

# Study plan

**Name of study plan: PL nav.prez.21/22 (pro obor PL)-skok do 2.r.**

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Technology in Transportation and Telecommunications

Type of study: Follow-up master full-time

Required credits: 120

Elective courses credits: 0

Sum of credits in the plan: 120

Note on the plan:

Name of the block: Compulsory courses

Minimal number of credits of the block: 99

The role of the block: Z

Code of the group: 1.S.NPPL 21/22

Name of the group: 1.sem.nav.prez.PL v 21/22 (obor PL)

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, <b>authors</b> and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
21BLED	<b>Aviation Safety</b>	Z,ZK	4	2P+2C+14B	Z	z
21CNSY	<b>CNS Systems</b> <i>Stanislav Pleninger</i>	Z,ZK	4	3P+1C+16B	Z	z
21LKS	<b>Aircraft Structures</b>	Z,ZK	5	3P+2C	Z	z
21PLDO	<b>Air Carrier Operation</b>	Z,ZK	5	3P+1C+14B	Z	z
21POHL	<b>Aircraft Propulsion</b>	Z,ZK	6	3P+2C	Z	z
22SLN	<b>Air Traffic Accident Investigation</b>	KZ	2	2P+0C+12B	Z	z
15J2A1	<b>Language - English 1</b> <i>Barbora Horáková, Jitka He manová, Dana Boušová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Marek Tomek, Markéta Musilová, .....</i>	Z	2	0P+2C+10B	Z	z

**Characteristics of the courses of this group of Study Plan: Code=1.S.NPPL 21/22 Name=1.sem.nav.prez.PL v 21/22 (obor PL)**

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, surveillance) 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.			
21PLDO	Air Carrier Operation	Z,ZK	5
Mission and importance of air transport. Legislation. Airlines - structure, strategy. Performances in air transport. Cost structure. Fuel management. Cargo. Aircraft maintenance (organization) and economics of aircraft operation. Ground handling and other services. Safety / Security / Quality and Compliance monitoring. Revenue management. Air transport and 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. Regulations 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
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.			

Code of the group: 2.S.NPPL 14/15

Name of the group: 2.sem.nav.prez.PL (od) 14/15 (obor PL)

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
16PDP	<b>Principles of Vehicle Design</b> <i>Jaroslav Machan, David Lehet Jaroslav Machan (Gar.)</i>	ZK	2	2P+0C+8B	L	z
21KST	<b>Space Technology</b> <i>Jakub Hospodka, Jakub Trýb Jakub Hospodka (Gar.)</i>	ZK	3	2P+0C+10B	L	z
21NSR	<b>Navigation and Flight Control Systems</b> <i>Jakub Hospodka, Milan Kameník, Ladislav Capoušek Jakub Hospodka</i>	Z,ZK	5	3P+2C+14B	Z	z
21SPOL	<b>Aircraft Technology Reliability</b> <i>Old ich Štumbauer, Natalia Guskova, Kate ina Grötschelová Andrej Lališ (Gar.)</i>	Z,ZK	4	2P+1C+12B	L	z
21AITM	<b>Air Traffic Management</b> <i>Terézia Pilmannová</i>	KZ	4	3P+2C+14B	L	z
23SCT	<b>Airport Security</b>	KZ	4	2P+1C+12B	L	z
15JBA2	<b>Language - English 2</b> <i>Barbora Horáková, Jitka He manová, Dana Boušová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Marek Tome ek, Markéta Musilová, .....</i>	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 (od) 14/15 (obor PL)**

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. Reliability, technological aspects etc.			
21KST	Space Technology	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 Control Systems	Z,ZK	5
Navigation. Radionavigation. Satellite navigation. Flight management system. Autopilot. FMC. Practical execution of flight.			
21SPOL	Aircraft Technology Reliability	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
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.			

Code of the group: 3.S.NPPL 19/20

Name of the group: 3.sem.nav.prez.PL (od) 19/20 (obor PL)

Requirement credits in the group: In this group you have to gain 25 credits

Requirement courses in the group: In this group you have to complete 7 courses

Credits in the group: 25

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
11STS	<b>Stochastic Systems</b> <i>Evženie Uglickich, Šárka Vorá ová, Natálie Blahitka, Michal Matowicki, Pavla Pecherková Pavla Pecherková Šárka Vorá ová (Gar.)</i>	Z,ZK	4	2P+2C+14B	Z	z
21ERGP	<b>Ergonomics in Aviation</b> <i>Vladimír Socha</i>	ZK	4	2P+0C	Z	z

21PSAP	<b>Aircraft and Spacecraft Instrumentation</b>	Z,ZK	4	2P+2C+14B	Z	z
21ULET		Z,ZK	6	3P+1C+16B	Z	z
21LEN1	<b>Aviation English 1</b> <i>Terézia Pilmannová</i>	Z	2	0P+2C+10B	Z	z
21PRDP	<b>Software means for thesis elaboration</b> <i>Vladimír Socha</i>	Z	3	1P+1C	Z	z
15JBA3	<b>Language - English 3</b> <i>Barbora Horáková, Jitka Hejmanová, Dana Boušová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Markéta Musilová, Eva Rezlerová</i>	Z	2	0P+2C+10B	Z	z

**Characteristics of the courses of this group of Study Plan: Code=3.S.NPPL 19/20 Name=3.sem.nav.prez.PL (od) 19/20 (obor PL)**

11STS	Stochastic Systems	Z,ZK	4
The subject deals with the problems of mathematical modelling of dynamical systems, estimation of 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.			
21ERGP	Ergonomics in Aviation	ZK	4
General concept of ergonomics. Visual system of a human. Aural system of a human. Information processing system of a human. Environmental influences on human performance. Displays, control elements and design in line with ergonomics. Design of a flight deck in line with ergonomics.			
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		Z,ZK	6
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.			
21PRDP	Software means for thesis elaboration	Z	3
The subject syllabus is oriented to solving associated problems with master's theses upon request from students, where individual classes will go through given issues on specific examples according to the needs and questions from students. The subject has flexible form owing to which it is possible to deepen students' knowledge of Matlab environment.			
15JBA3	Language - English 3	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement. Optional courses for certificates FCE, CAE.			

Code of the group: 4.S.NPPL 17/18

Name of the group: 4.sem.nav.prez. PL (od) 17/18 (obor PL)

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
21LCA2	<b>Aviation English 2</b> <i>Slobodan Stoji</i>	Z,ZK	2	0P+2C+10B	L	z
15JBA4	<b>Language - English 4</b> <i>Barbora Horáková, Jitka Hejmanová, Lenka Monková, Peter Morpuss, Markéta Vojanová, Marie Michlová, Markéta Musilová, Jan Feit, Eva Rezlerová</i>	ZK	2	0P+2C+10B	L	z

**Characteristics of the courses of this group of Study Plan: Code=4.S.NPPL 17/18 Name=4.sem.nav.prez. PL (od) 17/18 (obor PL)**

21LCA2	Aviation English 2	Z,ZK	2
15JBA4	Language - English 4	ZK	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.Optional courses for certificates FCE, CAE.			

Code of the group: XNDP 13/14

Name of the group: Diplomová práce (obory PL, DS, LA +[ID]) od 13/14

Requirement credits in the group: In this group you have to gain 18 credits

Requirement courses in the group: In this group you have to complete 1 course

Credits in the group: 18

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
11XNDP	<b>Master Thesis</b> <i>Evžen Uglíckich</i>	KZ	18	0P+2C+7B	L	z
12XNDP	<b>Master Thesis</b>	KZ	18	0P+2C+7B	L	z

15XNDP	<b>Master Thesis</b>	KZ	18	OP+2C+7B	L	Z
16XNDP	<b>Master Thesis</b>	KZ	18	OP+2C+7B	L	Z
17XNDP	<b>Master Thesis</b>	KZ	18	OP+2C+7B	L	Z
14XNDP	<b>Master Thesis</b>	KZ	18	OP+2C+7B	L	Z
20XNDP	<b>Master Thesis</b>	KZ	18	OP+2C+7B	L	Z
21XNDP	<b>Master Thesis</b> <i>Slobodan Stoji , Miloš Strouhal, Vladimír Socha, Peter Vittek, Iveta Kameníková, Petr Had, Petr Lukeš, Stanislav Pleninger, Petr en k, .....</i>	KZ	18	OP+2C+7B	L	Z
22XNDP	<b>Master Thesis</b> <i>Luboš Nouzovský</i>	KZ	18	OP+2C+7B	L	Z
23XNDP	<b>Master Thesis</b>	KZ	18	OP+2C+7B	L	Z
18XNDP	<b>Master Thesis</b>	KZ	18	OP+2C+7B	L	Z

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

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

Name of the block: Semestrální projekt

Minimal number of credits of the block: 13

The role of the block: ZP

Code of the group: XN1-4 14/15

Name of the group: Projekty nav.prez.1.-4.sem (obory PL + DS, LA, [BT]) od 14/15

Requirement credits in the group: In this group you have to gain 13 credits

Requirement courses in the group: In this group you have to complete 4 courses

Credits in the group: 13

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
11XN1	<b>Master Project 1</b>	Z	2	OP+2C+4B	Z	ZP
12XN1	<b>Master Project 1</b> <i>Zuzana arská, Dagmar Ko árková, Iva Šturmová, Kristýna Neubergová, Martin Jacura, Jan Kruntorád, Ond ej Trešl, David Vodák, Tomáš Javo ík, .....</i>	Z	2	OP+2C+4B	Z	ZP
14XN1	<b>Master Project 1</b>	Z	2	OP+2C+4B	Z	ZP
15XN1	<b>Master Project 1</b>	Z	2	OP+2C+4B	Z	ZP
16XN1	<b>Master Project 1</b> <i>P emysl Toman</i>	Z	2	OP+2C+4B	Z	ZP
17XN1	<b>Master Project 1</b> <i>Václav Baroch, Michal Drábek, Alexandra Dvo á ková, Veronika Failřová, Eliška Glaserová, Rudolf F. Heiddu, Tomáš Horák, Vít Janoš, Milan K íž, .....</i>	Z	2	OP+2C+4B	Z	ZP
18XN1	<b>Master Project 1</b> <i>Václav Rada, Nela Kr má ová</i>	Z	2	OP+2C+4B	Z	ZP
20XN1	<b>Master Project 1</b> <i>Jí í R ži ka</i>	Z	2	OP+2C+4B	Z	ZP
21XN1	<b>Master Project 1</b> <i>Jakub Hospodka, Natalia Guskova, Andrej Lališ, Slobodan Stoji , Vladimír Socha, Peter Vittek, Jakub Steiner, Terézia Pilmannová, Jakub Kraus, .....</i>	Z	2	OP+2C+4B	Z	ZP
22XN1	<b>Master Project 1</b> <i>Michal Frydrýn, Karel Kocián, Luboš Nouzovský, Zden k Svatý, Jakub Nová ek</i>	Z	2	OP+2C+4B	Z	ZP
23XN1	<b>Master Project 1</b>	Z	2	OP+2C+4B	Z	ZP
11XN2	<b>Master Project 2</b>	Z	2	OP+2C+8B	L	ZP
12XN2	<b>Master Project 2</b> <i>Zuzana arská, Dagmar Ko árková, Kristýna Neubergová, Martin Jacura, Jan Kruntorád, Ond ej Trešl, David Vodák, Tomáš Javo ík, Pavel Purkart, .....</i>	Z	2	OP+2C+8B	L	ZP

14XN2	<b>Master Project 2</b> <i>Vít Fábera, Tomáš Brandejský, Mária Jánešová, Jan Zelenka</i>	Z	2	0P+2C+8B	L	ZP
15XN2	<b>Master Project 2</b>	Z	2	0P+2C+8B	L	ZP
16XN2	<b>Master Project 2</b> <i>P emysl Toman, Josef Mík</i>	Z	2	0P+2C+8B	L	ZP
17XN2	<b>Master Project 2</b> <i>Václav Baroch, Michal Drábek, Alexandra Dvo áková, Veronika Faifrová, Rudolf F. Heid, Tomáš Horák, Vít Janoš, Milan K íž, Olga Mertlová, ..... Vít Janoš (Gar.)</i>	Z	2	0P+2C+8B	L	ZP
18XN2	<b>Master Project 2</b> <i>Daniel Kytý</i>	Z	2	0P+2C+8B	L	ZP
20XN2	<b>Master Project 2</b> <i>Ji í R ži ka, Patrik Horaž ovský</i>	Z	2	0P+2C+8B	L	ZP
21XN2	<b>Master Project 2</b> <i>Jakub Hospodka, Natalia Guskova, Kate ina Grötschelová, Andrej Lališ, Slobodan Stoji , Peter Vittek, Jakub Steiner, Terézia Pilmannová, Jakub Kraus, .....</i>	Z	2	0P+2C+8B	L	ZP
22XN2	<b>Master Project 2</b> <i>Michal Frydryn, Karel Kocián, Luboš Nouzovský, Zden k Svatý, Jakub Nová ek</i>	Z	2	0P+2C+8B	L	ZP
23XN2	<b>Master Project 2</b>	Z	2	0P+2C+8B	L	ZP
11XN3	<b>Master Project 3</b>	Z	1	0P+4C	Z	ZP
12XN3	<b>Master Project 3</b> <i>Zuzana árská, Dagmar Ko árková, Martin Jacura, Jan Kruntorád, Ond ej Trešl, David Vodák, Tomáš Javo ík, Pavel Purkart, Lukáš Týfa, .....</i>	Z	1	0P+4C	Z	ZP
14XN3	<b>Master Project 3</b>	Z	1	0P+4C	Z	ZP
15XN3	<b>Master Project 3</b>	Z	1	0P+4C	Z	ZP
16XN3	<b>Master Project 3</b> <i>P emysl Toman, Josef Mík, Michal Cenknér, Josef Svoboda</i>	Z	1	0P+4C	Z	ZP
17XN3	<b>Master Project 3</b> <i>Václav Baroch, Michal Drábek, Alexandra Dvo áková, Veronika Faifrová, Eliška Glaserová, Rudolf F. Heid, Tomáš Horák, Vít Janoš, Milan K íž, .....</i>	Z	1	0P+4C	Z	ZP
18XN3	<b>Master Project 3</b> <i>Daniel Kytý</i>	Z	1	0P+4C	Z	ZP
20XN3	<b>Master Project 3</b>	Z	1	0P+4C	Z	ZP
21XN3	<b>Master Project 3</b> <i>Miloš Strouhal, Terézia Pilmannová</i>	Z	1	0P+4C	Z	ZP
22XN3	<b>Master Project 3</b> <i>Michal Frydryn, Karel Kocián, Luboš Nouzovský, Zden k Svatý, Tomáš Mi unek</i>	Z	1	0P+4C	Z	ZP
23XN3	<b>Master Project 3</b>	Z	1	0P+4C	Z	ZP
11XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
12XN4	<b>Master Project 4</b> <i>Zuzana árská, Dagmar Ko árková, Kristýna Neubergová, Martin Jacura, Jan Kruntorád, Ond ej Trešl, David Vodák, Tomáš Javo ík, Pavel Purkart, .....</i>	Z	8	0P+4C	L	ZP
14XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
15XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
16XN4	<b>Master Project 4</b> <i>Josef Mík, Michal Cenknér</i>	Z	8	0P+4C	L	ZP
17XN4	<b>Master Project 4</b> <i>Václav Baroch, Michal Drábek, Alexandra Dvo áková, Veronika Faifrová, Rudolf F. Heid, Tomáš Horák, Vít Janoš, Milan K íž, Olga Mertlová, ..... Václav Baroch (Gar.)</i>	Z	8	0P+4C	L	ZP
18XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
20XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
21XN4	<b>Master Project 4</b> <i>Slobodan Stoji , Miloš Strouhal, Vladimír Socha, Peter Vittek, Iveta Kameníková, Petr Had, Petr Lukeš, Stanislav Pleninger, Jakub Steiner, .....</i>	Z	8	0P+4C	L	ZP
22XN4	<b>Master Project 4</b> <i>Michal Frydryn, Karel Kocián, Luboš Nouzovský, Zden k Svatý</i>	Z	8	0P+4C	L	ZP
23XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP

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

11XN1	Master Project 1	Z	2
12XN1	Master Project 1	Z	2
14XN1	Master Project 1	Z	2
15XN1	Master Project 1	Z	2
16XN1	Master Project 1	Z	2
17XN1	Master Project 1	Z	2
18XN1	Master Project 1	Z	2
20XN1	Master Project 1	Z	2
21XN1	Master Project 1	Z	2

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

Name of the block: Compulsory elective courses

Minimal number of credits of the block: 8

The role of the block: PV

Code of the group: Y2-NPPL 21/22

Name of the group: PVP nav.prez. obor PL 21/22

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
17Y2AM	<b>Application of Marketing Tools in Transportation</b>	KZ	2	2P+0C	L	PV
12Y2BM	<b>Safety on The Local Roads</b>	KZ	2	2P+0C	Z	PV
23Y2BP	<b>Security Class</b> <i>Zuzana Kosová</i>	KZ	2	2P+0C	Z	PV
21Y2BS	<b>Unmanned aircraft systems 2</b> <i>Tomáš Tluhoš, Michal Černý</i>	KZ	2	2P+0C	L	PV
14Y2C1	<b>CATIA I</b>	KZ	2	2P+0C	L	PV
14Y2C2	<b>CATIA II</b>	KZ	2	2P+0C	Z	PV
14Y2CS	<b>Sensitivity of Systems</b>	KZ	2	2P+0C	L	PV
21Y2CR	<b>CRM</b>	KZ	2	2P+0C	L	PV
12Y2DU	<b>Transport in the Context of Sustainability</b> <i>Kristýna Neubergová</i>	KZ	2	2P+0C	L	PV

15Y2DN	<b>Transportation Psychology in German Speaking Countries</b>	KZ	2	2P+0C	L	PV
18Y2DC	<b>Dynamics of Transport Routes and Vehicles</b>	KZ	2	2P+0C	Z	PV
18Y2EM	<b>Electron microscopy</b> <i>Nela Kr má ová</i>	KZ	2	2P+0C	L	PV
16Y2EE	<b>Emissions and Ergonomics of Vehicles</b>	KZ	2	2P+0C	L	PV
17Y2FM	<b>Financing in Urban Mass Transportation</b> <i>Václav Baroch</i>	KZ	2	2P+0C	Z	PV
21Y2FM	<b>Aviation Company Financial Management</b> <i>Radoslav Zozuák Radoslav Zozuák</i>	KZ	2	2P+0C+8B	Z	PV
23Y2FB	<b>Physics for Security Branches</b>	KZ	2	2P+0C	Z	PV
18Y2FZ	<b>Physical foundation of materials' properties</b> <i>Jaroslav Valach</i>	KZ	2	2P+0C	L	PV
15Y2HS	<b>Road Transport History</b> <i>Eva Rezlerová, Zuzana arská</i>	KZ	2	2P+0C	L	PV
16Y2HP	<b>Vehicle Hygiene</b>	KZ	2	2P+0C	L	PV
14Y2IS	<b>Intelligent Systems in Postal Services</b>	KZ	2	2P+0C	L	PV
12Y2IS	<b>Urban Networks</b>	KZ	2	2P+0C	Z	PV
14Y2JM	<b>One-Chip Controllers</b>	KZ	2	2P+0C	Z	PV
15Y2JH	<b>Job Hunting in English</b> <i>Lenka Monková</i>	KZ	2	2P+0C	Z	PV
14Y2KI	<b>Capital Investment in Transportation and Telecommunications</b>	KZ	2	2P+0C	L	PV
16Y2KV	<b>Car Body Design</b>	KZ	2	2P+0C	L	PV
12Y2KS	<b>Rail Transport in Settlements and Regions</b> <i>Miroslav Veliš</i>	KZ	2	2P+0C	Z	PV
12Y2KE	<b>Landscape Ecology</b> <i>Kristýna Neubergová</i>	KZ	2	2P+0C	Z	PV
21Y2LS	<b>Air Traffic Services</b>	KZ	2	2P+0C+8B	L	PV
11Y2LG	<b>Logics of Engineer's Judgement</b>	KZ	2	2P+0C	L	PV
23Y2MA	<b>Risk Analysis and Management</b>	KZ	2	2P+0C	L	PV
21Y2MQ	<b>Quality Management</b> <i>Luboš Socha</i>	KZ	2	2P+0C+8B	L	PV
15Y2MS	<b>Sociology for Managers</b> <i>Martina Šmidochová</i>	KZ	2	2P+0C	Z	PV
21Y2MK	<b>Marketing of Air Transport</b> <i>Peter Vittek Peter Vittek</i>	KZ	2	2P+0C+8B	Z	PV
12Y2MH	<b>Measurement and Modeling of Traffic Noise</b>	KZ	2	2P+0C	L	PV
12Y2MI	<b>Urban Engineering</b>	KZ	2	2P+0C	L	PV
18Y2MP	<b>Finite Element Method And Its Application</b> <i>Radek Kolman</i>	KZ	2	2P+0C	L	PV
16Y2MK	<b>Quality Methods for Vehicles</b>	KZ	2	2P+0C	L	PV
12Y2MD	<b>Methods of Traffic Regulation and Prediction</b> <i>Zuzana arská</i>	KZ	2	2P+0C	L	PV
17Y2MO	<b>International Organisations in Transportation</b>	KZ	2	2P+0C	L	PV
17Y2MS	<b>Microsimulation of Railway Operation</b> <i>Zden k Michl</i>	KZ	2	2P+0C	Z	PV
17Y2MD	<b>Modelling and optimization on transport networks</b>	KZ	2	2P+0C	Z	PV
21Y2MS	<b>Aerospace Engineering Simulation and Modelling</b>	KZ	2	2P+0C	Z	PV
21Y2MC	<b>CNS Systems Modelling</b> <i>Stanislav Pleninger Stanislav Pleninger</i>	KZ	2	2P+0C+8B	Z	PV
17Y2MT	<b>Modern History for Engineering Students</b> <i>Tomáš Horák, Petra Skolilová</i>	KZ	2	2P+0C	Z	PV
12Y2MZ	<b>Modernization of Railway Lines and Stations</b> <i>Dagmar Ko árková, Miroslav Veliš</i>	KZ	2	2P+0C	L	PV
14Y2OP	<b>Object Oriented Programming in Transport</b>	KZ	2	2P+0C	L	PV
15Y2OZ	<b>Health Protection in Transportation and EU</b> <i>Eva Rezlerová, Petr Musil</i>	KZ	2	2P+0C	Z	PV
15Y2OF	<b>Specialised French for Transportation and Telecommunications</b>	KZ	2	2P+0C	Z	PV
18Y2OB	<b>Optical Contactless Strain Measurements</b> <i>Petr Zlámal</i>	KZ	2	2P+0C	L	PV
16Y2PG	<b>Computer Graphics and Virtual Reality</b> <i>Stanislav Novotný, Petr Bouchner</i>	KZ	2	2P+0C	Z	PV
22Y2PS	<b>Traffic Accidents Computer Simulation and Analysis</b>	KZ	2	2P+0C	L	PV
15Y2PT	<b>Food in Transportation</b> <i>Eva Rezlerová, Petr Musil</i>	KZ	2	2P+0C	L	PV
23Y2PD	<b>Practical vehicle dynamics</b>	KZ	2	2P+0C	L	PV

15Y2PD	<b>Practical Spanish for Transportation</b>	KZ	2	2P+0C	Z	PV
21Y2PP	<b>Law and Operation in Air Transport</b> <i>Radoslav Zozuák</i>	KZ	2	2P+0C+8B	L	PV
20Y2PR	<b>Prediction of time series</b>	KZ	2	2P+0C	L	PV
12Y2PV	<b>Public transport priority</b>	KZ	2	2P+0C	L	PV
14Y2PI	<b>Process Information Systems in Transportation</b>	KZ	2	2P+0C	Z	PV
14Y2PJ	<b>C++ Programming Language</b>	KZ	2	2P+0C	L	PV
14Y2PH	<b>CAD Interface Programming</b>	KZ	2	2P+0C	L	PV
11Y2PM	<b>Programming in MATLAB</b> <i>Šárka Voráková</i>	KZ	2	2P+0C	L	PV
21Y2PL	<b>Operational Aspects of Aerodromes</b>	KZ	2	2P+0C	Z	PV
15Y2PU	<b>Publications and Their Creation</b>	KZ	2	2P+0C	Z	PV
12Y2RD	<b>Realization of Transport Buildings</b> <i>Dagmar Koárková, Martin Höfler, Tomáš Honc</i>	KZ	2	2P+0C	L	PV
17Y2RZ	<b>Control of Transport Processes</b>	KZ	2	2P+0C	Z	PV
21Y2S1	<b>Diploma Thesis Seminar 1</b>	KZ	2	2P+0C	L	PV
21Y2S2	<b>Diploma Thesis Seminar 2</b>	KZ	2	2P+0C	Z	PV
15Y2SP	<b>Seminar on Political Philosophy</b>	KZ	2	2P+0C	Z	PV
17Y2SJ	<b>Network Timetabling on the Railway</b> <i>Vít Janoš Vít Janoš (Gar.)</i>	KZ	2	2P+0C	L	PV
16Y2ST	<b>Special Technologies in Transport and Telecommunications</b>	KZ	2	2P+0C	L	PV
16Y2SV	<b>Special technologies in vehicle manufacturing</b>	KZ	2	2P+0C	L	PV
18Y2SD	<b>Reliability and Diagnostics, Experimental Methods</b> <i>Daniel Kytý</i>	KZ	2	2P+0C	Z	PV
15Y2SR	<b>Stylistics and Rhetorics</b>	KZ	2	2P+0C	Z	PV
17Y2SK	<b>Urban and Regional Rail Transport System</b>	KZ	2	2P+0C	L	PV
15Y2TS	<b>Technician and Contemporary Society</b> <i>Jan Feit, Eva Rezlerová</i>	KZ	2	2P+0C	L	PV
20Y2TE	<b>Technology of Electronic Systems</b>	KZ	2	2P+0C	Z	PV
14Y2TU	<b>Telecommunications Systems and Multimedia</b>	KZ	2	2P+0C	Z	PV
16Y2TT	<b>Transportation and Building Technology and Equipment</b>	KZ	2	2P+0C	Z	PV
23Y2TP	<b>Creation of legal and technical regulations</b>	KZ	2	2P+0C	L	PV
14Y2UI	<b>Artificial Intelligence</b>	KZ	2	2P+0C+8B	Z,L	PV
18Y2UB	<b>Accident Biomechanics and Safety</b>	KZ	2	2P+0C	L	PV
23Y2VZ	<b>Leadership and Human Resource Development</b>	KZ	2	2P+0C	L	PV
18Y2VC	<b>Computational Mechanics in Transportation</b> <i>Radek Kolman</i>	KZ	2	2P+0C	L	PV
23Y2VR	<b>Cope with Risks in Engineering Branches</b> <i>Danuše Procházková</i>	KZ	2	2P+0C		PV
12Y2ZK	<b>Traffic Calming</b> <i>Zuzana arská</i>	KZ	2	2P+0C	Z	PV
23Y2ZM	<b>Intelligence Means and Methods</b> <i>Miloslav Kuera</i>	KZ	2	2P+0C	Z	PV

**Characteristics of the courses of this group of Study Plan: Code=Y2-NPPL 21/22 Name=PVP nav.prez. obor PL 21/22**

17Y2AM	<b>Application of Marketing Tools in Transportation</b>	KZ	2
Application of marketing principles in transport issues, marketing tools suitable for transport, case studies of the use of marketing in the sphere of public passenger transport.			
12Y2BM	<b>Safety on The Local Roads</b>	KZ	2
Classification of road accidents rates, social losses. 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	<b>Security Class</b>	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.			
21Y2BS	<b>Unmanned aircraft systems 2</b>	KZ	2
Modern trends in unmanned aircraft development. Use of unmanned aircraft. Managerial activities related to the operation of unmanned aircraft. Flights beyond the applicable legislation.			
14Y2C1	<b>CATIA I</b>	KZ	2
Fundamentals of working with CATIA, making basic parts and bodies. Making 2D sketches, geometric structure, parametric linking, making adaptive models from 2D sketches. Import and export of made parts and bodies. Making assemble and visualization.			
14Y2C2	<b>CATIA II</b>	KZ	2
Extension of basic course. Modeling compound bodies. Possibility of enumeration, communications with other systems. Surface x solid bodies. Kinematic mechanism. Project making and project cooperation. Outputs of projects.			
14Y2CS	<b>Sensitivity of Systems</b>	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.			



21Y2CR	CRM	KZ	2
Introduction to CRM. Analysis of air accidents. Human factor. Error. Historical development of CRM. Health and fitness. Stress and its effect on the human body. Fatigue Sleep & Vigilance. Information Processing. Situational Awareness. Workload Management. Decision Making. Communication. Leadership & Team Behaviour. Automation.			
12Y2DU	Transport in the Context of Sustainability	KZ	2
Definitions of sustainable transport, historical context, development in our country and in the world. Sustainable development and sustainable transport. Demand for transport. Induction of transport. Examples of sustainable transport. Biofuels. Electromobility. New trends in transport. Practical examples.			
15Y2DN	Transportation Psychology in German Speaking Countries	KZ	2
Introduction into broader view of traffic problems with regard to the work with texts (Physics for drivers, abusing alcohol during driving, exhaustion, getting of driving licence, children in traffic, traffic accident, traffic psychology in the internet etc.)			
18Y2DC	Dynamics of Transport Routes and Vehicles	KZ	2
Basic theory and calculations of more mass systems. Analysis of the forces acting between the vehicle and transport route. Creation of dynamic models of vehicles and transport routes. Vibration of systems with a finite number of degrees of freedom. Methods of stiffness constants and pliability constants. Fundamentals of vibration of bridges. Criteria for the admissibility of oscillation. Experimental methods in dynamics.			
18Y2EM	Electron microscopy	KZ	2
Basic principles of electron microscopy, construction, control and maintenance of SEM, sample preparation, signal detection, types of detectors and data evaluation using image analysis, quantification of results and automation of data processing, energy dispersive X-ray microanalysis and other analytical methods in electron microscopy. Evaluation of data obtained from ED detector, practical examples of ED microanalysis on samples.			
16Y2EE	Emissions and Ergonomics of Vehicles	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.			
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.			
21Y2FM	Aviation Company Financial Management	KZ	2
Theories of corporate finance - financial statements, budget, forecast. Financial policy of the company. Financial resources - long-term financial resources, depreciation, retained earnings, shares, bonds, loans, leasing, capital. Financial and economic analysis of the company - structure and content.			
23Y2FB	Physics for Security Branches	KZ	2
Grounds of physics of substances and phenomena at extreme conditions. Grounds of rheology. Physics of Earth's interior. Geophysics. Physics of atmosphere. Applications in dengineering branches directed to safety.			
18Y2FZ	Physical foundation of materials' properties	KZ	2
Atomistic models, lattice defects influence on properties of materials, stiffness, plasticity, strength, fracture, fatigue, creep, corrosion, effects of environment and loading on materials' behavior are the main discussed topics.			
15Y2HS	Road Transport History	KZ	2
Roads and road traffic in the Ancient Age, corridors of main medieveal 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.			
14Y2IS	Intelligent Systems in Postal Services	KZ	2
The use of information systems in the postal services (ITIS, and POST, T + T, PS, KMP, DS), application of information technology in the processing of mail processing nodes in the postal network, optimizing logistics processes in the post. The appreciation of the real implementation of the Czech post in operation both in lectures and in the framework of the practical desk.			
12Y2IS	Urban Networks	KZ	2
The importance and the position of UN as public and technical infrastructure / utilities, 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.			
14Y2KI	Capital Investment in Transportation and Telecommunications	KZ	2
Financial market, investment desicion making - long term goals and investment strategies, long term financing			
16Y2KV	Car Body Design	KZ	2
Personal cars body, high-load car body, bus car body, and motorcycle as a construction set. Principles of design, production, testing and operation. Materials used for car body construction. Active and passive safety parts. Ergonomics, HMI, view out of the vehicle, operational extent, view behind the car. Conditioning tools, signaling function. Aerodynamics of the car body. Design and artistic design principles. Practical training.			
12Y2KS	Rail Transport in Settlements and Regions	KZ	2
Modernization and development of railway infrastructure in Czech Republic. Arrangement of railway networks and junctions. Suburban railway services. Network configuration and operation of metro systems. Network configuration and operation of tram systems. Special thematic lectures (rail transport in selected countries / regions).			
12Y2KE	Landscape Ecology	KZ	2
Landscape ecology. Landscape - definition, types, evolution. Landscape systems. Anthropogenic impacts on landscape. Methods using for evaluating landscape. Fractal geometry and its potential applications in landscape ecology. Landscape planning.			
21Y2LS	Air Traffic Services	KZ	2
Airspace structure in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, APP a ACC control. History of ATS at USA and Czechoslovakia. ATS - Model of financing. Training Systém of Air Traffic Controllers. Future development of ATS.			
11Y2LG	Logics of Engineer's Judgement	KZ	2
Logical structure of engineer's judgement, its propositional and predicative logical base. Solutions of logical tasks through the methods of truthfulness and semantic analysis charts. Venn's diagram method. Logical basis for network design for the solution of technical tasks.			

23Y2MA	Risk Analysis and Management	KZ	2
Concept of risks and terms. Risk sources, definition of hazard, impacts and risks. Methods for identification, analysis, assessment and management of risks. Risk engineering targets and good engineering practice. Methods, tools and techniques for risk engineering. System of systems risk. Application of strategic and system approach for benefit of security and development. Territorial, emergency and crisis planning. Human factor - its role.			
21Y2MQ	Quality Management	KZ	2
History, basic definition. Pioneers in the field of quality. International quality organisations and quality promotion in the Czech Republic. Quality management system. Environmental management systems. Integrated management systems. Risk management in the context of the requirements of ISO standards. Sectoral quality management systems. Comprehensive quality management, excellence models and corporate social responsibility. Quality audits.			
15Y2MS	Sociology for Managers	KZ	2
Sociological approach to a corporation. Corporation and its organization. Corporation and its running - human role and communication. Corporation, its culture and social system. Human's work position in free market economy. Corporate directorship, work groups, adaptation, strife, different roles and positions in corporation.			
21Y2MK	Marketing of Air Transport	KZ	2
The content of the course "Marketing in air transport" is the management of activities and processes using available marketing tools and processes for analysis, strategy development and implementation of sales of goods and services in the aviation industry. In addition to the theoretical foundations of marketing, the lectures present systems of market, competition and product analysis, creation of marketing strategies and planning.			
12Y2MH	Measurement and Modeling of Traffic Noise	KZ	2
Theoretical introduction to noise from traffic. Noise from rail transport. Noise from road traffic. Measurement and calculation of noise from rail traffic. Measurement and calculation of noise from road traffic. Modelling of traffic noise in the CADNA A.			
12Y2MI	Urban Engineering	KZ	2
Teaching aiming on utilities storage in area, coordination engineering activities in area, arrangement of public space, conception of public spaces.			
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.			
17Y2MO	International Organisations in Transportation	KZ	2
International relations in transport, UN, EEC UN, Intergovernmental organisations, EU Offices and Agencies, Conference of European Ministries of transport, International mode organisations of public transport, Air-Rail, railways, roads, air, waterways, forwarding and postal services.			
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.			
17Y2MD	Modelling and optimization on transport networks	KZ	2
Coordination problems on public transport networks, scheduling vehicles, design of control plans for light-controlled intersections including green wave modelling, service systems, modelling of advanced problems in distribution systems - exact, heuristic and metaheuristic principles of solving problems.			
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.			
21Y2MC	CNS Systems Modelling	KZ	2
The course is designed as a set of model tasks in the field of communication navigation and surveillance systems in aviation, addressed using mathematical approaches and software tools. A large part is devoted to air targets tracking, measurement-to-track association, track filtering and multisensor tracking.			
17Y2MT	Modern History for Engineering Students	KZ	2
Selected chapters from the 19. century history. Geopolitical situation in Europe explained on the examples of Great Britain, Germany and Austrian Empire. Rise of the United States, American Civil War, transatlantic transportation development. Imperial China: Late Qing dynasty. Selected chapters from the 20. century history: From Bellé Epoque to Cold War. Czechoslovak historical myths.			
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 transit corridors.			
14Y2OP	Object Oriented Programming in Transport	KZ	2
Class, object, encapsulation, inheritance, polymorphism, templates, retyping, stream, exceptions, repository, collections, virtual methods and classes. Problem cases will be chosen from microscopic simulation system, discrete event simulation, cellular automata simulation and virtual life area.			
15Y2OZ	Health Protection in Transportation and EU	KZ	2
Health protection in transportation in CR in the past and present. Conditions before 1989 and after, current legislature, future prospects. Harmonisation of legislation with other EU members. Fundamental principles of health protection and support in selected EU countries.			
15Y2OF	Specialised French for Transportation and Telecommunications	KZ	2
Basic transportation (public transport, railway, air, road and ship transport) and telecommunications terminology. Special focus on independent speaking and writing skills.			
18Y2OB	Optical Contactless Strain Measurements	KZ	2
In the course students will get theoretical knowledge and practical experience in optical strain measurement methods. Students will get experience with use of laboratory cameras, DSLRs and high speed cameras for acquisition of suitable image data and with digital image correlation algorithms for displacements measurements and strain fields calculation.			
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 passengers, pedestrian, traffic accident simulation and analysis.			

15Y2PT	Food in Transportation	KZ	2
The nutrition policy. Interaction transportation and foodstuffs. The health risks. Hygienic safeguard. The practical examples from the Czech Republic and from the world. The issues of dining cars, work trains and other railroad equipment. Legislation.			
23Y2PD	Practical vehicle dynamics	KZ	2
Theory of vehicle dynamics. Multibody vehicle modeling. Modeling with IPG CarMaker. Standard and development stage experiments with road vehicles. Realization of experimental measurements with passenger vehicles. Experiment evaluation.			
15Y2PD	Practical Spanish for Transportation	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.			
21Y2PP	Law and Operation in Air Transport	KZ	2
Development of aviation law. International conventions on civil aviation. International organisations and including of the Czech Republic in these organisations. EU legislation and civil aviation. Execution of state administration and state supervision in matters of civil aviation, in accordance with Act No. 49/1997 Col. Facilitation. Responsibilities of air carriers for passengers, luggage and cargo. The safe transport of dangerous goods.			
20Y2PR	Prediction of time series	KZ	2
Introduction to time series prediction, meaning of prediction, basics of quantitative prediction. Methods for predictive quality evaluation, descriptive statistics, MAE, MAPE, RMSE, naive prediction, prediction for general formula of loss function. Calculation and programming environment R. Regression models, basics of linear regression, simple regression. Multiple regression, statistical tests of linear dependence, selection of input variables.			
12Y2PV	Public transport priority	KZ	2
Public transport as the backbone of sustainable mobility. Public transport priority (PTP) in strategic documents. PTP in the Czech Republic and abroad. Types of PTP measures. Design of PTP measures. Relationship between Basics of public transport stops and stations design. PTP measures and evaluation of their operation. Economic and environmental effects of PTP. The process of preparing PTP measures.			
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). Information systems implementation and operations description in the Czech Republic (technical and process) included lectures and visits.			
14Y2PJ	C++ Programming Language	KZ	2
OOP philosophy and basics of C++ programming language. Class, object, constructor, destructor, inheritance, abstract class, virtual methods, exceptions, streams, method and operator overloading, abstract data type implementation in C++.			
14Y2PH	CAD Interface Programming	KZ	2
Introduction to CAD interface programming techniques with the help of LIST and VBA programming languages. Possibilities of proper objects (commands), dialogues, interfaces, and applications creation in CAD systems. Programming of cooperation with other applications (databases, spread-sheets).			
11Y2PM	Programming in MATLAB	KZ	2
To explain the principle of modelling and simulation, description of Matlab environment and its settings, optimization and program code debugging, data fitting and designing GUI in Matlab.			
21Y2PL	Operational Aspects of Aerodromes	KZ	2
Operational aspects of aerodromes. Location of aerodrome and orientation of runways. Requirements for apron. Capacity of airports runways and terminals. Operation under winter conditions. Firefighting units. Protection against unlawful interference. Local transport connection. Environmental protection.			
15Y2PU	Publications and Their Creation	KZ	2
Scientific texts types. Footnotes and references. Exploration of facts. Quotations. Formal document layout. Working with information databases. Typographic principles. Typographic editors - MS Word, Tex/LaTeX. Practical creation of simple scientific documents.			
12Y2RD	Realization of Transport Buildings	KZ	2
Transport Buildings Types. Project Documentation Types. Building Code. Land Permission and Building Permission Process. Building Process. Project Economics. Project Management.			
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.			
21Y2S1	Diploma Thesis Seminar 1	KZ	2
Types of final theses (review, applied research, basic research, work dealing with design proposals). Working with citation sources (citation databases, citation styles). Analysis of the current state (writing standards). Definition of the limitations of the current state. Introduction to the methodology of writing final theses.			
21Y2S2	Diploma Thesis Seminar 2	KZ	2
Methodology of writing final theses. Definition of materials and methods, approach to obtaining results, presentation and discussion of results, formulation of conclusions. Data collection and presentation, basic statistics, validation of results and proposals. Achieving the objectives of the paper and evaluation of hypotheses tests. Formal and graphic design of the paper - working with LaTeX and Word template.			
15Y2SP	Seminar on Political Philosophy	KZ	2
Interpreting of philosophical texts, view of society, state and their system of government.			
17Y2SJ	Network Timetabling on the Railway	KZ	2
Timetable samples. Capacity allocation, technological intervals in railway operation. Rules and regulations of train paths, running times, time adds and supplements. Rolling stock circulation planning. Rules of train-diagramm creating. Timetables for more service-levels on the line. Construction slot conflicts between passenger- and freight transport. Network line relations and waiting times, timetables for lines under construction.			
16Y2ST	Special Technologies in Transport and Telecommunications	KZ	2
Micro, nano and special technologies, electric arc and its applications, plasma technologies, dipping, beam technologies, electron beams technology in reduction and mending of vehicles, laser and laser technologies, soldering, gluing, ultrasound, diffusion, friction and explosion technologies, micro stoves, gas.			
16Y2SV	Special technologies in vehicle manufacturing	KZ	2
Micro, nano and special technologies, electric arc and its applications, plasma technologies, dipping, beam technologies, electron beams technology in reduction and mending of vehicles, laser and laser technologies, soldering, gluing, ultrasound, diffusion, friction and explosion technologies, micro stoves, gas.			
18Y2SD	Reliability and Diagnostics, Experimental Methods	KZ	2
The course is focused on theoretical background and practical experience in the field of reliability of constructions, implementation of diagnostic procedures for the detection of material defects and determination of residual life of structures. For this purpose, non-destructive methods of experimental mechanics (e. g. strain-gauge measurement, photoelasticity) and optical methods, including electron microscopy, will be used.			
15Y2SR	Stylistics and Rhetorics	KZ	2
Basic skills of oral and written expression as a means of human communication. Basic information about speech, articulation, oral and written language. Teaching to speak well-vocal organs, voice training. Language semantics, language syntactic and the pragmatic aspect. Creative thought and its oral and written expression. Practice - cultivating the skills of speech.			

17Y2SK	Urban and Regional Rail Transport System	KZ	2
Factors influencing transport demand, modal-split, traffic flows distribution on public transit network. Line network optimization and configuration. Timetable designing and evaluation accenting integrated periodic timetable. Rolling stock circulation, staff and crew services optimization and their order to rosters. Framework legislation, non-barrier effects and preference of public transport. Marketing.			
15Y2TS	Technician and Contemporary Society	KZ	2
Why to take off a hat in a room and open a door for a lady, are there simple solutions, science vs belief, do we need to know or is it enough to turn on a PC, it must be true - it's on the Internet and in newspapers, what are the sights for, interest in public affairs - a hangover from the past?			
20Y2TE	Technology of Electronic Systems	KZ	2
Principle technologies for an effective operation of electronically controlled systems. Maintaining, measuring, optimization of safety and reliability of complex systems. Semiconductor technologies, printed circuits, assembly operations, interconnection and repairs technologies users 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, provisioning 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).			
23Y2TP	Creation of legal and technical regulations	KZ	2
Creation of legislation, structure of the bills of law, legal process, compatibility with the EC law, the creation of technical standards and their publication, ÚNMZ (Czech Office for standards, metrology and testing) in Czech Republic, organizations CEN, CENELEC and ETSI, the notification process.			
14Y2UI	Artificial Intelligence	KZ	2
History of artificial intelligence, knowledge, its representation including frames, state space search, constraints, genetic algorithms, machine learning.			
18Y2UB	Accident Biomechanics and Safety	KZ	2
Anatomy of man. Methods of Medical Diagnostics - RTG, CT, MRI, US. Dynamics of traumatic events. Factors influencing the severity of an accident and the extent of a traffic accident. Injuries in road traffic. Pedestrian injuries. Injury in railway and air traffic accidents. Analysis of biomechanical events in accidents and their computational modeling. Principles of treatment and rehabilitation. Protective elements and safety measures in transport.			
23Y2VZ	Leadership and Human Resource Development	KZ	2
Introduction to the study of human resources, human resources management, corporate goals, strategies, cultural and ethical aspects. Team management, communication in teams, strategy and planning in human resources, ethics and corporate culture, cross-cultural differences. The labor code. Introduction into protocols.			
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 transportation systems. Elastic, elastoplastic and viscoelastic material. FEM in problems of biomechanics. Numerical analysis of structural parts with programme ANSYS on instances.			
23Y2VR	Cope with Risks in Engineering Branches	KZ	2
Types of engineering branches directed to risks, procedures used in risk engineering, ensuring the secured systems, ensuring the safe systems, ensuring the safe systems of systems.			
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.			

## 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 of 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
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	<b>Safety on The Local Roads</b> Classification of road accidents rates, social losses. 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.	KZ	2
12Y2DU	<b>Transport in the Context of Sustainability</b> Definitions of sustainable transport, historical context, development in our country and in the world. Sustainable development and sustainable transport. Demand for transport. Induction of transport. Examples of sustainable transport. Biofuels. Electromobility. New trends in transport. Practical examples.	KZ	2
12Y2IS	<b>Urban Networks</b> The importance and the position of UN as public and technical infrastructure / utilities, methodology of the UN master planning, of UN design, UN coordination, UN installation and UN operation (basic technical standards of UN, trenchless technologies for UN).	KZ	2
12Y2KE	<b>Landscape Ecology</b> 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.	KZ	2
12Y2KS	<b>Rail Transport in Settlements and Regions</b> 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).	KZ	2
12Y2MD	<b>Methods of Traffic Regulation and Prediction</b> 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.	KZ	2
12Y2MH	<b>Measurement and Modeling of Traffic Noise</b> 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.	KZ	2
12Y2MI	<b>Urban Engineering</b> Teaching aiming on utilities storage in area, coordination engineering activities in area, arrangement of public space, conception of public spaces.	KZ	2
12Y2MZ	<b>Modernization of Railway Lines and Stations</b> 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 transit corridors.	KZ	2
12Y2PV	<b>Public transport priority</b> Public transport as the backbone of sustainable mobility. Public transport priority (PTP) in strategic documents. PTP in the Czech Republic and abroad. Types of PTP measures. Design of PTP measures. Relationship between Basics of public transport stops and stations design. PTP measures and evaluation of their operation. Economic and environmental effects of PTP. The process of preparing PTP measures.	KZ	2
12Y2RD	<b>Realization of Transport Buildings</b> Transport Buildings Types. Project Documentation Types. Building Code. Land Permission and Building Permission Process. Building Process. Project Economics. Project Management.	KZ	2
12Y2ZK	<b>Traffic Calming</b> 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.	KZ	2
14XN1	<b>Master Project 1</b>	Z	2
14XN2	<b>Master Project 2</b>	Z	2
14XN3	<b>Master Project 3</b>	Z	1
14XN4	<b>Master Project 4</b>	Z	8
14XNDP	<b>Master Thesis</b>	KZ	18
14Y2C1	<b>CATIA I</b> Fundamentals of working with CATIA, making basic parts and bodies. Making 2D sketches, geometric structure, parametric linking, making adaptive models from 2D sketches. Import and export of made parts and bodies. Making assemble and visualization.	KZ	2
14Y2C2	<b>CATIA II</b> Extension of basic course. Modeling compound bodies. Possibility of enumeration, communications with other systems. Surface x solid bodies. Kinematic mechanism. Project making and project cooperation. Outputs of projects.	KZ	2
14Y2CS	<b>Sensitivity of Systems</b> 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.	KZ	2
14Y2IS	<b>Intelligent Systems in Postal Services</b> The use of information systems in the postal services (ITIS, and POST, T + T, PS, KMP, DS), application of information technology in the processing of mail processing nodes in the postal network, optimizing logistics processes in the post. The appreciation of the real implementation of the Czech post in operation both in lectures and in the framework of the practical desk.	KZ	2
14Y2JM	<b>One-Chip Controllers</b> One-chip controllers architecture, embedded peripherals (counters, timers, converters, ports) and their utilisation. Practical tasks are programmed with the aid of AVR chips.	KZ	2
14Y2KI	<b>Capital Investment in Transportation and Telecommunications</b> Financial market, investment decision making - long term goals and investment strategies, long term financing	KZ	2
14Y2OP	<b>Object Oriented Programming in Transport</b> Class, object, encapsulation, inheritance, polymorphism, templates, retyping, stream, exceptions, repository, collections, virtual methods and classes. Problem cases will be chosen from microscopic simulation system, discrete event simulation, cellular automata simulation and virtual life area.	KZ	2
14Y2PH	<b>CAD Interface Programming</b> 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).	KZ	2
14Y2PI	<b>Process Information Systems in Transportation</b> 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). Information systems implementation and operations description in the Czech Republic (technical and process) included lectures and visits.	KZ	2
14Y2PJ	<b>C++ Programming Language</b> OOP philosophy and basics of C++ programming language. Class, object, constructor, destructor, inheritance, abstract class, virtual methods, exceptions, streams, method and operator overloading, abstract data type implementation in C++.	KZ	2

14Y2TU	Telecommunications Systems and Multimedia	KZ	2
New trends in telecommunications namely applied in transport solutions, identification and quantification of telecommunications networks and services performance based on redundant architecture, provisioning of guaranteed service quality, two generations of the handover principles.			
14Y2UI	Artificial Intelligence	KZ	2
History of artificial intelligence, knowledge, its representation including frames, state space search, constraints, genetic algorithms, machine learning.			
15J2A1	Language - English 1	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.			
15JBA2	Language - English 2	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement.			
15JBA3	Language - English 3	Z	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement. Optional courses for certificates FCE, CAE.			
15JBA4	Language - English 4	ZK	2
Presentation Skills - expert technical discourse and style; Analysis of expert texts and their production; Preparation for overseas work engagement. Optional courses for certificates FCE, CAE.			
15XN1	Master Project 1	Z	2
15XN2	Master Project 2	Z	2
15XN3	Master Project 3	Z	1
15XN4	Master Project 4	Z	8
15XNDP	Master Thesis	KZ	18
15Y2DN	Transportation Psychology in German Speaking Countries	KZ	2
Introduction into broader view of traffic problems with regard to the work with texts (Physics for drivers, abusing alcohol during driving, exhaustion, getting of driving licence, children in traffic, traffic accident, traffic psychology in the internet etc.)			
15Y2HS	Road Transport History	KZ	2
Roads and road traffic in the Ancient Age, corridors of main medieval 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.			
15Y2PD	Practical Spanish for Transportation	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.			
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. Reliability, 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
16Y2EE	Emissions and Ergonomics of Vehicles	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.			

16Y2HP	Vehicle Hygiene	KZ	2
Emissions and ergonomics 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. Ergonomics - sitting, standing, control, operational reach. Condition - heating, ventilation, air-conditioning, filtration, tiredness.			
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 reduction and mending of vehicles, laser and laser technologies, soldering, gluing, ultrasound, diffusion, friction and explosion technologies, micro stoves, gas.			
16Y2SV	Special technologies in vehicle manufacturing	KZ	2
Micro, nano and special technologies, electric arc and its applications, plasma technologies, dipping, beam technologies, electron beams technology in reduction 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
17Y2AM	Application of Marketing Tools in Transportation	KZ	2
Application of marketing principles in transport issues, marketing tools suitable for transport, case studies of the use of marketing in the sphere of public passenger transport.			
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.			
17Y2MD	Modelling and optimization on transport networks	KZ	2
Coordination problems on public transport networks, scheduling vehicles, design of control plans for light-controlled intersections including green wave modelling, service systems, modelling of advanced problems in distribution systems - exact, heuristic and metaheuristic principles of solving problems.			
17Y2MO	International Organisations in Transportation	KZ	2
International relations in transport, UN, EEC UN, Intergovernmental organisations, EU Offices and Agencies, Conference of European Ministries of transport, International mode organisations of public transport, Air-Rail, railways, roads, air, waterways, forwarding and postal services.			
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.			
17Y2MT	Modern History for Engineering Students	KZ	2
Selected chapters from the 19. century history. Geopolitical situation in Europe explained on the examples of Great Britain, Germany and Austrian Empire. Rise of the United States, American Civil War, transatlantic transportation development. Imperial China: Late Qing dynasty. Selected chapters from the 20. century history: From Bellé Epoque to Cold War. Czechoslovak historical myths.			
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.			
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.			
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
18Y2DC	Dynamics of Transport Routes and Vehicles	KZ	2
Basic theory and calculations of more mass systems. Analysis of the forces acting between the vehicle and transport route. Creation of dynamic models of vehicles and transport routes. Vibration of systems with a finite number of degrees of freedom. Methods of stiffness constants and pliability constants. Fundamentals of vibration of bridges. Criteria for the admissibility of oscillation. Experimental methods in dynamics.			

18Y2EM	Electron microscopy	KZ	2
Basic principles of electron microscopy, construction, control and maintenance of SEM, sample preparation, signal detection, types of detectors and data evaluation using image analysis, quantification of results and automation of data processing, energy dispersive X-ray microanalysis and other analytical methods in electron microscopy. Evaluation of data obtained from ED detector, practical examples of ED microanalysis on samples.			
18Y2FZ	Physical foundation of materials' properties	KZ	2
Atomistic models, lattice defects influence on properties of materials, stiffness, plasticity, strength, fracture, fatigue, creep, corrosion, effects of environment and loading on materials' behavior are the main discussed topics.			
18Y2MP	Finite Element Method And Its Application	KZ	2
Basic mathematical formulation of the Finite Element Method. Direct Stiffness Method used in structural mechanics. Evaluation of stiffness matrices for the basic elements using variational principles. Element formulation (bar and beam elements, CST, LST, quadrilateral, tetrahedral and brick elements). Natural coordinates, natural shape functions and isoparametric representation. Numerical integration. Introduction to dynamics. FEM programming.			
18Y2OB	Optical Contactless Strain Measurements	KZ	2
In the course students will get theoretical knowledge and practical experience in optical strain measurement methods. Students will get experience with use of laboratory cameras, DSLRs and high speed cameras for acquisition of suitable image data and with digital image correlation algorithms for displacements measurements and strain fields calculation.			
18Y2SD	Reliability and Diagnostics, Experimental Methods	KZ	2
The course is focused on theoretical background and practical experience in the field of reliability of constructions, implementation of diagnostic procedures for the detection of material defects and determination of residual life of structures. For this purpose, non-destructive methods of experimental mechanics (e. g. strain-gauge measurement, photoelasticimetry) and optical methods, including electron microscopy, will be used.			
18Y2UB	Accident Biomechanics and Safety	KZ	2
Anatomy of man. Methods of Medical Diagnostics - RTG, CT, MRI, US. Dynamics of traumatic events. Factors influencing the severity of an accident and the extent of a traffic accident. Injuries in road traffic. Pedestrian injuries. Injury in railway and air traffic accidents. Analysis of biomechanical events in accidents and their computational modeling. Principles of treatment and rehabilitation. Protective elements and safety measures in transport.			
18Y2VC	Computational Mechanics in Transportation	KZ	2
Principle of virtual work and variational principles in FEM. Bar shaped, planar and three - dimensional structures in FEM. FEM in statics and in dynamics of transportation 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	Prediction of time series	KZ	2
Introduction to time series prediction, meaning of prediction, basics of quantitative prediction. Methods for predictive quality evaluation, descriptive statistics, MAE, MAPE, RMSE, naive prediction, prediction for general formula of loss function. Calculation and programming environment R. Regression models, basics of linear regression, simple regression. Multiple regression, statistical tests of linear dependence, selection of input variables.			
20Y2TE	Technology of Electronic Systems	KZ	2
Principle technologies for an effective operation of electronically controlled systems. Maintaining, measuring, optimization of safety and reliability of complex systems. Semiconductor technologies, printed circuits, assembly operations, interconnection and repairs technologies users and operators.			
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, surveillance) systems used in aviation. Systems are presented in perspective of future development.			
21ERGP	Ergonomics in Aviation	ZK	4
General concept of ergonomics. Visual system of a human. Aural system of a human. Information processing system of a human. Environmental influences on human performance. Displays, control elements and design in line with ergonomics. Design of a flight deck in line with ergonomics.			
21KST	Space Technology	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.			
21LCA2	Aviation English 2	Z,ZK	2
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.			
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 Control Systems	Z,ZK	5
Navigation. Radionavigation. Satellite navigation. Flight management system. Autopilot. FMC. Practical execution of flight.			
21PLDO	Air Carrier Operation	Z,ZK	5
Mission and importance of air transport. Legislation. Airlines - structure, strategy. Performances in air transport. Cost structure. Fuel management. Cargo. Aircraft maintenance (organization) and economics of aircraft operation. Ground handling and other services. Safety / Security / Quality and Compliance monitoring. Revenue management. Air transport and 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.			



21PRDP	Software means for thesis elaboration	Z	3
The subject syllabus is oriented to solving associated problems with master's theses upon request from students, where individual classes will go through given issues on specific examples according to the needs and questions from students. The subject has flexible form owing to which it is possible to deepen students' knowledge of Matlab environment.			
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	Aircraft Technology Reliability	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		Z,ZK	6
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
21Y2BS	Unmanned aircraft systems 2	KZ	2
Modern trends in unmanned aircraft development. Use of unmanned aircraft. Managerial activities related to the operation of unmanned aircraft. Flights beyond the applicable legislation.			
21Y2CR	CRM	KZ	2
Introduction to CRM. Analysis of air accidents. Human factor. Error. Historical development of CRM. Health and fitness. Stress and its effect on the human body. Fatigue Sleep & Vigilance. Information Processing. Situational Awareness. Workload Management. Decision Making. Communication. Leadership & Team Behaviour. Automation.			
21Y2FM	Aviation Company Financial Management	KZ	2
Theories of corporate finance - financial statements, budget, forecast. Financial policy of the company. Financial resources - long-term financial resources, depreciation, retained earnings, shares, bonds, loans, leasing, capital. Financial and economic analysis of the company - structure and content.			
21Y2LS	Air Traffic Services	KZ	2
Airspace structure in Czech Republic and other countries. Introduction and description of ATS units in Czech Republic. Practical examples of TWR, APP a ACC control. History of ATS at USA and Czechoslovakia. ATS - Model of financing. Training System of Air Traffic Controllers. Future development of ATS.			
21Y2MC	CNS Systems Modelling	KZ	2
The course is designed as a set of model tasks in the field of communication navigation and surveillance systems in aviation, addressed using mathematical approaches and software tools. A large part is devoted to air targets tracking, measurement-to-track association, track filtering and multisensor tracking.			
21Y2MK	Marketing of Air Transport	KZ	2
The content of the course "Marketing in air transport" is the management of activities and processes using available marketing tools and processes for analysis, strategy development and implementation of sales of goods and services in the aviation industry. In addition to the theoretical foundations of marketing, the lectures present systems of market, competition and product analysis, creation of marketing strategies and planning.			
21Y2MQ	Quality Management	KZ	2
History, basic definition. Pioneers in the field of quality. International quality organisations and quality promotion in the Czech Republic. Quality management system. Environmental management systems. Integrated management systems. Risk management in the context of the requirements of ISO standards. Sectoral quality management systems. Comprehensive quality management, excellence models and corporate social responsibility. Quality audits.			
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.			
21Y2S1	Diploma Thesis Seminar 1	KZ	2
Types of final theses (review, applied research, basic research, work dealing with design proposals). Working with citation sources (citation databases, citation styles). Analysis of the current state (writing standards). Definition of the limitations of the current state. Introduction to the methodology of writing final theses.			
21Y2S2	Diploma Thesis Seminar 2	KZ	2
Methodology of writing final theses. Definition of materials and methods, approach to obtaining results, presentation and discussion of results, formulation of conclusions. Data collection and presentation, basic statistics, validation of results and proposals. Achieving the objectives of the paper and evaluation of hypotheses tests. Formal and graphic design of the paper - working with LaTeX and Word template.			
22SLN	Air Traffic Accident Investigation	KZ	2
Specification of forensic expertise. Regulations 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 passengers, 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
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 engineering branches directed to safety.			
23Y2MA	Risk Analysis and Management	KZ	2
Concept of risks and terms. Risk sources, definition of hazard, impacts and risks. Methods for identification, analysis, assessment and management of risks. Risk engineering targets and good engineering practice. Methods, tools and techniques for risk engineering. System of systems risk. Application of strategic and system approach for benefit of security and development. Territorial, emergency and crisis planning. Human factor - its role.			
23Y2PD	Practical vehicle dynamics	KZ	2
Theory of vehicle dynamics. Multibody vehicle modeling. Modeling with IPG CarMaker. Standard and development stage experiments with road vehicles. Realization of experimental measurements with passenger vehicles. Experiment evaluation.			
23Y2TP	Creation of legal and technical regulations	KZ	2
Creation of legislation, structure of the bills of law, legal process, compatibility with the EC law, the creation of technical standards and their publication, ÚNMZ (Czech Office for standards, metrology and testing) in Czech Republic, organizations CEN, CENELEC and ETSI, the notification process.			
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.			
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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