Study plan

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

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Air Traffic Control and Management
Garantor of the study branch: doc. Ing. Jakub Hospodka, Ph.D.
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: Semestrální projekt
Minimal number of credits of the block: 13
The role of the block: ZP

Code of the group: XN1-4 14/15
Name of the group: Projekty nav.prez.1.-4.sem (DS, LA, PL+ [BT])
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, Tomáš Mičunek, Luboš Nouzovský, Zdeněk Svatý*	Z	2	0P+2C	Z	ZP
21XN1	**Master Project 1**	Z	2	0P+2C	Z	ZP
20XN1	**Master Project 1** *Jiří Růžička, Patrik Horažďovský, Vladimír Faltus, Petr Bureš, Milan Sliacky, Martin Langr*	Z	2	0P+2C	Z	ZP
18XN1	**Master Project 1** *Petr Zlámal, Petr Koudelka, Tomáš Fíla*	Z	2	0P+2C	Z	ZP
17XN1	**Master Project 1** *Václav Baroch, Edvard Březina, Michal Drábek, Alexandra Dvořáčková, Veronika Faifrová, Tomáš Horák, Vít Janoš, Milan Kříž, Olga Mertlová, ...*	Z	2	0P+2C	Z	ZP
23XN1	**Master Project 1**	Z	2	0P+2C	Z	ZP
15XN1	**Master Project 1** *Jan Feit, Eva Rezlerová*	Z	2	0P+2C	Z	ZP
14XN1	**Master Project 1** *Jana Kaliková, Jan Krčál, Martin Šrotýř, Zdeněk Lokaj, Tomáš Zelinka, Ota Hajzler Jana Kaliková (Gar.)*	Z	2	0P+2C	Z	ZP
12XN1	**Master Project 1** *Zuzana Čarská, Jiří Čarský, Josef Filip, Jan Gallia, Martin Höfler, Tomáš Honc, Lukáš Hrdina, Petr Chmela, Martin Jacura, ...*	Z	2	0P+2C	Z	ZP
11XN1	**Master Project 1** *Magdalena Hykšová* ***Ivan Nagy***	Z	2	0P+2C	Z	ZP
16XN1	**Master Project 1** *Adam Orlický, Josef Mík, Dmitry Rozhdestvenskiy, Přemysl Toman*	Z	2	0P+2C	Z	ZP
22XN2	**Master Project 2** *Michal Frydrýn, Karel Kocián, Luboš Nouzovský, Zdeněk Svatý*	Z	2	0P+2C	L	ZP
21XN2	**Master Project 2** *Peter Vittek, Lenka Hanáková, Vladimír Socha, Jakub Kraus, Stanislav Pleninger, Jakub Hospodka, Andrej Lališ, Slobodan Stojić, Markéta Šedivá Kafková, ...*	Z	2	0P+2C	L	ZP
20XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
18XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
17XN2	**Master Project 2** *Václav Baroch, Edvard Březina, Michal Drábek, Tomáš Horák, Vít Janoš, Milan Kříž, Olga Mertlová, Zdeněk Michl, Denisa Mocková, ...*	Z	2	0P+2C	L	ZP

16XN2	**Master Project 2** *Adam Orlický, Josef Mík*	Z	2	0P+2C	L	ZP
15XN2	**Master Project 2** *Eva Rezlerová*	Z	2	0P+2C	L	ZP
14XN2	**Master Project 2** *Jana Kaliková, Jan Krčál, Martin Šrotýř, Zdeněk Lokaj, Tomáš Zelinka, Ota Hajzler*	Z	2	0P+2C	L	ZP
12XN2	**Master Project 2** *Zuzana Čarská, Jiří Čarský, Josef Filip, Jan Gallia, Martin Höfler, Tomáš Honc, Lukáš Hrdina, Petr Chmela, Martin Jacura, ...*	Z	2	0P+2C	L	ZP
11XN2	**Master Project 2** ***Ivan Nagy***	Z	2	0P+2C	L	ZP
23XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
11XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
12XN3	**Master Project 3** *Zuzana Čarská, Jiří Čarský, Josef Filip, Jan Gallia, Martin Höfler, Tomáš Honc, Lukáš Hrdina, Petr Chmela, Martin Jacura, ...*	Z	1	0P+4C	Z	ZP
23XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
22XN3	**Master Project 3** *Michal Frydrýn, Karel Kocián, Tomáš Mičunek, Luboš Nouzovský, Zdeněk Svatý*	Z	1	0P+4C	Z	ZP
21XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
20XN3	**Master Project 3** *Milan Sliacky*	Z	1	0P+4C	Z	ZP
18XN3	**Master Project 3** *Daniel Kytýř*	Z	1	0P+4C	Z	ZP
17XN3	**Master Project 3** *Václav Baroch, Edvard Březina, Michal Drábek, Alexandra Dvořáčková, Veronika Faifrová, Tomáš Horák, Vít Janoš, Milan Kříž, Olga Mertlová, ...*	Z	1	0P+4C	Z	ZP
16XN3	**Master Project 3** *Adam Orlický, Josef Mík*	Z	1	0P+4C	Z	ZP
15XN3	**Master Project 3** *Jan Feit, Eva Rezlerová*	Z	1	0P+4C	Z	ZP
14XN3	**Master Project 3** *Jana Kaliková*	Z	1	0P+4C	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** *Peter Vittek, Lenka Hanáková, Vladimír Socha, Jakub Kraus, Stanislav Pleninger, Jakub Hospodka, Andrej Lališ, Slobodan Stojić, Markéta Šedivá Kafková, ...*	Z	8	0P+4C	L	ZP
20XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
18XN4	**Master Project 4** *Petr Zlámal, Petr Koudelka, Daniel Kytýř*	Z	8	0P+4C	L	ZP
23XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
16XN4	**Master Project 4** *Milan Sliacky, Adam Orlický, Josef Mík, Přemysl Toman*	Z	8	0P+4C	L	ZP
15XN4	**Master Project 4** *Eva Rezlerová*	Z	8	0P+4C	L	ZP
14XN4	**Master Project 4** *Jana Kaliková, Jan Krčál, Martin Šrotýř, Zdeněk Lokaj, Tomáš Zelinka, Ota Hajzler*	Z	8	0P+4C	L	ZP
12XN4	**Master Project 4** *Zuzana Čarská, Jiří Čarský, Josef Filip, Jan Gallia, Martin Höfler, Tomáš Honc, Lukáš Hrdina, Petr Chmela, Martin Jacura, ...*	Z	8	0P+4C	L	ZP
17XN4	**Master Project 4** *Václav Baroch, Edvard Březina, Michal Drábek, Tomáš Horák, Vít Janoš, Milan Kříž, Olga Mertlová, Zdeněk Michl, Denisa Mocková, ...*	Z	8	0P+4C	L	ZP

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

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
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
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
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
12XN4	Master Project 4	Z	8
17XN4	Master Project 4	Z	8

Name of the block: Compulsory courses
Minimal number of credits of the block: 99
The role of the block: Z

Code of the group: 1.S.NPPL 14/15
Name of the group: 1.sem.nav.prez.PL 14/15
Requirement credits in the group: In this group you have to gain 28 credits
Requirement courses in the group: In this group you have to complete 7 courses
Credits in the group: 28
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
21BLED	**Aviation Safety** *AndrejAliš, Vladimír Plos AndrejAliš (Gar.)*	Z,ZK	4	2P+2C+14B	Z	z
21CNSY	**CNS Systems** *Stanislav Pleninger, Petr Lukeš*	Z,ZK	4	3P+1C+16B	Z	z
21LKS	**Aircraft Structures** *Ladislav Keller*	Z,ZK	5	3P+2C	Z	z
21PLD	**Air Transport Operations** *Jakub Kraus, Markéta Šedivá Kafková, Roman Vokáč, Sébastien Lán Jakub Kraus (Gar.)*	Z,ZK	5	2P+2C+14B	Z	z
21POHL	**Aircraft Propulsion** *Michala Poštová, Daniel Hanus, Kateřina Kunčíková*	Z,ZK	6	3P+2C	Z	z
22SLN	**Air Traffic Accident Investigation** *Michal Frydrýn, Karel Mundel, Jindřich Šachl Karel Mundel (Gar.)*	KZ	2	2P+0C+12B	Z	z
15J2A1	**Language - English 1** *Jan Feit, Eva Rezlerová, Klára Lancová, Lenka Monková, Marie Michlová, Jitka Heřmanová, Dana Boušová, Barbora Horáčková, Peter Morpuss, ... Jitka Heřmanová (Gar.)*	Z	2	0P+2C+10B	Z	z

Characteristics of the courses of this group of Study Plan: Code=1.S.NPPL 14/15 Name=1.sem.nav.prez.PL 14/15

21BLED	Aviation Safety	Z,ZK	4
Reliability and system lifecycle. Basics of reliability theory. Reliability mathematical tools. Reliability analysis. Maintenance system. Safety and quality theory. Basic concepts of safety. Managing of safety. Safety management. Safety management strategies. Hazard, risk. Risk management.			
21CNSY	CNS Systems	Z,ZK	4
Subject provides full technical informations about CNS (communication, navigation, surveilance) systems used in aviation. Systems are presented in perspective of future development.			
21LKS	Aircraft Structures	Z,ZK	5
History and development of aeronautics. Classification of aircraft. Fundamental parts and systems. Safety, reliability and airworthiness. Limit states of aircraft structure and strength certification. Aviation regulations. Load factor. Manoeuvring loads. Manoeuvring envelope of load factor. Gust load. Gust load factor and envelope of gust load factor.			
21PLD	Air Transport Operations	Z,ZK	5
The mission and the importance of air transport. Legislation. Airlines. Strategy. Performance in air transport. The cost structure. Fuel management. Cargo. Quality. Aircraft maintenance (organization) and the economics of aircraft operations. Ground services. Revenue management. Environment.			
21POHL	Aircraft Propulsion	Z,ZK	6
Theoretical background. Earth atmosphere. Classification of aircraft engines, characteristics, domains of use, comparative parameters, characteristics and criteria. Energy transformation within aircraft propulsion systems, thermal cycles analysis, working substances, environmental constraints, efficiencies. Reciprocating and turbine engines, their construction and material characteristics and performance characteristics. Environmental impacts.			
22SLN	Air Traffic Accident Investigation	KZ	2
Specification of forensic expertise. Rregulations and establishments for exceptional events in air traffic. Analysis of air traffic accidents (cause investigation, time course, human factor). Air traffic accidents prevention. Exceptional aviation event report. Analysis of particular accidents in air traffic.			
15J2A1	Language - English 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 English and practical application, formal and technical registers and their use, language of management.			

Code of the group: 2.S.NPPL 14/15
Name of the group: 2.sem.nav.prez.PL 14/15
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 7 courses
Credits in the group: 24
Note on the group:

Code	**Name of the course / Name of the group of courses** ***(in case of groups of courses the list of codes of their members)*** *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
16PDP	**Principles of Vehicle Design** *Přemysl Toman, Jaroslav Machan*	ZK	2	2P+0C+8B	L	z
21KST	**Space Technologies** *Jakub Hospodka*	ZK	3	2P+0C+10B	L	z
21NSR	**Navigation and Flight Management Systems** *Jakub Hospodka*	Z,ZK	5	3P+2C+16B	L	z
21SPOL	**Reliability of Aerospace Engineering** *Oldřich Štumbauer*	Z,ZK	4	2P+1C+12B	L	z
21AITM	**Air Traffic Management** *Miloš Strouhal*	KZ	4	3P+2C+14B	L	z
23SCT	**Airport Security** *Václav Jirovský* ***Václav Jirovský*** *Václav Jirovský (Gar.)*	KZ	4	2P+1C+12B	L	z
15JBA2	**Language - English 2** *Jan Feit, Eva Rezlerová, Lenka Monková, Marie Michlová, Jitka Heřmanová, Dana Boušová, Barbora Horáčková, Peter Morpuss, Markéta Olehlová, ...*	Z	2	0P+2C+10B	L	z

Characteristics of the courses of this group of Study Plan: Code=2.S.NPPL 14/15 Name=2.sem.nav.prez.PL 14/15

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.			
21KST	Space Technologies	ZK	3
Universe and its basic characteristics. Fundamentals of astrophysics. Kepler´s laws. Solar system. Earth's and its atmosphere and outer space. Space transport vehicles. Rockets and rocket engines and their structure and operational characteristics. Space crafts and satellites, space flight. Orbital mechanics. Application of space technologies for global navigation and communication. Space exploration and piloted space flights and missions.			
21NSR	Navigation and Flight Management Systems	Z,ZK	5
Navigation. Radionavigation. Satellite navigation. Flight management system. Autopilot. FMC. Practical execution of flight.			
21SPOL	Reliability of Aerospace Engineering	Z,ZK	4
Subject deals with tuition of separate attributes of reliability (no failure, vitality, maintainability, and so on) and main criterions of safety of production and working of aerospace engineering. General legalities are in the framework of tuition demonstrated on the example of calculation of reliability of integral characteristics of materials and they are practical illustration of its security in The Czech Police Aviation Department.			
21AITM	Air Traffic Management	KZ	4
Current ATM system and its functional blocks. View of ATM data (technical architecture and configuration, transmission systems and networks). Data exchange with neighboring ATM systems. Monitoring systems and technical supervision. ATM simulation. ATM conceptions and strategies for next years. EUROCONTROL - CFMU. FAB. ATS's - AOC's data applications.			
23SCT	Airport Security	KZ	4
Division of airport in terms of security, design, standards and conventions, forms of risk in general, the analysis and management of risk in the ground security, emergency plans, mode of airport security, identification and security systems, radar systems and their role in security operations, scanning systems, X-rays and microwave scanners, intelligence services and security services at the airport, the technology used to ensure the security.			

15JBA2	Language - English 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 English and practical application, formal and technical registers and their use, language of management.

Code of the group: 3.S.NPPL 15/16
Name of the group: 3.sem.nav.prez.PL 15/16
Requirement credits in the group: In this group you have to gain 25 credits
Requirement courses in the group: In this group you have to complete 6 courses
Credits in the group: 25
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
11STS	**Stochastic Systems** *Šárka Jozová, Ivan Nagy, Pavla Pecherková, Evženie Uglickich*	Z,ZK	4	2P+2C+14B	Z	z
21ERG	**Ergonomy in Aviation Technology**	Z,ZK	7	3+1	Z	z
21PSAP	**Aircraft and Spacecraft Instrumentation** *Pavel Hovorka*	Z,ZK	4	2P+2C+14B	Z	z
21ULET	**Aircraft Maintenance** *Kateřina Kunčíková, David Hůlek*	Z,ZK	6	3P+1C+16B	Z	z
21LEN1	**Aviation English 1** *Andrej Lališ, Slobodan Stojić, Roman Matyáš*	Z	2	0P+2C+10B	Z	z
15JBA3	**Language - English 3** *Jan Feit, Eva Rezlerová, Klára Lancová, Lenka Monková, Marie Michlová, Jitka Heřmanová, Dana Boušová, Barbora Horáčková, Peter Morpuss, ...*	Z	2	0P+2C+10B	Z	z

Characteristics of the courses of this group of Study Plan: Code=3.S.NPPL 15/16 Name=3.sem.nav.prez.PL 15/16

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.

21ERG	Ergonomy in Aviation Technology	Z,ZK	7

Basic facts about ergonomics. Human visual system. Human hearing system. Information processing system in humans. Environmental effects on human performance. Displays, controls and design in accordance with ergonomic requirements. Cockpit design in accordance with ergonomic requirements.

21PSAP	Aircraft and Spacecraft Instrumentation	Z,ZK	4

The course deals with a theory and description of basic functions, structures and principles of aircraft and spacecraft instrumentation working in a low-frequency band. Within the scope of this course it is possible to get knowledge about instrument boards, propulsion parameters measurements, aerometrical systems, and fuselage health monitoring systems. Furthermore, gyroscopic systems and systems for navigation are also covered.

21ULET	Aircraft Maintenance	Z,ZK	6

Aircraft operations and technical operations. System of work. System of maintenance. Failure scanning methods. Diagnostical tools for inspections. Selection and qualification of aviation personnel. Basic documentation for maintenance. Procedures for optimizing maintenance time. Regulation n. 2042/2003, part 145. Human factor. EASA director regulation. Excercises will be focused on practical applications.

21LEN1	Aviation English 1	Z	2

Aircraft description. Airline business and marketing. Airports and handling services. Maintenance. Air traffic services. Aviation history. Accident investigation. Human factors. Aviation economics. Development of air services. Low cost airlines. Airline history. Market development. Company management. Airport design. Ecology.

15JBA3	Language - English 3	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 English and practical application, formal and technical registers and their use, language of management.

Code of the group: 4.S.NPPL 15/16
Name of the group: 4.sem.nav.prez. PL od 15/16
Requirement credits in the group: In this group you have to gain 4 credits
Requirement courses in the group: In this group you have to complete 2 courses
Credits in the group: 4
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
21LEN2	**Aviation English 2**	Z	2	0+2	L	z
15JBA4	**Language - English 4** *Jan Feit, Eva Rezlerová, Lenka Monková, Marie Michlová, Jitka Heřmanová, Dana Boušová, Barbora Horáčková, Peter Morpuss, Markéta Olehlová, ...*	ZK	2	0P+2C+10B	L	z

Characteristics of the courses of this group of Study Plan: Code=4.S.NPPL 15/16 Name=4.sem.nav.prez. PL od 15/16

21LEN2	Aviation English 2	Z	2
Airline market trends. Distribution systems. Aircraft construction materials. Engines. Staff training. Dangerous weather. Air traffic services economics. Passenger rights. Airline customer programmes. Catering, baggage handling systems. Airport handling equipment. Search and rescue. Quality of passenger services. Security.			
15JBA4	Language - English 4	ZK	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 English and practical application, formal and technical registers and their use, language of management.			

Code of the group: XNDP 13/14
Name of the group: Diplomová práce (DS, LA, PL +[ID]) 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**	KZ	18	0P+20C+70B	L	Z
12XNDP	**Master Thesis** *Zuzana Čarská, Jiří Čarský, Josef Filip, Jan Gallia, Martin Höfler, Tomáš Honc, Lukáš Hrdina, Petr Chmela, Martin Jacura, ...*	KZ	18	0P+20C+70B	L	Z
15XNDP	**Master Thesis** *Eva Rezlerová*	KZ	18	0P+20C+70B	L	Z
16XNDP	**Master Thesis** *Josef Mík, Stanislav Novotný*	KZ	18	0P+20C+70B	L	Z
17XNDP	**Master Thesis** *Václav Baroch, Edvard Březina, Michal Drábek, Tomáš Horák, Vít Janoš, Milan Kříž, Olga Mertlová, Zdeněk Michl, Denisa Mocková, ...*	KZ	18	0P+20C+70B	L	Z
14XNDP	**Master Thesis** *Jana Kaliková, Jan Krčál, Marek Kalika*	KZ	18	0P+20C+70B	L	Z
20XNDP	**Master Thesis**	KZ	18	0P+20C+70B	L	Z
21XNDP	**Master Thesis** *Peter Vittek, Lenka Hanáková, Vladimír Socha, Jakub Kraus, Stanislav Pleninger, Jakub Hospodka, Andrej Lališ, Slobodan Stojić, Markéta Šedivá Kafková, ...*	KZ	18	0P+20C+70B	L	Z
22XNDP	**Master Thesis** *Michal Frydrýn, Karel Kocián, Luboš Nouzovský, Zdeněk Svatý* ***Luboš Nouzovský*** *Michal Frydrýn (Gar.)*	KZ	18	0P+20C+70B	L	Z
23XNDP	**Master Thesis**	KZ	18	0P+20C+70B	L	Z
18XNDP	**Master Thesis** *Petr Zlámal, Petr Koudelka, Tomáš Fíla, Daniel Kytýř*	KZ	18	0P+20C+70B	L	Z

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

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 8
The role of the block: PV

Code of the group: Y2-NPPL 14/15
Name of the group: PVP nav.prez.PL 14/15
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
23Y2AE	**Acoustics and Electroacoustics in Transportation**	KZ	2	2+0	Z	PV
12Y2BM	**Safety on The Local Roads**	KZ	2	2+0	Z	PV
23Y2BP	**Security Class**	KZ	2	2+0	Z	PV
14Y2C1	**CATIA I**	KZ	2	2P+0C	L	PV
14Y2C2	**CATIA II**	KZ	2	2+0	Z	PV
14Y2CS	**Sensitivity of Systems**	KZ	2	2P+0C	L	PV
15Y2DN	**Transportation Psychology in German Speaking Countries**	KZ	2	2P+0C	L	PV
18Y2D2	**Dynamics of Transport Routes and Vehicles 2**	KZ	2	2+0	L	PV
17Y2FM	**Financing in Urban Mass Transportation**	KZ	2	2P+0C	Z	PV
11Y2FX	**Functions of Complex Variable**	KZ	2	2+0	Z	PV
23Y2FB	**Physics for Security Branches**	KZ	2	2+0	Z	PV
18Y2FZ	**Physical Basis of Materials' Properties** *Jaroslav Valach*	KZ	2	2P+0C	L	PV
15Y2HS	**Road Transport History** *Zuzana Čarská*	KZ	2	2P+0C	L	PV
16Y2HP	**Vehicle Hygiene** *Jiří First*	KZ	2	2P+0C	L	PV
12Y2IS	**Urban Networks**	KZ	2	2+0	Z	PV
14Y2JM	**One-Chip Controllers**	KZ	2	2P+0C	Z	PV
15Y2JH	**Job Hunting in English** *Jan Feit, Eva Rezlerová, Lenka Monková*	KZ	2	2P+0C	Z	PV
17Y2KI	**Capital Investment in Transportation and Telecommunications**	KZ	2	2+0	L	PV
16Y2KV	**Car Body Design** *Josef Mík, Jiří First*	KZ	2	2P+0C	L	PV
12Y2KS	**Rail Transport in Settlements and Regions** *Miroslav Veliš*	KZ	2	2P+0C	Z	PV
12Y2KE	**Landscape Ecology** *Kristýna Neubergová*	KZ	2	2P+0C	Z	PV
21Y2LS	**Air Traffic Services** *Jiří Šála, Marek Štumper*	KZ	2	2P+0C	L	PV
11Y2LG	**Logics of Engineer's Judgement**	KZ	2	2P+0C	L	PV
15Y2MS	**Sociology for Managers** *Jan Feit, Eva Rezlerová*	KZ	2	2P+0C	Z	PV
21Y2MK	**Marketing of Air Transport**	KZ	2	2+0	L	PV
18Y2MP	**Finite Element Method And Its Application** *Ondřej Jiroušek*	KZ	2	2P+0C	L	PV
16Y2MK	**Quality Methods for Vehicles** *Přemysl Toman, Jaroslav Machan*	KZ	2	2P+0C	L	PV
12Y2MD	**Methods of Traffic Regulation and Prediction** *Zuzana Čarská*	KZ	2	2P+0C	L	PV
17Y2MS	**Microsimulation of Railway Operation**	KZ	2	2P+0C	Z	PV
17Y2MM	**Mobility of Small Towns**	KZ	2	2+0	L	PV
21Y2MS	**Aerospace Engineering Simulation and Modelling**	KZ	2	2P+0C	Z	PV
12Y2MZ	**Modernization of Railway Lines and Stations** *Miroslav Veliš*	KZ	2	2P+0C	L	PV
12Y2MH	**Measurement and Modeling of Traffic Noise**	KZ	2	2P+0C	L	PV
23Y2NE	**Design of Electronic Equipments**	KZ	2	2+0	L	PV
17Y2NU	**Cost and Benefits of Transport Systems**	KZ	2	2+0	L	PV
14Y2OP	**Object Oriented Programming in Transport**	KZ	2	2P+0C	L	PV
15Y2OZ	**Health Protection in Transportation and EU** *Jan Feit, Eva Rezlerová, Petr Musil*	KZ	2	2P+0C	Z	PV
15Y2OF	**Specialised French for Transportation and Telecommunications**	KZ	2	2P+0C	Z	PV
15Y2PT	**Food in Transportation** *Jan Feit, Eva Rezlerová, Petr Musil*	KZ	2	2P+0C	L	PV
16Y2PG	**Computer Graphics and Virtual Reality**	KZ	2	2P+0C	Z	PV
22Y2PS	**Traffic Accidents Computer Simulation and Analysis** *Michal Frydrýn, Tomáš Mičunek*	KZ	2	2P+0C	L	PV
15Y2PS	**Practical Spanish for Transportation, Management and Business**	KZ	2	2+0	Z	PV
20Y2PR	**Time Series Prediction** *Emil Pelikán*	KZ	2	2P+0C	L	PV

14Y2PI	**Process Information Systems in Transportation**	KZ	2	2+0	Z	PV
14Y2PJ	**C++ Programming Language** *Vít Fábera*	KZ	2	2P+0C	L	PV
14Y2PH	**CAD Interface Programming**	KZ	2	2P+0C	L	PV
11Y2PM	**Programming in MATLAB**	KZ	2	2P+0C	L	PV
21Y2PL	**Operational Aspects of Aerodromes** *Viktor Sýkora*	KZ	2	2P+0C	Z	PV
21Y2PP	**Law and Operation in Air Transport** *Marie Hauerová*	KZ	2	2P+0C	L	PV
15Y2PU	**Publications and Their Creation**	KZ	2	2P+0C	Z	PV
17Y2PR	**Carriage Processes**	KZ	2	2+0	Z	PV
17Y2PS	**Case Studies in Transportation**	KZ	2	2P+0C	Z	PV
12Y2RD	**Realization of Transport Buildings** *Martin Höfler*	KZ	2	2P+0C	L	PV
17Y2RS	**Regional Transport - Mobility of Small Towns**	KZ	2	2+0	Z	PV
15Y2SP	**Seminar on Political Philosophy** *Jan Feit, Eva Rezlerová, Marek Tomeček*	KZ	2	2P+0C	Z	PV
16Y2ST	**Special Technologies in Transport and Telecommunications** *Jiří Dunovský*	KZ	2	2P+0C	L	PV
18Y2SD	**Reliability and Diagnostics, Experimental Methods** *Daniel Kytýř, Stanislav Hračov*	KZ	2	2P+0C	Z	PV
15Y2SR	**Stylistics and Rhetorics**	KZ	2	2+0	Z	PV
17Y2SG	**Systematic Creating of Railway Timetables**	KZ	2	2+0	Z	PV
17Y2SK	**Urban and Regional Rail Transport System** *Jiří Pospíšil*	KZ	2	2P+0C	L	PV
17Y2SJ	**Network Timetabling on the Railway** *Vít Janoš*	KZ	2	2P+0C	L	PV
15Y2TS	**Technician and Contemporary Society** *Jan Feit, Eva Rezlerová*	KZ	2	2P+0C	L	PV
17Y2TP	**Technological Prognoses in Transportation and Telecommunication**	KZ	2	2+0	L	PV
20Y2TE	**Technology of Electronic Systems**	KZ	2	2+0	Z	PV
14Y2TU	**Telecommunications Systems and Multimedia**	KZ	2	2+0	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** *Kristýna Neubergová*	KZ	2	2P+0C	L	PV
14Y2UI	**Artificial Intelligence**	KZ	2	2P+0C	Z	PV
20Y2UA	**Artificial Neural Networks, Realization and Applications** *Mirko Novák*	KZ	2	2P+0C	Z	PV
23Y2VZ	**Leadership and Human Resource Development**	KZ	2	2P+0C	L	PV
21Y2VA	**Selected Parts of Aerodynamics**	KZ	2	2+0	Z	PV
23Y2VS	**Negotiation and Cooperation**	KZ	2	2+0	Z	PV
23Y2VR	**Cope with Risks in Engineering Branches**	KZ	2	2P+0C	L	PV
12Y2VT	**High Speed Railways** *Lukáš Týfa*	KZ	2	2P+0C	Z	PV
18Y2VC	**Computational Mechanics in Transportation** *Ondřej Jiroušek*	KZ	2	2P+0C	L	PV
12Y2ZK	**Traffic Calming** *Zuzana Čarská*	KZ	2	2P+0C	Z	PV
23Y2ZM	**Intelligence Means and Methods**	KZ	2	2+0	Z	PV
18Y2UB	**Accident Biomechanics and Safety** *Jitka Jírová*	KZ	2	2P+0C	L	PV
17Y2RZ	**Control of Transport Processes** *Edvard Březina*	KZ	2	2P+0C	Z	PV

Characteristics of the courses of this group of Study Plan: Code=Y2-NPPL 14/15 Name=PVP nav.prez.PL 14/15

23Y2AE	Acoustics and Electroacoustics in Transportation	KZ	2

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

12Y2BM	Safety on The Local Roads	KZ	2

Classification of road accidents rates, social looses. Collision points, diagrams. Tools and methods for safer road transportation. Crossroads from the point of view of safety. Psychological right of way. Roundabouts. Pedestrian transport, cyclists. Traffic lights coordination. Transport control and regulation.

23Y2BP	Security Class	KZ	2

The most prevalent topics include data management, data and text mining applications, terrorism informatics, deception and intent detection, terrorist and criminal social network analysis, crime analysis, cyber-infrastructure protection, transportation infrastructure security, and information assurance, among others.

14Y2C1	CATIA I	KZ	2
Fundaments of working with CATIA, making basic parts and bodies. Making 2D sketches, geometric stucture, parametric linking, making adaptive models from 2D sketches. Import and export of made parts and bodies. Making assemble and visualization.			
14Y2C2	CATIA II	KZ	2
Extension of basic course. Modeling compound bodies. Possibility of enumeration, comunications with other systems. Surface x solid bodies. Kinematic mechanism. Project making and project cooperation. Outputs of projects.			
14Y2CS	Sensitivity of Systems	KZ	2
Design of systems with defined reliability. The impact of changing parameters and subsystems within a system. System sensitivity computing, definition of sensitivity functions and matrices and their usability in system design.			
15Y2DN	Transportation Psychology in German Speaking Countries	KZ	2
Introduction to larger view of the traffic problems with regard to the work with texts (physics for drivers, abusing alcohol during driving, exhaustion, getting of driving licence, children in traffic, traffic accident, traffic psychology in the internet etc.).			
18Y2D2	Dynamics of Transport Routes and Vehicles 2	KZ	2
Analysis of forces in the vehicle and transport routes and their influence on the stress and strain components of the vehicle structure or behavior of traffic routes. Creation of dynamic models of vehicles and transport routes. Vibration of systems with a finite number of degrees of freedom. Methods of constant stiffness and constant compliance. Dynamic calculations of structural systems. Criteria for the admissibility of oscillation.			
17Y2FM	Financing in Urban Mass Transportation	KZ	2
UMT history and development in Prague and other cities in the world. Building and operation of public tram, bus, and trolleybus networks. Underground building and operation. Other UMT types. UMT development in small towns. Particularities of investment and operation financing of individual UMT types. Historic and present models of UMT financing. Transport inspection and blind passengers. Tourism & UMT. UMT typology & choice of optimum financing.			
11Y2FX	Functions of Complex Variable	KZ	2
Derivation of complex function, holomorphic function, complex exponential series, integration, Cauchy theorem. Taylor series, Laurent series of complex variable function. Basics of Laplace and Z-transformation.			
23Y2FB	Physics for Security Branches	KZ	2
Grounds of physics of substances and phenomena at extreme conditions. Grounds of rheology. Physics of Earth´s interior. Geophysics. Physics of atmosphere. Applications in dengineering branches directed to safety.			
18Y2FZ	Physical Basis of Materials' Properties	KZ	2
On the basis of internal structure and nature of intraction elastic material behavior and its maximum strength is explained. The model is further developed by considering different types of defects, loads and environment for explanation of failure mechanisms - the level of real strength determined by internal defects, and brittle fracture, fatigue and creep. Failures are discussed as a challenge posed to design of novel materials.			
15Y2HS	Road Transport History	KZ	2
Roads and road traffic in the Ancient Age, corridors of main mediveal pathways. Development of road traffic in the modern period, acceleration of road transport development during 1st part of 20th century. Development of road layout, geometric and construction layers. Beginning of modern road civil engineering. Development of road travelling in modern period. History of road intercections, bridges and traffic control, development of road signs.			
16Y2HP	Vehicle Hygiene	KZ	2
Emissions and ergonomy of vehicles and the influence on man and nature. National and international law related to the hygiene. Noise and vibrations - sources, creation, propagation, physical values, ways of measuring, prevention, elimination. Exhausts - creation, measurement, reduction, non-regular fuels and drives. Ergonomy - sitting, standing, control, operational reach. Condition - heating, ventilation, air-conditioning, filtration, tiredom.			
12Y2IS	Urban Networks	KZ	2
The importance and the position of UN as public and technical infrastructure / utillities, metodology of the UN master planning, of UN design, UN coordination, UN installation and UN operation (basic technical standards of UN, trenchless technologies for UN).			
14Y2JM	One-Chip Controllers	KZ	2
One-chip controllers architecture, embedded peripherals (counters, timers, converters, ports) and their utilisation. Practical tasks are programmed with the aid of AVR chips.			
15Y2JH	Job Hunting in English	KZ	2
The course provides a practical guide to applying for a job in English. The interview process is mapped out, with the course including skills practise for all the stages of this process, including specifics for job-hunting in English. Students will also be introduced to the English vocabulary and phraseology necessary for a successful interview.			
17Y2KI	Capital Investment in Transportation and Telecommunications	KZ	2
Financial market, investment desicion making - long term goals and investment strategies, long temr financing.			
16Y2KV	Car Body Design	KZ	2
Personal cars body, high-load car body, bus car body, and motorcycle as a construction set. Principles of design, production, testing and operation. Materials used for car body construction. Active and passive safety parts. Ergonomics, HMI, view out of the vehicle, operational extent, view behind the car. Conditioning tools, signaling function. Aerodynamics of the car body. Design and artistic design principles. Practical training.			
12Y2KS	Rail Transport in Settlements and Regions	KZ	2
Modernization and development of railway infrastructure in Czech Republic. Arrangement of railway networks and junctions. Suburban railway services. Network configuration and operation of metro systems. Network configuration and operation of tram systems. Special thematic lectures (rail transport in selected countries / regions).			
12Y2KE	Landscape Ecology	KZ	2
Landscape ecology. Landscape - definition, types, evolution. Landscape systems. Anthropogenic impacts on landscape. Methods using for evaluating landscape. Fractal geometry and its potential applications in landscape ecology. Landscape planning.			
21Y2LS	Air Traffic Services	KZ	2
Airspace structure in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, APP a ACC control. Procedural and radar control. Incidents caused or partially caused by ATS. History of ATS and czech airspace.			
11Y2LG	Logics of Engineer's Judgement	KZ	2
Logical structure of engineer's judgement, its propositional and predicative logical base. Solutions of logical tasks through the methods of truthfulness and semantic analysis charts. Venn's diagram method. Logical basis for network design for the solution of technical tasks.			
15Y2MS	Sociology for Managers	KZ	2
Sociological approach to a corporation. Corporation and its organization. Corporation and its running - human role and communication. Corporation, its culture and social system. Human's work position in free market economy. Corporate directorship, work groups, adaptation, strife, different roles and positions in corporation.			
21Y2MK	Marketing of Air Transport	KZ	2
Definition, purpose, evolution, stages and types of marketing. Marketing in air transportation. Marketing research. Market segmentation. Airlines marketing strategies. Airline Products. Yield management and revenues. Air transport market sales.			

18Y2MP	Finite Element Method And Its Application	KZ	2
Basic mathematical formulation of the Finite Element Method. Direct Stiffness Method used in structural mechanics. Evaluation of stiffness matrices for the basic elements using variational principles. Element formulation (bar and beam elements, CST, LST, quadrilateral, tetrahedral and brick elements). Natural coordinates, natural shape functions and isoparametric representation. Numerical integration. Introduction to dynamics. FEM programming.			
16Y2MK	Quality Methods for Vehicles	KZ	2
Quality management methods list, customer data acquisition and analysis of customer requirements, QFD, DFM, DFA, DFS. FMEA (Failure mode effect analysis). Elements of parallel (team) design.			
12Y2MD	Methods of Traffic Regulation and Prediction	KZ	2
Basic ways of traffic prognosis, traffic prognosis for large area (calculation of future traffic volumes, calculation of future traffic volumes between areas (analogical and synthetic methods, modal split, traffic distribution to road network). Shock wave in traffic flow. Service levels and their traffic volumes. Acceleration noise.			
17Y2MS	Microsimulation of Railway Operation	KZ	2
Introduction to the characteristics of simulation tools, creation of a simulation model of railway infrastructure, verification of a specific operational concept on the given infrastructure, adaptation of the infrastructure model and modification to the infrastructure to allow the implementation of the proposed operational concept. Stability tests and evaluations. Evaluation of sensitivity of the operational concept to delays.			
17Y2MM	Mobility of Small Towns	KZ	2
Basic terms, networks of railway and bus lines, alternative forms of regional transport, influence in regional transport in vicinity of big cities, solutions of passenger and freight transport in regions, activities related to regional transport, passenger transport safety in regions.			
21Y2MS	Aerospace Engineering Simulation and Modelling	KZ	2
The course is designed as a set of exemplary tasks and problems based on practical aviation issues. The university degree mathematic skills and software applications usage will be necessary for successful figuring out. Both simple tasks, where students create own model themselves (e.g. in Matlab), and more complicated problems where professional developed tools will be applied.			
12Y2MZ	Modernization of Railway Lines and Stations	KZ	2
Line speed increasing. AGC and AGTC Agreement. AGC and AGTC railway network. Principles of modernization (conceptual papers, definitions of basic concepts, individual principles). Track geometrical characteristics on modernized railway lines. Superstructure and substructure on upgraded lines. Designing of railway stations. Bridges and tunnels. Development and realization of projects. Technical description of the tranzit corridors.			
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.			
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.			
17Y2NU	Cost and Benefits of Transport Systems	KZ	2
Transport systems and their history, externalities and their internalization, public goods, transport funding, assessment of transport constructions and systems by the methods CBA, MCA, CA, transport taxation, influence of transport constructions on public budgets, relation of transport and economic growth, importance of transport in area, spatial economy.			
14Y2OP	Object Oriented Programming in Transport	KZ	2
Classes, objects, encapsulation, inheritance, polymorphism, templates, retyping, streams, events, repository, collections, virtual methods and classes. Examples will be derived from microscopic simulation systems, discrete event simulation, cellulár simulations and virtual life simulations.			
15Y2OZ	Health Protection in Transportation and EU	KZ	2
Health protection in transportation in CR in the past and present. Conditions before 1989 and after, current legislature, future prospects. Harmonisation of legislation with other EU members. Fundamental principles of health protection and support in selected EU countries.			
15Y2OF	Specialised French for Transportation and Telecommunications	KZ	2
Basic transportation (public transport, railway, air, road and ship transport) and telecommunications terminology. Special focus on independent speaking and writing skills.			
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.			
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.			
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.			
20Y2PR	Time Series Prediction	KZ	2
Basic methods of quantitative forecasting, causal models, time series. Model performance evaluation, describing statistics, MAE, MAPE, RMSE, entropy measures, naive models. Basic theory of the linear prediction models, covariance and correlation coefficients, smoothing methods, regression methods, Box-Jenkins methodology, statistical tests, genetics algorithms.			
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
Principles of object-oriented programming and C++ programming language. Basic concepts, such as - classes, objects, constructors, destructors, inheritance, virtual methods, exceptions, streams, overloading, ADT.			
14Y2PH	CAD Interface Programming	KZ	2
Introduction to CAD interface programming techniques with the help of LIST and VBA programming languages. Possibilities of proper objects (commands), dialogues, interfaces, and applications creation in CAD systems. Programming of cooperation with other applications (databases, spread-sheets).			
11Y2PM	Programming in MATLAB	KZ	2
To explain the principle of modelling and simulation, description of Matlab environment and its settings, optimization and program code debugging, data fitting and designing GUI in Matlab.			

21Y2PL	Operational Aspects of Aerodromes	KZ	2
Operational aspects of aerodromes. Location of aerodrome and orientation of runways. Requirements for apron. Capacity of airports runways and terminals. Operation under winter conditions. Firefighting units. Protection against unlawful interference. Local transport connection. Environmental protection.			
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.			
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.			
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.).			
12Y2RD	Realization of Transport Buildings	KZ	2
In the first part acquainting students with preliminary to project. Preliminary to realization. Execution of a project.			
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.			
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
Reliability theory. Ultimate limit state and serviceability. Diagnosis of components and systems. Defects in materials and products. Experimental observation of the variables and mechanical phenomena. Model similarity. Non-destructive testing of materials and structures. Optical methods. Strain gauges. Experimental determination of residual stresses. Measurement errors. Evaluation experiments.			
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.			
17Y2SJ	Network Timetabling on the Railway	KZ	2
Timetable samples. Capacity allocation, technological intervals in railway operation. Rules and regulations of train paths, running times, time adds and supplements. Rolling stock circulation planning. Rules of train-diagramm creating. Timetables for more service-levels on the line. Construction slot conflicts between passenger- and freight transport. Network line relations and waiting times, timetables for lines under construction.			
15Y2TS	Technician and Contemporary Society	KZ	2
Why to take off a hat in a room and open a door for a lady? Are there simple solutions? Science vs belief. Do we need to know or is it enough to turn on a PC? It must be true - it´s on the Internet and in newspapers! What are the sights for? Interest in public affairs - a hangover from the past?			
17Y2TP	Technological Prognoses in Transportation and Telecommunication	KZ	2
The students will be analysing both the general forecasting studies (NASA, CIA) and forecasting in the segment of transport and telecommunications.			
20Y2TE	Technology of Electronic Systems	KZ	2
Principle technologies for an effective operation of electronically controlled systems. Maintaining, meassuring, optimization of safety and reliability of complex systems. Semiconductor technologies, printed circuits, assembly operations, interconnection and repairs technologiesusers and operators.			
14Y2TU	Telecommunications Systems and Multimedia	KZ	2
New trends in telecommunications namely applied in transport solutions, identification and quantification of telecommunications networks and services performance based on redundant architecture, provissioning of guaranteed service quality, two generations of the handover principles.			
16Y2TT	Transportation and Building Technology and Equipment	KZ	2
Transportation and building technology and equipment.Transport of solid and mass material, soil and rock above all. Highway and underground constructions. Transport surface vehicles, description and construction features, delivered mass calculation, economy of operation. Technics and technology of underground constructions. Terrestrial vehicles operation management methodology (ultrasound, laser, GPS, total stations).			
21Y2TL	Development Trends of Aircraft Construction	KZ	2
Historical and nowadays trends. Future scenarios. Space industry. Economy.			
12Y2UD	Sustainable Transportation	KZ	2
Sustainable development, definition, history, legal framework. Sustainable development indicators. Sustainable transportation, definition, history, legal framework. Practical application of sustainable development theory, case study.			
14Y2UI	Artificial Intelligence	KZ	2
History of artificial intelligence, knowledge, its representation including frames, state space search, constraints, genetic algorithms, machine learning.			
20Y2UA	Artificial Neural Networks, Realization and Applications	KZ	2
History of neural networks. Basic principles. Comparing the structure of a natural and an artificial neuron. Neural classificators, predictors, compresors, expanders and other specialised functional blocs and systems. Modelling of neurons. Grossberg's equations. Learning principles. Leyered and Hopfield's nets.			

23Y2VZ	Leadership and Human Resource Development	KZ	2
Introduction to the study of human resources, human resources management, corporate goals, strategies, cultural and ethical aspects. Team management, communication in teams, strategy and planning in human resources, ethics and corporate culture, cross-cultural differences. The labor code. Introduction into protocols.			
21Y2VA	Selected Parts of Aerodynamics	KZ	2
Real gases physical properties, atmosphere. Fundamentals of fluid dynamics. External and internal aerodynamics in aircraft applications.Wing sections, wings, airfoil cascades, lift, drag. Polar, ideal incompressible and compressible flows. Viscous flows. Boundary layer, stability, turbulence. Reynolds, Strouhal and Mach Numbers. Flows aircraft aerodynamics and light dynamics. Static and dynamic stability. Anoeurability. Aircraft performances.			
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.			
23Y2VR	Cope with Risks in Engineering Branches	KZ	2
Types of engineering branches directed to risks, procedures used in risk engineering, ensuring the secured systems, ensuring the safe systems, ensuring the safe systems of systems.			
12Y2VT	High Speed Railways	KZ	2
High speed rail (HSR) transport characteristics and position in transportation system. HSR vehicles types and characteristics and control-command and signalling system. HSR system interoperability. Non-adhesion HSR systems. City traffic service by HSR. HSR operating points. HSR worldwide network. HSR routing and traffic conception. Specifics of HSR track construction and geometrical characteristics.			
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.			
12Y2ZK	Traffic Calming	KZ	2
Principles of traffic calming. Solution of road network organization. Urban road layouts. Psychological and physical obstacles (measures of traffic calming) and their combinations. Traffic calming measures in crossroads. Pedestrian zones. Residential streets and zones.			
23Y2ZM	Intelligence Means and Methods	KZ	2
History and the present of intelligence services and their role in the modern world. How intelligence services handle with information. Methods and procedures of collecting and evaluating information. Means of intelligence services. Internal and external intelligence, military intelligence. The means and methods of state security services. Cooperation among Intelligence services within NATO, EU. The organization of the intelligence services.			
18Y2UB	Accident Biomechanics and Safety	KZ	2
Anatomy of Man. Biomechanics of musculo-skeletal system. Medical diagnostic methods - X-ray, CT, MRI, US. Dynamics and causes of traumatic events. Pedestrian injuries. Injury accidents in road, rail and air traffic. Analysis of physical processes in terms of injury biomechanics. Principles of treatment and rehabilitation. Safety equipment and precautions to reduce the consequences of traffic accidens.			
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.			

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.			
11XN1	Master Project 1	Z	2
11XN2	Master Project 2	Z	2
11XN3	Master Project 3	Z	1
11XN4	Master Project 4	Z	8
11XNDP	Master Thesis	KZ	18
11Y2FX	Functions of Complex Variable	KZ	2
Derivation of complex function, holomorphic function, complex exponential series, integration, Cauchy theorem. Taylor series, Laurent series of complex variable function. Basics of Laplace and Z-transformation.			
11Y2LG	Logics of Engineer's Judgement	KZ	2
Logical structure of engineer's judgement, its propositional and predicative logical base. Solutions of logical tasks through the methods of truthfulness and semantic analysis charts. Venn's diagram method. Logical basis for network design for the solution of technical tasks.			
11Y2PM	Programming in MATLAB	KZ	2
To explain the principle of modelling and simulation, description of Matlab environment and its settings, optimization and program code debugging, data fitting and designing GUI in Matlab.			
12XN1	Master Project 1	Z	2
12XN2	Master Project 2	Z	2
12XN3	Master Project 3	Z	1
12XN4	Master Project 4	Z	8
12XNDP	Master Thesis	KZ	18
12Y2BM	Safety on The Local Roads	KZ	2
Classification of road accidents rates, social looses. Collision points, diagrams. Tools and methods for safer road transportation. Crossroads from the point of view of safety. Psychological right of way. Roundabouts. Pedestrian transport, cyclists. Traffic lights coordination. Transport control and regulation.			
12Y2IS	Urban Networks	KZ	2
The importance and the position of UN as public and technical infrastructure / utillities, metodology of the UN master planning, of UN design, UN coordination, UN installation and UN operation (basic technical standards of UN, trenchless technologies for UN).			

12Y2KE	Landscape Ecology	KZ	2
Landscape ecology. Landscape - definition, types, evolution. Landscape systems. Anthropogenic impacts on landscape. Methods using for evaluating landscape. Fractal geometry and its potential applications in landscape ecology. Landscape planning.			
12Y2KS	Rail Transport in Settlements and Regions	KZ	2
Modernization and development of railway infrastructure in Czech Republic. Arrangement of railway networks and junctions. Suburban railway services. Network configuration and operation of metro systems. Network configuration and operation of tram systems. Special thematic lectures (rail transport in selected countries / regions).			
12Y2MD	Methods of Traffic Regulation and Prediction	KZ	2
Basic ways of traffic prognosis, traffic prognosis for large area (calculation of future traffic volumes, calculation of future traffic volumes between areas (analogical and synthetic methods, modal split, traffic distribution to road network). Shock wave in traffic flow. Service levels and their traffic volumes. Acceleration noise.			
12Y2MH	Measurement and Modeling of Traffic Noise	KZ	2
Theoretical introduction to noise from traffic. Noise from rail transport. Noise from road traffic. Measurement and calculation of noise from rail traffic. Measurement and calculation of noise from road traffic. Modelling of traffic noise in the CADNA A.			
12Y2MZ	Modernization of Railway Lines and Stations	KZ	2
Line speed increasing. AGC and AGTC Agreement. AGC and AGTC railway network. Principles of modernization (conceptual papers, definitions of basic concepts, individual principles). Track geometrical characteristics on modernized railway lines. Superstructure and substructure on upgraded lines. Designing of railway stations. Bridges and tunnels. Development and realization of projects. Technical description of the tranzit corridors.			
12Y2RD	Realization of Transport Buildings	KZ	2
In the first part acquainting students with preliminary to project. Preliminary to realization. Execution of a project.			
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.			
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
Classes, objects, encapsulation, inheritance, polymorphism, templates, retyping, streams, events, repository, collections, virtual methods and classes. Examples will be derived from microscopic simulation systems, discrete event simulation, cellulár simulations and virtual life simulations.			
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
Principles of object-oriented programming and C++ programming language. Basic concepts, such as - classes, objects, constructors, destructors, inheritance, virtual methods, exceptions, streams, overloading, ADT.			
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
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 English and practical application, formal and technical registers and their use, language of management.			
15JBA2	Language - English 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 English and practical application, formal and technical registers and their use, language of management.			

15JBA3	Language - English 3	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 English and practical application, formal and technical registers and their use, language of management.			
15JBA4	Language - English 4	ZK	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 English and practical application, formal and technical registers and their use, language of management.			
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 to larger view of the traffic problems with regard to the work with texts (physics for drivers, abusing alcohol during driving, exhaustion, getting of driving licence, children in traffic, traffic accident, traffic psychology in the internet etc.).			
15Y2HS	Road Transport History	KZ	2
Roads and road traffic in the Ancient Age, corridors of main mediveal pathways. Development of road traffic in the modern period, acceleration of road transport development during 1st part of 20th century. Development of road layout, geometric and construction layers. Beginning of modern road civil engineering. Development of road travelling in modern period. History of road intercections, bridges and traffic control, development of road signs.			
15Y2JH	Job Hunting in English	KZ	2
The course provides a practical guide to applying for a job in English. The interview process is mapped out, with the course including skills practise for all the stages of this process, including specifics for job-hunting in English. Students will also be introduced to the English vocabulary and phraseology necessary for a successful interview.			
15Y2MS	Sociology for Managers	KZ	2
Sociological approach to a corporation. Corporation and its organization. Corporation and its running - human role and communication. Corporation, its culture and social system. Human's work position in free market economy. Corporate directorship, work groups, adaptation, strife, different roles and positions in corporation.			
15Y2OF	Specialised French for Transportation and Telecommunications	KZ	2
Basic transportation (public transport, railway, air, road and ship transport) and telecommunications terminology. Special focus on independent speaking and writing skills.			
15Y2OZ	Health Protection in Transportation and EU	KZ	2
Health protection in transportation in CR in the past and present. Conditions before 1989 and after, current legislature, future prospects. Harmonisation of legislation with other EU members. Fundamental principles of health protection and support in selected EU countries.			
15Y2PS	Practical Spanish for Transportation, Management and Business	KZ	2
Development of communication skills, training of correct written expression of formal character, basic technical vocabulary, cultural specifics of the Spanish speaking countries. Terminology of transport and commerce, business letter.			
15Y2PT	Food in Transportation	KZ	2
The nutrition policy. Interaction transportation and foodstuffs. The health risks. Hygienic safeguard. The practical examples from the Czech Republic and from the world. The issues of dining cars, work trains and other railroad equipment. Legislation.			
15Y2PU	Publications and Their Creation	KZ	2
Scientific texts types. Footnotes and references. Exploration of facts. Quotations. Formal document layout. Working with information databases. Typographic principles. Typographic editors - MS Word, Tex/LaTeX. Practical creation of simple scientific documents.			
15Y2SP	Seminar on Political Philosophy	KZ	2
Interpreting of philosophical texts, view of society, state and their system of government.			
15Y2SR	Stylistics and Rhetorics	KZ	2
Basic skills of oral and written expression as a means of human communication. Basic information about speech, articulation, oral and written language. Teaching to speak well-vocal organs, voice training. Language semantics, language syntactic and the pragmatic aspect. Creative thought and its oral and written expression. Practice - cultivating the skills of speech.			
15Y2TS	Technician and Contemporary Society	KZ	2
Why to take off a hat in a room and open a door for a lady? Are there simple solutions? Science vs belief. Do we need to know or is it enough to turn on a PC? It must be true - it´s on the Internet and in newspapers! What are the sights for? Interest in public affairs - a hangover from the past?			
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.			
16Y2MK	Quality Methods for Vehicles	KZ	2
Quality management methods list, customer data acquisition and analysis of customer requirements, QFD, DFM, DFA, DFS. FMEA (Failure mode effect analysis). Elements of parallel (team) design.			
16Y2PG	Computer Graphics and Virtual Reality	KZ	2
Principles of creation and processing of bitmap and vector 2D graphics, 3D virtual scenes and algorithms used for their computerized processing. Adopting skills of work with professional and freeware tools for creation and processing of 2D, 3D and interactive graphics, and basics of programming language VRML and graphic libraries (OpenGL).			

16Y2ST	Special Technologies in Transport and Telecommunications	KZ	2
Micro, nano and special technologies, electric arc and its applications, plasma technologies, dipping, beam technologies, electron beams technology in roduction and mending of vehicles, laser and laser technologies, soldering, gluing, ultrasound, diffusion, friction and explosion technologies, micro stoves, gas.			
16Y2TT	Transportation and Building Technology and Equipment	KZ	2
Transportation and building technology and equipment.Transport of solid and mass material, soil and rock above all. Highway and underground constructions. Transport surface vehicles, description and construction features, delivered mass calculation, economy of operation. Technics and technology of underground constructions. Terrestrial vehicles operation management methodology (ultrasound, laser, GPS, total stations).			
17XN1	Master Project 1	Z	2
17XN2	Master Project 2	Z	2
17XN3	Master Project 3	Z	1
17XN4	Master Project 4	Z	8
17XNDP	Master Thesis	KZ	18
17Y2FM	Financing in Urban Mass Transportation	KZ	2
UMT history and development in Prague and other cities in the world. Building and operation of public tram, bus, and trolleybus networks. Underground building and operation. Other UMT types. UMT development in small towns. Particularities of investment and operation financing of individual UMT types. Historic and present models of UMT financing. Transport inspection and blind passengers. Tourism & UMT. UMT typology & choice of optimum financing.			
17Y2KI	Capital Investment in Transportation and Telecommunications	KZ	2
Financial market, investment desicion making - long term goals and investment strategies, long temr financing.			
17Y2MM	Mobility of Small Towns	KZ	2
Basic terms, networks of railway and bus lines, alternative forms of regional transport, influence in regional transport in vicinity of big cities, solutions of passenger and freight transport in regions, activities related to regional transport, passenger transport safety in regions.			
17Y2MS	Microsimulation of Railway Operation	KZ	2
Introduction to the characteristics of simulation tools, creation of a simulation model of railway infrastructure, verification of a specific operational concept on the given infrastructure, adaptation of the infrastructure model and modification to the infrastructure to allow the implementation of the proposed operational concept. Stability tests and evaluations. Evaluation of sensitivity of the operational concept to delays.			
17Y2NU	Cost and Benefits of Transport Systems	KZ	2
Transport systems and their history, externalities and their internalization, public goods, transport funding, assessment of transport constructions and systems by the methods CBA, MCA, CA, transport taxation, influence of transport constructions on public budgets, relation of transport and economic growth, importance of transport in area, spatial economy.			
17Y2PR	Carriage Processes	KZ	2
Carrier´s commercial liability. Ordering and contracting of carriage. Intergovernmental conventions on international carriage. Contract on passenger carriage. Contract on freight carriage. Forwarding contract. Liability and rights based on carrying contract. Contractual carrying conditions. Guarantee of carrying contract by more operators. Internationally accepted commercial terms (INCOTERMS). Tariff and calculation of prices.			
17Y2PS	Case Studies in Transportation	KZ	2
Simulation expert discussions on the topics - the impact of transport on the environment and the economy, energy, construction of transport infrastructure etc. The students will each lesson presented one current and the real issue, which solutions will have to think of each other. Each of them will be represent another role (public authorities, investors, carrier representative interest groups, residents, etc.).			
17Y2RS	Regional Transport - Mobility of Small Towns	KZ	2
Basic terms, networks of railway and bus lines, alternative forms of regional transport, influence in regional transport in vicinity of big cities, solutions of passenger and freight transport in regions, activities related to regional transport, passenger transport safety in regions.			
17Y2RZ	Control of Transport Processes	KZ	2
Theoretical bases, transport system, decomposition, factors influencing control, quality diagnosis, methods of control, systems for decision making support, risk of decision making, telematics.			
17Y2SG	Systematic Creating of Railway Timetables	KZ	2
Timetable samples. Capacity allocation, technological intervals in railway operation. Rules and regulations of train paths, running times, time adds and supplements. Rolling stock and crew circulation planning. Rules of train-diagramm creating. Train-diagramm construction in case of more service-levels on the line.			
17Y2SJ	Network Timetabling on the Railway	KZ	2
Timetable samples. Capacity allocation, technological intervals in railway operation. Rules and regulations of train paths, running times, time adds and supplements. Rolling stock circulation planning. Rules of train-diagramm creating. Timetables for more service-levels on the line. Construction slot conflicts between passenger- and freight transport. Network line relations and waiting times, timetables for lines under construction.			
17Y2SK	Urban and Regional Rail Transport System	KZ	2
Factors influencing transport demand, modal-split, traffic flows distribution on public transit network. Line network optimization and configuration. Timetable designing and evaluation accenting integrated periodic timetable. Rolling stock circulation, staff and crew services optimization and their order to rosters. Framework legislation, non-barrier effects and preference of public transport. Marketing.			
17Y2TP	Technological Prognoses in Transportation and Telecommunication	KZ	2
The students will be analysing both the general forecasting studies (NASA, CIA) and forecasting in the segment of transport and telecommunications.			
18XN1	Master Project 1	Z	2
18XN2	Master Project 2	Z	2
18XN3	Master Project 3	Z	1
18XN4	Master Project 4	Z	8
18XNDP	Master Thesis	KZ	18
18Y2D2	Dynamics of Transport Routes and Vehicles 2	KZ	2
Analysis of forces in the vehicle and transport routes and their influence on the stress and strain components of the vehicle structure or behavior of traffic routes. Creation of dynamic models of vehicles and transport routes. Vibration of systems with a finite number of degrees of freedom. Methods of constant stiffness and constant compliance. Dynamic calculations of structural systems. Criteria for the admissibility of oscillation.			
18Y2FZ	Physical Basis of Materials' Properties	KZ	2
On the basis of internal structure and nature of intraction elastic material behavior and its maximum strength is explained. The model is further developed by considering different types of defects, loads and environment for explanation of failure mechanisms - the level of real strength determined by internal defects, and brittle fracture, fatigue and creep. Failures are discussed as a challenge posed to design of novel materials.			

18Y2MP	Finite Element Method And Its Application	KZ	2
Basic mathematical formulation of the Finite Element Method. Direct Stiffness Method used in structural mechanics. Evaluation of stiffness matrices for the basic elements using variational principles. Element formulation (bar and beam elements, CST, LST, quadrilateral, tetrahedral and brick elements). Natural coordinates, natural shape functions and isoparametric representation. Numerical integration. Introduction to dynamics. FEM programming.			
18Y2SD	Reliability and Diagnostics, Experimental Methods	KZ	2
Reliability theory. Ultimate limit state and serviceability. Diagnosis of components and systems. Defects in materials and products. Experimental observation of the variables and mechanical phenomena. Model similarity. Non-destructive testing of materials and structures. Optical methods. Strain gauges. Experimental determination of residual stresses. Measurement errors. Evaluation experiments.			
18Y2UB	Accident Biomechanics and Safety	KZ	2
Anatomy of Man. Biomechanics of musculo-skeletal system. Medical diagnostic methods - X-ray, CT, MRI, US. Dynamics and causes of traumatic events. Pedestrian injuries. Injury accidents in road, rail and air traffic. Analysis of physical processes in terms of injury biomechanics. Principles of treatment and rehabilitation. Safety equipment and precautions to reduce the consequences of traffic accidens.			
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.			
20XN1	Master Project 1	Z	2
20XN2	Master Project 2	Z	2
20XN3	Master Project 3	Z	1
20XN4	Master Project 4	Z	8
20XNDP	Master Thesis	KZ	18
20Y2PR	Time Series Prediction	KZ	2
Basic methods of quantitative forecasting, causal models, time series. Model performance evaluation, describing statistics, MAE, MAPE, RMSE, entropy measures, naive models. Basic theory of the linear prediction models, covariance and correlation coefficients, smoothing methods, regression methods, Box-Jenkins methodology, statistical tests, genetics algorithms.			
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.			
21AITM	Air Traffic Management	KZ	4
Current ATM system and its functional blocks. View of ATM data (technical architecture and configuration, transmission systems and networks). Data exchange with neighboring ATM systems. Monitoring systems and technical supervision. ATM simulation. ATM conceptions and strategies for next years. EUROCONTROL - CFMU. FAB. ATS's - AOC's data applications.			
21BLED	Aviation Safety	Z,ZK	4
Reliability and system lifecycle. Basics of reliability theory. Reliability mathematical tools. Reliability analysis. Maintenance system. Safety and quality theory. Basic concepts of safety. Managing of safety. Safety management. Safety management strategies. Hazard, risk. Risk management.			
21CNSY	CNS Systems	Z,ZK	4
Subject provides full technical informations about CNS (communication, navigation, surveilance) systems used in aviation. Systems are presented in perspective of future development.			
21ERG	Ergonomy in Aviation Technology	Z,ZK	7
Basic facts about ergonomics. Human visual system. Human hearing system. Information processing system in humans. Environmental effects on human performance. Displays, controls and design in accordance with ergonomic requirements. Cockpit design in accordance with ergonomic requirements.			
21KST	Space Technologies	ZK	3
Universe and its basic characteristics. Fundamentals of astrophysics. Kepler´s laws. Solar system. Earth's and its atmosphere and outer space. Space transport vehicles. Rockets and rocket engines and their structure and operational characteristics. Space crafts and satellites, space flight. Orbital mechanics. Application of space technologies for global navigation and communication. Space exploration and piloted space flights and missions.			
21LEN1	Aviation English 1	Z	2
Aircraft description. Airline business and marketing. Airports and handling services. Maintenance. Air traffic services. Aviation history. Accident investigation. Human factors. Aviation economics. Development of air services. Low cost airlines. Airline history. Market development. Company management. Airport design. Ecology.			
21LEN2	Aviation English 2	Z	2
Airline market trends. Distribution systems. Aircraft construction materials. Engines. Staff training. Dangerous weather. Air traffic services economics. Passenger rights. Airline customer programmes. Catering, baggage handling systems. Airport handling equipment. Search and rescue. Quality of passenger services. Security.			
21LKS	Aircraft Structures	Z,ZK	5
History and development of aeronautics. Classification of aircraft. Fundamental parts and systems. Safety, reliability and airworthiness. Limit states of aircraft structure and strength certification. Aviation regulations. Load factor. Manoeuvring loads. Manoeuvring envelope of load factor. Gust load. Gust load factor and envelope of gust load factor.			
21NSR	Navigation and Flight Management Systems	Z,ZK	5
Navigation. Radionavigation. Satellite navigation. Flight management system. Autopilot. FMC. Practical execution of flight.			
21PLD	Air Transport Operations	Z,ZK	5
The mission and the importance of air transport. Legislation. Airlines. Strategy. Performance in air transport. The cost structure. Fuel management. Cargo. Quality. Aircraft maintenance (organization) and the economics of aircraft operations. Ground services. Revenue management. Environment.			
21POHL	Aircraft Propulsion	Z,ZK	6
Theoretical background. Earth atmosphere. Classification of aircraft engines, characteristics, domains of use, comparative parameters, characteristics and criteria. Energy transformation within aircraft propulsion systems, thermal cycles analysis, working substances, environmental constraints, efficiencies. Reciprocating and turbine engines, their construction and material characteristics and performance characteristics. Environmental impacts.			
21PSAP	Aircraft and Spacecraft Instrumentation	Z,ZK	4
The course deals with a theory and description of basic functions, structures and principles of aircraft and spacecraft instrumentation working in a low-frequency band. Within the scope of this course it is possible to get knowledge about instrument boards, propulsion parameters measurements, aerometrical systems, and fuselage health monitoring systems. Furthermore, gyroscopic systems and systems for navigation are also covered.			

21SPOL	Reliability of Aerospace Engineering	Z,ZK	4
Subject deals with tuition of separate attributes of reliability (no failure, vitality, maintainability, and so on) and main criterions of safety of production and working of aerospace engineering. General legalities are in the framework of tuition demonstrated on the example of calculation of reliability of integral characteristics of materials and they are practical illustration of its security in The Czech Police Aviation Department.			
21ULET	Aircraft Maintenance	Z,ZK	6
Aircraft operations and technical operations. System of work. System of maintenance. Failure scanning methods. Diagnostical tools for inspections. Selection and qualification of aviation personnel. Basic documentation for maintenance. Procedures for optimizing maintenance time. Regulation n. 2042/2003, part 145. Human factor. EASA director regulation. Excercises will be focused on practical applications.			
21XN1	Master Project 1	Z	2
21XN2	Master Project 2	Z	2
21XN3	Master Project 3	Z	1
21XN4	Master Project 4	Z	8
21XNDP	Master Thesis	KZ	18
21Y2LS	Air Traffic Services	KZ	2
Airspace structure in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, APP a ACC control. Procedural and radar control. Incidents caused or partially caused by ATS. History of ATS and czech airspace.			
21Y2MK	Marketing of Air Transport	KZ	2
Definition, purpose, evolution, stages and types of marketing. Marketing in air transportation. Marketing research. Market segmentation. Airlines marketing strategies. Airline Products. Yield management and revenues. Air transport market sales.			
21Y2MS	Aerospace Engineering Simulation and Modelling	KZ	2
The course is designed as a set of exemplary tasks and problems based on practical aviation issues. The university degree mathematic skills and software applications usage will be necessary for successful figuring out. Both simple tasks, where students create own model themselves (e.g. in Matlab), and more complicated problems where professional developed tools will be applied.			
21Y2PL	Operational Aspects of Aerodromes	KZ	2
Operational aspects of aerodromes. Location of aerodrome and orientation of runways. Requirements for apron. Capacity of airports runways and terminals. Operation under winter conditions. Firefighting units. Protection against unlawful interference. Local transport connection. Environmental protection.			
21Y2PP	Law and Operation in Air Transport	KZ	2
Development of aviation law. International conventions on civil aviation. International organisations and including of the Czech Republic in these organisations. EU legislation and civil aviation. Execution of state administration and state supervision in matters of civil aviation, in accordance with Act No. 49/1997 Col. Facilitation. Responsibilities of air carriers for passengers, luggage and cargo. The safe transport of dangerous goods.			
21Y2TL	Development Trends of Aircraft Construction	KZ	2
Historical and nowadays trends. Future scenarios. Space industry. Economy.			
21Y2VA	Selected Parts of Aerodynamics	KZ	2
Real gases physical properties, atmosphere. Fundamentals of fluid dynamics. External and internal aerodynamics in aircraft applications.Wing sections, wings, airfoil cascades, lift, drag. Polar, ideal incompressible and compressible flows. Viscous flows. Boundary layer, stability, turbulence. Reynolds, Strouhal and Mach Numbers. Flows aircraft aerodynamics and light dynamics. Static and dynamic stability. Anoeurability. Aircraft performances.			
22SLN	Air Traffic Accident Investigation	KZ	2
Specification of forensic expertise. Rregulations and establishments for exceptional events in air traffic. Analysis of air traffic accidents (cause investigation, time course, human factor). Air traffic accidents prevention. Exceptional aviation event report. Analysis of particular accidents in air traffic.			
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.			
23SCT	Airport Security	KZ	4
Division of airport in terms of security, design, standards and conventions, forms of risk in general, the analysis and management of risk in the ground security, emergency plans, mode of airport security, identification and security systems, radar systems and their role in security operations, scanning systems, X-rays and microwave scanners, intelligence services and security services at the airport, the technology used to ensure the security.			
23XN1	Master Project 1	Z	2
23XN2	Master Project 2	Z	2
23XN3	Master Project 3	Z	1
23XN4	Master Project 4	Z	8
23XNDP	Master Thesis	KZ	18
23Y2AE	Acoustics and Electroacoustics in Transportation	KZ	2
Basic acoustic quantities, properties of acoustic signals. Basic equations in acoustics, method of equivalent circuits. Acoustic impedance, damping. Acoustic actuators, loudspeakers. Acoustic sensors, microphones. Fundamentals of acoustic signal processing. Acoustics of closed spaces. Fundamentals of acoustics in solids. Acoustic problems in transport and their solutions.			
23Y2BP	Security Class	KZ	2
The most prevalent topics include data management, data and text mining applications, terrorism informatics, deception and intent detection, terrorist and criminal social network analysis, crime analysis, cyber-infrastructure protection, transportation infrastructure security, and information assurance, among others.			
23Y2FB	Physics for Security Branches	KZ	2
Grounds of physics of substances and phenomena at extreme conditions. Grounds of rheology. Physics of Earth´s interior. Geophysics. Physics of atmosphere. Applications in dengineering branches directed to safety.			

23Y2NE	Design of Electronic Equipments	KZ	2
Characteristics and realization of semiconductor electronic components, basic electronic devices division. Sources, input and output elements, process elements. Realization of basic circuits - amplifiers, data converters. Analog electronic systems, analog computing. Switching elements, logic circuits, FPGA implementation. Single chip microcomputers and microcontrollers. Design (ORCAD), construction of electronic devices.			
23Y2VR	Cope with Risks in Engineering Branches	KZ	2
Types of engineering branches directed to risks, procedures used in risk engineering, ensuring the secured systems, ensuring the safe systems, ensuring the safe systems of systems.			
23Y2VS	Negotiation and Cooperation	KZ	2
Negotiation principles. Negotiation sense, base, essence. Business and crisis negotiation differences. The "Win-Win" principle. Specification. Credibility. Negotiation behavior principles. Negotiation and command. Team variability. Formal and informal team roles.			
23Y2VZ	Leadership and Human Resource Development	KZ	2
Introduction to the study of human resources, human resources management, corporate goals, strategies, cultural and ethical aspects. Team management, communication in teams, strategy and planning in human resources, ethics and corporate culture, cross-cultural differences. The labor code. Introduction into protocols.			
23Y2ZM	Intelligence Means and Methods	KZ	2
History and the present of intelligence services and their role in the modern world. How intelligence services handle with information. Methods and procedures of collecting and evaluating information. Means of intelligence services. Internal and external intelligence, military intelligence. The means and methods of state security services. Cooperation among Intelligence services within NATO, EU. The organization of the intelligence services.			

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