breadth of HR management and taking into account the aims, strategy and culture of companies. The course deals with basic concepts of HR management and directing working teams; communication in teams; planning and strategy for HR; and, finally, ethics related to human resources and company culture (as well as trancultural differencies). A presentation of current amendments to the Labour Code. The course includes training exercises and simulation games, oriented toward feedback and experience.			
14DSIM	Traffic Microsimulation	Z	3
Basic overview of traffic microsimulation models. Introduction to the working environment application. Project processing microsimulation model in urban area - creating a transport network, capacity assessment of level intersections, light coordination of level intersections, creating a network of public transport, parking lots, pedestrian and bicycle paths.			
14GISS	Geographical Information Systems	KZ	2
Construction of saving format of space-oriented information land-survey and cartography minimum basic tasks of spatial operations principles of territorial identification			
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, provissioning 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.			
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.			
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.			
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.			
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?			
16PDP	Principles of Vehicle Design	ZK	2
Design of transportation vehicle according to its usage and function. Marketing and user demands. Vehicle dynamics. Propulsion systems. Design process, functional design and vehicle structure. Evaluation of variant concepts. Design phases. Realiability, technological aspects etc.			
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.			
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).			
16Y2PU	Principles of Vehicle Design	KZ	2
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).			
17MGD	Management of Transport Systems	Z,ZK	3
Functions, processes and systems of management in transport, organisational structures, strategy, social responsibility, soft skills.			
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.			
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
17Y2BU	Stock Market and Investment Companies	KZ	2
The course will teach the students to understand the financial and capital markets, especially the financial system, market determination of discount rates, money-market analysis and valuation of securities. Investor liquidity. Investment companies, its types, management and performance measuring of a portfolio, agiotage and arbitrage. The investment instruments, volatility and risks.			
17Y2DL	Transportation Logistics	KZ	2
Position of the transportation in logistic systems. Methods of optimal management and allocation of the material flows. Decision processes in material and information flows management. Quality of transportation in logistic system, optimization of the quality level in view of shipment affinity. Role and function of information flows in logistic systems. Projection of information, diagnostic and decision systems in logistics.			
17Y2DT	Taxes and Fees in Transport and Telecommunications	KZ	2
System of taxes and fees of the Czech Republic, comparison with customs in the EU. Purpose and kinds of taxes, fundamental terms and tax categories. National budget, duties, state, local and court fees. Historic development of rates of taxation of natural individual, legal entity, VAT, consumption tax.			
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.			
17Y2LS	Logistic Systems	KZ	2
Logistics systems create a set of specific activities that are interconnected by interactive links. The base of these systems forms: stock control and inventory management, integrated transportation systems, management systems and logistics partnership formation and logistic alliances formation.			
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.			
17Y2P	Insurance Bussiness	KZ	2
Insurance bussiness - history and progress. Insurance company, insurance - sorts. Risks and damages. Reinsurance company, principle of reinsurance.			
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.			

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.			
18GES	Geomechanics and Foundation Engineering	Z,ZK	4
Basic soil behaviour, water flow in the soil, basic of the soil mechanic, mechanic of the soil mass, stress in the soil, landslide and their rehabilitation, mechanics of the rock mass, type of the foundations and their design, abutment walls, breast walls, sheeting structures, improvement of the soil, modern method of the subsoil bearing capacity and slope stability improvement (geotextile, geogrids, anchored prefabticated elements), EN 1997-2.			
18TAM	Theoretical and Applied Mechanics	ZK	2
Fundamentals of theory of plasticity. Plasticity conditions. Elastoplastic and plastic state of body. Reliability and durability of structures. The stress and strain state around the notch. Stress intensity factor. Fracture toughness. Energy methods of linear fracture mechanics. Crack driving force. Opening the crack. Fatigue properties of the material. Fatigue process. Dimensioning of fatigue.			
18TIK	Theory of Engineering Structures	Z,ZK	4
The course builds upon the knowledge gained in basic mechanics courses in bachelor study (especially Statics and Elasticity) in the field of mathematical theory of elasticity. Emphasis is placed on plane and axisymmetric problems, as well as on the calculation of stress and strain in plates and shells. Students are further acquainted with methods of modeling the behavior of subsoil used in the design of line structures.			
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.			
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.			
20DTEL	Road´s Traffic Telematics	ZK	4
Traffic management in cities and on highways, information and navigation systems, electronic fee collection, safe and intelligent vehicle and safety systems.			
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
20Y2AP	Computer Systems Architecture	KZ	2
Description of computer architecture principles, e.g. von Neumann's model, pipelining, different coupling of systems, transmission protocols, systolic systems, parallel systems classification, etc. The Amdahl's law, effectiveness of parallel systems performance measurement, RISC and CICS architectures, superscalar architectures, mass parallel architectures and symmetric multiprocessing explained on many examples.			
20Y2MK	Quality Tools in the Development Phase	KZ	2
Overview of quality management methods, data acquisition and analysis of customer requirements, methods, QFD, DFM, DFA, DFS. FMEA (Analysis of defects and their consequences). Introduction to concurrent (team) design.			
20Y2NE	Design of Experiments in the Development Phase	KZ	2
The role of experiment in the development of cars. A detailed overview of their own methods. Applied Statistics. Laboratory tests of durability, performance, road tests, climatic tests, acoustic tests, vibration, corrosion testing, analysis of customer satisfaction, specific expert system for the VDS, the relationship with FMEA (failure mode and effect analysis).			
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
21Y2LZ	Human Recources and Projects in Aviation	KZ	2
Human resource strategy and policy, the HR specifics in aviation, managers´ and specialists´ competence in HR development, management and development of HR performance, the corporate culture, HR in the conditions of global market and competition, new trends and approaches to HR development. Project management as a current practice in the current conditions of corporate management. The philosophy and principles, of project management.			
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.			
21Y2NR	Navigation and Flight Control Systems	KZ	2
Navigtion (ANP/RNP), area navigation, FMS, FMC, A/P, A/T, FD, MCDU, GPWS.			
21Y2OU	Organizations Licenced for A/C Maintenance	KZ	2
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.			
22AMM	Measuring Methods Applied to Transportation	KZ	2
Geodetic location and technical processing of traffic route with geodetic total station, GPS and photogrammetry, 3D scanning. Transport corridor setting out usány geodetic methods. Detection and technical processing of several vehicle dynamic characteristics using high-speed cameras, accelerometers and radar device.			
22SKM	Vehicle Kinematic Modelling and Simulation	KZ	2
Principles and posibilities of simulation tools with regards to vehicle movement analysis and vehicle crash analysis. Kinematic modelling of vehicle / vehicle train movement. View conditions. Proposed road space passage.			
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.			
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.			
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.			
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.			

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