Study plan

Name of study plan: Prospectus-Bachelor

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: Bachelor
Required credits: 5
Elective courses credits: -5
Sum of credits in the plan:
Note on the plan:

Name of the block: Volitelné předměty-odborné
Minimal number of credits of the block: 5
The role of the block: F

Code of the group: PRO-B-1
Name of the group: Courses that will be open if at least ten students are registered
Requirement credits in the group: In this group you have to gain at least 3 credits (at most 19)
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 3
Note on the group:

Code of the group: PRO-B-O
Name of the group: Courses that will certainly be open
Requirement credits in the group: In this group you have to gain at least 2 credits (at most 18)
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 2
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
14ASD	**Algorithm and Data Structures** *Petr Hnyk, Michal Jeřábek, Marek Kalika, Zdeněk Lokaj, Jan Zelenka, Vít Fábera Michal Jeřábek (Gar.)*	KZ	3	0P+2C+8B	Z	F
11CAL1	**Calculus 1** *Magdalena Hykšová, Ondřej Navrátil, Bohumil Kovář, Tomáš Třasák, Olga Vraštilová Ondřej Navrátil (Gar.)*	Z,ZK	7	2P+4C+22B	Z	F
11CAL2	**Calculus 2** *Magdalena Hykšová* ***Magdalena Hykšová*** *Magdalena Hykšová (Gar.)*	Z,ZK	5	2P+3C+20B	L	F
15JZ1A	**Foreign Language - English 1** *Eva Rezlerová, Dana Boušová, Jitka Heřmanová, Barbora Horáčková, Marie Michlová, Lenka Monková, Markéta Olehlová, Markéta Vojanová, Peter Morpuss, ...*	Z	3	0P+4C	Z	F
15JZ2A	**Foreign Language - English 2**	Z,ZK	3	0P+4C+10B	L	F
15JZ3F	**Foreign Language - French 3** *Eva Rezlerová, Irena Veselková*	Z	3	0P+4C	Z	F
15JZ4F	**Foreign Language - French 4**	Z,ZK	3	0P+4C+10B	L	F
15JZ3N	**Foreign Language - German 3** *Eva Rezlerová, Jana Štikarová*	Z	3	0P+4C	Z	F
15JZ4N	**Foreign Language - German 4**	Z,ZK	3	0P+4C+10B	L	F
15JZ3R	**Foreign Language - Russian 3** *Eva Rezlerová, Marie Michlová*	Z	3	0P+4C	Z	F
15JZ4R	**Foreign Language - Russian 4**	Z,ZK	3	0P+4C+10B	L	F
15JZ3S	**Foreign Language - Spanish 3** *Eva Rezlerová, Nina Hricsina Puškinová*	Z	3	0P+4C	Z	F

15JZ4S	**Foreign Language - Spanish 4**	Z,ZK	3	0P+4C+10B	L	F
14DATS	**Database Systems** *Martin Šrotýř, Jan Krčál, Jana Kaliková Jana Kaliková (Gar.)*	KZ	2	1P+1C	Z	F
21DKL	**Aviation Data Link Communication**	KZ	3	2P+1C	L	F
15DPLG	**Transportation Psychology** *Eva Rezlerová, Jana Štikarová*	Z	2	2P+0C+6B	Z	F
21ELED	**Air Transport Economy**	Z,ZK	4	2P+2C+14B	L	F
21EBLP	**European Air Transport Safety Attitude**	Z,ZK	4	2P+2C	L	F
11FYZ	**Physics** *Tomáš Vítů, Zuzana Malá, Marek Honců* ***Zuzana Malá*** *Zuzana Malá (Gar.)*	Z,ZK	5	2P+2C	Z	F
11GIE	**Geometry** *Oldřich Hykš, Šárka Voráčová, Pavel Provinský Šárka Voráčová (Gar.)*	KZ	3	2P+2C+12B	Z	F
21HVL	**Weight and Balance of Aircraft** ***Roman Matyáš***	Z,ZK	4	2P+1C	L	F
14KSP	**Constructing with Computer Aid** *Vladimír Douda, Martin Brumovský, Lukáš Kozel, Radek Kratochvíl, Filip Müller, Lukáš Svoboda, Drahomír Schmidt Lukáš Svoboda (Gar.)*	KZ	2	0P+2C+8B	Z	F
21LRF	**Laboratories of Radiotelephony** *Jakub Hospodka, Jakub Kraus, Pavel Valenta, Milan Kameník*	Z	2	0P+2C	Z	F
21LGPS	**Legislation and Operational Regulations** *Jakub Hospodka, Jakub Kraus, Roman Matyáš, Radoslav Zozuľák*	Z,ZK	8	4P+2C	Z	F
21LGP	**Legislation and Operational Regulations** *Jakub Kraus, Radoslav Zozuľák, Adéla Zmeškalová, Peter Vittek, Adéla Zmeškalová, Tomáš Pustina*	Z,ZK	5	2P+2C	Z	F
21LL1	**Aircraft 1** ***Ladislav Keller***	KZ	3	2P+1C+10B	L	F
21LTA2	**Aircraft 2** *Jakub Hospodka, Jakub Kraus, Roman Matyáš, Tomasz Balcerzak, Anna Kačeriaková, Vladimír Plos, Oldřich Štumbauer, Ladislav Keller*	Z,ZK	2	2P+1C	Z	F
21LAG1	**English for Aviation 1** *Jakub Kraus, Sarah Van Den Bergh, Andrej Lališ, Slobodan Stojić, Terézia Pilmannová, Max Chopart, Václav Brož*	KZ	3	0P+2C	Z	F
21APL1	**Aviation English 1 for Professional Pilot** *Jakub Hospodka, Jakub Kraus, Sarah Van Den Bergh, František Kuba*	Z	3	0P+4C	Z	F
21LAG2	**English in Aviation 2**	KZ	3	0P+2C+10B	L	F
21APL2	**Aviation English 2 for Professional Pilot**	Z,ZK	3	0P+4C	L	F
21LCM	**Aircraft Engines** *Jakub Kraus, Pavel Valenta, Roman Matyáš, Michal Freigang, František Straka, Kateřina Kunčíková, Denisa Kupková, Tomáš Parýzek, Denisa Kupková, ...*	Z,ZK	3	2P+1C	Z	F
21LTTE	**Aerodromes** ***Ladislav Capoušek***	Z,ZK	4	2P+1C+12B	L	F
21LIVO	**Human Performance and Limitations**	Z,ZK	5	2P+2C+14B	L	F
21LCVL	**Human Factors in Aviation** *Jakub Hospodka, Jakub Kraus, Roman Matyáš, Lenka Hanáková, Ľubomír Háčik, Vladimír Socha*	ZK	2	2P+0C	Z	F
11LA	**Linear Algebra** *Pavel Provinský, Lucie Kárná, Jan Přikryl, Martina Bečvářová Martina Bečvářová (Gar.)*	Z,ZK	3	2P+1C+10B	Z	F
18MTY	**Materials Science and Engineering** *Michaela Neuhäuserová, Jan Falta, Václav Rada, Michaela Neuhäuserová, Václav Rada, Jaroslav Valach*	Z,ZK	3	2P+1C+10B	Z	F
21MEO1	**Meteorology 1** *Jakub Hospodka, Jakub Kraus, Roman Matyáš, Iveta Kameníková*	KZ	4	2P+2C	Z	F
21MET2	**Meteorology 2**	Z,ZK	5	2P+2C	L	F
11MSP	**Modeling of Systems and Processes** ***Bohumil Kovář***	Z,ZK	4	2P+2C+12B	L	F
12MDE	**Transport Models and Transport Excesses** *Milan Dont, Josef Kocourek*	Z,ZK	3	2P+1C	Z	F
21N	**Navigation**	ZK	4	4P+0C	L	F
21OBP	**Airline Business and Operations**	Z,ZK	3	2P+1C+12B	L	F
21PUPE	**Instrumentation**	ZK	4	4P+0C	L	F
21PJE	**Aircraft Instruments**	KZ	2	2P+0C+8B	L	F
21PAP	**Flight Planning and Performance**	Z,ZK	4	2P+2C+14B	L	F
14PRG	**Programming**	KZ	2	0P+2C+8B	L	F
12PPOK	**Designing Roads, Highways and Motorways** *Petr Šatra, Jiří Čarský, Jan Gallia, Tomáš Padělek, Petr Kumpošt*	KZ	3	1P+2C	Z	F
21PDLT	**Airport Design and Operation** *Jakub Hospodka, Jakub Kraus, Roman Matyáš, Roman Vokáč, Petr Líkař, Ladislav Capoušek*	KZ	5	2P+2C	Z	F
21PPLP	**Operational Procedures and IFR Flights**	Z,ZK	7	4P+2C	L	F

18PZP	**Elasticity and Strength** *Petr Zlámal, Jan Vyčichl, Tomáš Doktor, Josef Jíra, Petr Koudelka, Jan Šleichrt, Tomáš Doktor, Daniel Kytýř, Jan Šleichrt, ...*	Z,ZK	3	2P+1C	Z	F
21RNG	**Radionavigation**	Z,ZK	7	3P+4C	L	F
21RTFS	**Radiotelephony and Communication**	KZ	2	1P+1C	L	F
12SDK	**Highways, Motorways and Intersections**	Z,ZK	4	2P+2C	L	F
18SAT	**Structural Analysis**	Z,ZK	4	2P+2C+14B	L	F
11STAT	**Statistics**	Z,ZK	4	2P+2C+12B	L	F
20SYSA	**Systems Analysis**	Z,ZK	5	2P+2C+14B	L	F
18TED	**Technical Documentation** *Jitka Řezníčková*	KZ	2	1P+1C+8B	Z	F
17TEDL	**Transport Technology and Logistics**	KZ	3	2P+1C	L	F
17TGA	**Graph Theory and its Applications in Transport** *Alena Rybičková, Denisa Mocková, Dušan Teichmann Alena Rybičková (Gar.)*	Z,ZK	4	2P+2C	Z	F
21TPLV	**Theory of the Pilot's Training** *Jakub Hospodka, Jakub Kraus, Roman Matyáš, Jan Žižka, Filip Bartůněk*	Z,ZK	8	4P+4C	Z	F
21VL	**Aircraft Performance** *Jakub Hospodka, Jakub Kraus, Roman Matyáš, Ota Hajzler, Anna Polánecká*	Z,ZK	4	2P+2C	Z	F
21ZLS	**ATM Systems** *Jakub Hospodka, Jakub Kraus, Roman Matyáš, Terézia Pilmannová, Tereza Topková, Vladimír Machula, Stanislav Pleninger*	Z,ZK	5	2P+2C	Z	F
12ZYDI	**Introduction to Transportation Engineering** *Dagmar Kočárková, Zuzana Čarská, Jan Kruntorád, Nikol Dousková, Vojtěch Novotný*	Z,ZK	2	1P+1C	Z	F
21ZEL1	**Electronics Basics 1** *Jan Zelenka, Vít Fábera, Jakub Kraus, Tomáš Musil, Jindřich Sadil*	Z,ZK	5	3P+2C	Z	F
21ZALD	**Basics of Air Transport**	KZ	2	0P+2C+8B	L	F
21ZYL1	**Principles of Flight 1**	Z,ZK	5	2P+2C+16B	L	F
21ZYL2	**Principles of Flight 2** *Jakub Hospodka, Jakub Kraus, Roman Matyáš, Václav Brož, Lenka Hanáková, Václav Brož, Přemysl Vávra, Liana Karapetjan, Martin Vecko, ...*	Z,ZK	5	2P+2C	Z	F
21ULCT	**Aircraft Maintenance**	Z	2	2P+0C+8B	L	F
16UDOP	**Introduction into Vehicles** *Zuzana Radová, Josef Mík, Petr Bouchner Petr Bouchner (Gar.)*	Z	2	2P+0C+8B	Z	F
20UITS	**Introduction to Intelligent Transport Systems** *Vladimír Faltus, Jiří Růžička, Pavel Hrubeš, Martin Langr, Patrik Horažďovský, Tomáš Zelinka, Jiří Růžička*	Z,ZK	7	3P+2C	Z	F
21UDVY	**Introduction to the Training of Aviation Personnel** *Jakub Hospodka, Jakub Kraus, Milan Kameník, Roman Matyáš, Michaela Šerlová*	Z,ZK	4	2P+2C	Z	F
21RILP	**Air Traffic Control**	Z	2	0P+2C+8B	L	F
12ZTS	**Railway Lines and Stations**	Z,ZK	4	2P+2C+10B	L	F

Characteristics of the courses of this group of Study Plan: Code=PRO-B-O Name=Courses that will certainly be open

14ASD	Algorithm and Data Structures	KZ	3

Students will be familiarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze problems, propose theoretical solutions to the set task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart and use the basics of Boolean algebra with forming the conditions for the algorithms.

11CAL1	Calculus 1	Z,ZK	7

Sequence of real numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dimensional Euklidean space and Cartesian coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several real variables.

11CAL2	Calculus 2	Z,ZK	5

Antiderivative, Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in Rn. Parametric description of regular k-dimensional surfaces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations of the first order, linear differential equations with constant coefficients and its systems.

15JZ1A	Foreign Language - English 1	Z	3

Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.

15JZ2A	Foreign Language - English 2	Z,ZK	3

Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.

15JZ3F	Foreign Language - French 3	Z	3

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

15JZ4F	Foreign Language - French 4	Z,ZK	3

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

15JZ3N	Foreign Language - German 3	Z	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ4N	Foreign Language - German 4	Z,ZK	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ3R	Foreign Language - Russian 3	Z	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ4R	Foreign Language - Russian 4	Z,ZK	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ3S	Foreign Language - Spanish 3	Z	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ4S	Foreign Language - Spanish 4	Z,ZK	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
14DATS	Database Systems	KZ	2
Basic concepts of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrity of data, database queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW.			
21DKL	Aviation Data Link Communication	KZ	3
Categorization of communication systems in aviation, RCP, network standards and protocols, ACARS and ATN standard. Data link applications and services, ATS data link applications (CPDLC, ADS-C, FIS, ...), AOC applications, data link within surveillance domain. Inter-ATC centers communication (OLDI messages). Network Manager Operations Centre (NMOC), satellite communication. Internet on board. Wireless communication in aviation.			
15DPLG	Transportation Psychology	Z	2
Subject of psychology and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle construction. Psychological aspects of travel route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport operation.			
21ELED	Air Transport Economy	Z,ZK	4
Economic benefits of air transport. Costs of airline. Revenue management. Fuel management. Currencies development. Demand and supply. Rates in air transport. Aircraft selection. Fleet asignment. Aging of aircraft. Airlines bankrupcty. Crew planning. Marketing in Air Transport. Cargo tariff and rates. Air network configuration.			
21EBLP	European Air Transport Safety Attitude	Z,ZK	4
Reliability and life cycle systems, reliability theory, mathematics tools for reliability, reliability analysis, maintenance systems, theory of operational safety and quality, the basic concept of security, safety management, security management strategy, hazard, risk, risk management.			
11FYZ	Physics	Z,ZK	5
Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.			
11GIE	Geometry	KZ	3
Orthographic and oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - parameterization, arc of the curve, torsion and curvature, Frenet`s trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a curved path.			
21HVL	Weight and Balance of Aircraft	Z,ZK	4
Basic terms of mass and balance, basic aircraft masses, weighing and maximum aircrafts masses, overloading of aircraft, standard weights of passenger, baggage and crew, determination of load of aircraft, flight documentation - loadsheet, trimsheet, securing of load, determination of centre of gravity, influence of centre of gravity position on aircarft performance.			
14KSP	Constructing with Computer Aid	KZ	2
"CAD systems" term determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common work rules in graphic applications and CA systems. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possibilites, AutoCAD environment profiles, drawings with raster foundaments).			
21LRF	Laboratories of Radiotelephony	Z	2
VFR and IFR communication, basic opertional procedures, standard aeronautical frazeology, broadcasting of the numbers, letters, etc., call signs, radio-communication in normal and emergency procedures, loss of communication, weather information, HF communication.			
21LGPS	Legislation and Operational Regulations	Z,ZK	8
Introduction into aviation regulations. The scope of international and national organizations in civil aviation. Analysis and interpretation of the ICAO Annexes 1-19, ICAO Docs. 4444, 7030, 8168, analyses and interpretation of the European Parliament and Council Regulations (EC), European Commission Regulations (EU) and the Decisions of the Executive Director of EASA.			
21LGP	Legislation and Operational Regulations	Z,ZK	5
Introduction into aviation regulations. The scope of international and national organizations in civil aviation. Analysis and interpretation of the ICAO Annexes 1-19, ICAO Docs. 4444, 7030, 8168. Introduction to the European Parliament and Council Regulation (EC), Commission Regulation (EU) and the Decisions of the Executive Director of EASA.			
21LL1	Aircraft 1	KZ	3
Aircraft structural and conceptual design types - definitions and basic knowledge of the problem. Development of requirements, aircraft definitions and categorisation. Aircraft loadings. Systems of primary and secondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeroplane topics.			
21LTA2	Aircraft 2	Z,ZK	2
Manufacturers responsibility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national standards. Static solidity of aircraft structures. Aeroelasticity. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presumption.			
21LAG1	English for Aviation 1	KZ	3
Familiarity with the terminology used in civil aviation in the general context and emphasizing the ability to receive information only in English.			

21APL1	Aviation English 1 for Professional Pilot	Z	3
Exercises focused on continuous reading specialized texts, vocabulary extension of technical English, terminology in the sphere of aircraft construction, principles of flight, aircraft engines, instruments and systems, analyzes relating to topics of air traffic, operational procedures, relevant legislation and operators procedures.			
21LAG2	English in Aviation 2	KZ	3
Terminology in the sphere of aircraft construction, principles of flight, aircraft engines, instruments and systems.			
21APL2	Aviation English 2 for Professional Pilot	Z,ZK	3
Exercises focused on repetition and smoother communication within VFR and IFR communication, communication with technical staff at the airport, a fluent conversation within the airlines.			
21LCM	Aircraft Engines	Z,ZK	3
Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational characteristics. Engine control.			
21LTTE	Aerodromes	Z,ZK	4
Aerodrome reference point and temperature, TORA, TODA, ASDA, LDA. Taxiway and apron. Clearway. Stopway. Obstacle limitation surfaces. Runway marking. Runway zone lights. Environmental conditions. Public traffic.			
21LIVO	Human Performance and Limitations	Z,ZK	5
Human performace & limitations, aptibility & competence, accident statistics, flight safety, basics of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods.			
21LCVL	Human Factors in Aviation	ZK	2
Human performace & limitations, aptibility & competence, accident statistics, flight safety, basics of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods.			
11LA	Linear Algebra	Z,ZK	3
Vector spaces (linear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvability. Determinants and their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.			
18MTY	Materials Science and Engineering	Z,ZK	3
Basic course of materials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructure. However the main attention is paid to metals as the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and composites. Attention is also paid to degradation processes in materials, to defectoscopy and to main mechanical tests.			
21MEO1	Meteorology 1	KZ	4
Composition, size and vertical structure of the atmosphere. QNH, QFE, QFF, QNE, density and height measurements. Wind, turbulence, jet streams and standing waves. Moisture adiabatic processes. Creating and types of cloud, fog, haze. Precipitation. Types of air masses, frontal interface. Distribution of pressure, cyclones, anticyclones, non-frontal cyclone.			
21MET2	Meteorology 2	Z,ZK	5
Climatic zones, tropical climatology, meteorological situation of mid-latitudes. Icing, turbulence, wind shear, thunderstorms, tornadoes, flying in the stratosphere, mountain areas, reducing visibility phenomena. Observation, weather maps, important information for flight planning.			
11MSP	Modeling of Systems and Processes	Z,ZK	4
Mathematical methods and algorithms as a basis for system analysis. Methods for modelling and evaluating the systems in continuous and discrete time domain. Laplace transform, z-transform, and the recursive algorithms in solution of differential and difference equations, as an instrument for system description. Practical use of technical computing environment (MATLAB).			
12MDE	Transport Models and Transport Excesses	Z,ZK	3
Parameters of the traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shock waves. Quality of transport and its assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. Improving of transport safety and fluency.			
21N	Navigation	ZK	4
Earth - shape, dimensions of the reference ellipsoid and geoid, position reference system (grid), large and small circles. Great-circle distance and the rhumb line. Convergence. Spherical trigonometry. Mathematical determination of elements rhumb line course and Great-circle distance. Agona, isogona. Projection of maps. ICAO and Jeppeson maps. Times - UTC, Zulu, LT. Time zones. Comparative navigation. Dead reckoning. INS / IRS, FMS.			
21OBP	Airline Business and Operations	Z,ZK	3
Airline business and operation abbreviations and terminology. Civil aviation structure in the Czech republic. Act No. 49/1997 Coll., on civil aviation. Air transport regulations ICAO, EU. IATA, ICAO, ECAC, JAA, EUROCONTROL. Air operators. Air transport distribution. Global distribution and reservation systems. Agreements among air operators. Air traffic manuals and publications. Passenger and cargo air transport.			
21PUPE	Instrumentation	ZK	4
Basic classification and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measurement of air data parameters. Earth's magnetic field, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, monitoring and recording systems, integrated instrument systems.			
21PJE	Aircraft Instruments	KZ	2
Overview of aircraft instrumentation and its principles and construction, aircraft electrical systems, engine measuring and monitoring systems, air data computer, icing monitoring systems, gyroscopic indicators, inertial and radio navigation means, communication means, data recorders, complex flight and navigation data processing systems.			
21PAP	Flight Planning and Performance	Z,ZK	4
Mass and balance. Load of aircraft. Determination of centre of gravity - loadsheet, trimsheet. Aircraft weighing. Overloading of aircraft. Basic characteristic speeds. Runway characteristics. Take off and landing performance. Drift down. ETOPS. MEL. Flight planning and monitoring. Routing. FL and speeds selection. Charts. ICAO ATC FPL. Aerodrom operation minimums. Fuel plan. Operational flight plan.			
14PRG	Programming	KZ	2
Algorithm development, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables, conditions, cycles, arrays, functions), programming techniques, complexity.			
12PPOK	Designing Roads, Highways and Motorways	KZ	3
Definition, types, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. Route in rural areas. Range of vision for stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device. Crossings, junctions, intersections.			
21PDLT	Airport Design and Operation	KZ	5
Methods for the new airports design. Existing airports development. A closer look at the development of the airports operational areas. Certification of the operating areas and procedures by ICAO Airports Manual. Development planning and project preparation, regulatory basis.			

21PPLP	Operational Procedures and IFR Flights	Z,ZK	7
Documentation Jeppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS without GP, VOR/DME, NDB and SRA. Airport's operational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedures. RNAV approach procedures and other operation. CDFA procedures and principles of increasing airspace capacity.			
18PZP	Elasticity and Strength	Z,ZK	3
Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and welded joint of structure. Analysis of deflection curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic foundation. Strength analysis.			
21RNG	Radionavigation	Z,ZK	7
Ground direction finder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SSR and transponder. Radar utilization for navigation during the flight. Area navigation (RNAV) - general philosophy, gauges and equipment, indication and sensors for RNAV, VOR/DME (RNAV). Autopilot and flight director. Satellite navigation, systems and backups.			
21RTFS	Radiotelephony and Communication	KZ	2
VFR and IFR communication, basic operational procedures, standard aeronautical frazeology, broadcasting of the numbers, letters, etc., call signs, radio-communication in normal and emergency procedures, loss of communication, weather information, HF communication.			
12SDK	Highways, Motorways and Intersections	Z,ZK	4
Roads and motorways network, transport output. Types of direction curves. Hairpin bend. Stopping sight distance and overtaking sight distance. Levels of traffic service. Design elements of crossroads and intersections. Crossroads. Roundabouts. Intersections. Special types of junctions. Capacity of crossroads and intersections. Structure of pavement of roads and motorways. Road engineering structures. Assessment of route alternatives.			
18SAT	Structural Analysis	Z,ZK	4
General system of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate beams and simple girders. Principle of virtual work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions. Cross-sectional characteristics of planar shapes. Fiber polygons and chains.			
11STAT	Statistics	Z,ZK	4
Definition of probability, random variable and its description, known distributions, random vector, function of random variable. Methods of point estimation. Testing of statistical hypothesis. Regression and correlation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linear regression, analysis of variance, multiple regression, the use of matrices in regression.			
20SYSA	Systems Analysis	Z,ZK	5
Introduction to system sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks, processes, system behaviour and its analysis, strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tables, algorithms for structural tasks. Soft and hard systems, methods for soft system analysis.			
18TED	Technical Documentation	KZ	2
Technical standards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy, arrangement of drawing sheets.			
17TEDL	Transport Technology and Logistics	KZ	3
Basic terms in transport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight transport, organisation of traffic in each transport modus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication using various transport modus.			
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4
Basic terms of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in other scientific disciplines.			
21TPLV	Theory of the Pilot's Training	Z,ZK	8
Theoretical knowledge instruction required for entry into the first phase of integrated training. Tuition refers to the syllabus provided in the CZ / ATO-010 manuals. Subjects and their minimum range is in accordance with the requirements of EU regulation no. 1178/2011 and objects are numbered in accordance with Part FCL 010 to 090. The course is finished with unclassified assessment and examination. This course is intended only for long-term student, who are in integrated pilots training and study all courses related to Study field PIL (Professional Pilot) in all three years.			
21VL	Aircraft Performance	Z,ZK	4
Basic terms of aircraft performance, basic characteristic speeds, runway characteristics, single and multiengine aircraft performance class B, aircraft performance class A, take off and landing performance, after take off and missed approach climb, noise abatement procedures, range of aircraft, drift down, MEL, ETOPS.			
21ZLS	ATM Systems	Z,ZK	5
The course introduces classical and modern facilities, systems and technologies designated for ATS. Student obtains knowledge of technical principles and solutions as far as communication, navigation and surveillance aviation systems are concerned.			
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2
Role of transportation in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, public mass transport. Negative impacts of transportation to environment and safety.			
21ZEL1	Electronics Basics 1	Z,ZK	5
Electron theory. Static electricity, electrical conductivity and terminology. Production of electricity and the DC power source. DC Circuits. Electrical resistance, resistor and performance. Capacity and capacitor. Magnetism. Inductance and inductor. DC motors and generators. Theory AC, resistive, capacitive, inductive circuits. Transformers. Brushless motors and generators. Frequency filters.			
21ZALD	Basics of Air Transport	KZ	2
History, definitions, terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation. Weight, balance, performance. Flight planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ground handling, security. Air crew. Airlines and economics. Space technologies.			
21ZYL1	Principles of Flight 1	Z,ZK	5
Aerodynamic drag, relation between drag and speed, streamline, boundary layer, formula of continuity, formula of Bernoulli, lift and drag, air flow and pressures around wing, angle of attack, reactions of wing in air flow, lift and drag of a wing and an aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, induced drag, interference, devices for lift and drag increase.			
21ZYL2	Principles of Flight 2	Z,ZK	5
Ways of producing thrust, propeller, jet propulsion, thrust and momentum, propulsion efficiency, aerodynamics of fixed and variable pitch propeller, propeller operation modes, propeller airstream effect, gyroscopic effect, balance of forces in horizontal flight, glide and landing, performances, take off an climb, acceleration, positive load, manoevures, stability and controllability, transsonic speeds.			
21ULCT	Aircraft Maintenance	Z	2
Aircraft operations and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and qualification of aviation personnel. Basic documentation for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft maintenance. Regulation of director EASA for aircraft maintenance. Seminars will be focused on practical application.			

16UDOP	Introduction into Vehicles	Z	2
Vehicles and transportation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and water transport. Alternative means of transport. Lifting equipment and conveyors. Legislation.			
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
Terminology and legislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of information and telecommunication systems for ITS. Principles and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples of possible applications of the principles of ITS.			
21UDVY	Introduction to the Training of Aviation Personnel	Z,ZK	4
Pilot training. History. Drive. Meteorology. Airports. Navigation. Aircraft Design. Space technology. Practical training. Flying Rules. Airspace. Presentation ATO. This course is intended only for long-term student, who are in integrated pilots training and study all courses related to Study field PIL (Professional Pilot) in all three years.			
21RILP	Air Traffic Control	Z	2
Air traffic services and their distribution. Organization of air traffic, flow and capacity management. Airspace management. System support for aircraft flying through space. Flight plan, the form, content. Separation of aircraft. Reports of air traffic services, the form, content. Harmonization and integration of ATC. CFMU and its subsystems. Flexible use of airspace - FUA. RVSM, RNP. New trends in the area of ATC.			
12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Railway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. Spatial layout of railway lines. Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
11CAL1	Calculus 1	Z,ZK	7
Sequence of real numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dimensional Euklidean space and Cartesian coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several real variables.			
11CAL2	Calculus 2	Z,ZK	5
Antiderivative, Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in Rn. Parametric description of regular k-dimensional surfaces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations of the first order, linear differential equations with constant coefficients and its systems.			
11FYZ	Physics	Z,ZK	5
Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.			
11GIE	Geometry	KZ	3
Orthographic and oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - parameterization, arc of the curve, torsion and curvature, Frenet`s trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a curved path.			
11LA	Linear Algebra	Z,ZK	3
Vector spaces (linear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvability. Determinants and their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.			
11MSP	Modeling of Systems and Processes	Z,ZK	4
Mathematical methods and algorithms as a basis for system analysis. Methods for modelling and evaluating the systems in continuous and discrete time domain. Laplace transform, z-transform, and the recursive algorithms in solution of differential and difference equations, as an instrument for system description. Practical use of technical computing environment (MATLAB).			
11STAT	Statistics	Z,ZK	4
Definition of probability, random variable and its description, known distributions, random vector, function of random variable. Methods of point estimation. Testing of statistical hypothesis. Regression and correlation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linear regression, analysis of variance, multiple regression, the use of matrices in regression.			
12MDE	Transport Models and Transport Excesses	Z,ZK	3
Parameters of the traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shock waves. Quality of transport and its assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. Improving of transport safety and fluency.			
12PPOK	Designing Roads, Highways and Motorways	KZ	3
Definition, types, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. Route in rural areas. Range of vision for stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device. Crossings, junctions, intersections.			
12SDK	Highways, Motorways and Intersections	Z,ZK	4
Roads and motorways network, transport output. Types of direction curves. Hairpin bend. Stopping sight distance and overtaking sight distance. Levels of traffic service. Design elements of crossroads and intersections. Crossroads. Roundabouts. Intersections. Special types of junctions. Capacity of crossroads and intersections. Structure of pavement of roads and motorways. Road engineering structures. Assessment of route alternatives.			
12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Railway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. Spatial layout of railway lines. Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport.			
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2
Role of transportation in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, public mass transport. Negative impacts of transportation to environment and safety.			
14ASD	Algorithm and Data Structures	KZ	3
Students will be familiarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze problems, propose theoretical solutions to the set task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart and use the basics of Boolean algebra with forming the conditions for the algorithms.			

14DATS	Database Systems	KZ	2
Basic concepts of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrity of data, database queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW.			
14KSP	Constructing with Computer Aid	KZ	2
"CAD systems" term determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common work rules in graphic applications and CA systems. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possibilites, AutoCAD environment profiles, drawings with raster foundaments).			
14PRG	Programming	KZ	2
Algorithm development, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables, conditions, cycles, arrays, functions), programming techniques, complexity.			
15DPLG	Transportation Psychology	Z	2
Subject of psychology and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle construction. Psychological aspects of travel route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport operation.			
15JZ1A	Foreign Language - English 1	Z	3
Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.			
15JZ2A	Foreign Language - English 2	Z,ZK	3
Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.			
15JZ3F	Foreign Language - French 3	Z	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ3N	Foreign Language - German 3	Z	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ3R	Foreign Language - Russian 3	Z	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ3S	Foreign Language - Spanish 3	Z	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ4F	Foreign Language - French 4	Z,ZK	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ4N	Foreign Language - German 4	Z,ZK	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ4R	Foreign Language - Russian 4	Z,ZK	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
15JZ4S	Foreign Language - Spanish 4	Z,ZK	3
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
16UDOP	Introduction into Vehicles	Z	2
Vehicles and transportation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and water transport. Alternative means of transport. Lifting equipment and conveyors. Legislation.			
17TEDL	Transport Technology and Logistics	KZ	3
Basic terms in transport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight transport, organisation of traffic in each transport modus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication using various transport modus.			
17TGA	Graph Theory and its Applications in Transport	Z,ZK	4
Basic terms of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in other scientific disciplines.			
18MTY	Materials Science and Engineering	Z,ZK	3
Basic course of materials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructure. However the main attention is paid to metals as the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and composites. Attention is also paid to degradation processes in materials, to defectoscopy and to main mechanical tests.			
18PZP	Elasticity and Strength	Z,ZK	3
Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and welded joint of structure. Analysis of deflection curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic foundation. Strength analysis.			
18SAT	Structural Analysis	Z,ZK	4
General system of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate beams and simple girders. Principle of virtual work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions. Cross-sectional characteristics of planar shapes. Fiber polygons and chains.			

18TED	Technical Documentation	KZ	2
Technical standards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy, arrangement of drawing sheets.			
20SYSA	Systems Analysis	Z,ZK	5
Introduction to system sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks, processes, system behaviour and its analysis, strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tables, algorithms for structural tasks. Soft and hard systems, methods for soft system analysis.			
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
Terminology and legislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of information and telecommunication systems for ITS. Principles and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples of possible applications of the principles of ITS.			
21APL1	Aviation English 1 for Professional Pilot	Z	3
Exercises focused on continuous reading specialized texts, vocabulary extension of technical English, terminology in the sphere of aircraft construction, principles of flight, aircraft engines, instruments and systems, analyzes relating to topics of air traffic, operational procedures, relevant legislation and operators procedures.			
21APL2	Aviation English 2 for Professional Pilot	Z,ZK	3
Exercises focused on repetition and smoother communication within VFR and IFR communication, communication with technical staff at the airport, a fluent conversation within the airlines.			
21DKL	Aviation Data Link Communication	KZ	3
Categorization of communication systems in aviation, RCP, network standards and protocols, ACARS and ATN standard. Data link applications and services, ATS data link applications (CPDLC, ADS-C, FIS, ...), AOC applications, data link within surveillance domain. Inter-ATC centers communication (OLDI messages). Network Manager Operations Centre (NMOC), satellite communication. Internet on board. Wireless communication in aviation.			
21EBLP	European Air Transport Safety Attitude	Z,ZK	4
Reliability and life cycle systems, reliability theory, mathematics tools for reliability, reliability analysis, maintenance systems, theory of operational safety and quality, the basic concept of security, safety management, security management strategy, hazard, risk, risk management.			
21ELED	Air Transport Economy	Z,ZK	4
Economic benefits of air transport. Costs of airline. Revenue management. Fuel management. Currencies development. Demand and supply. Rates in air transport. Aircraft selection. Fleet asignment. Aging of aircraft. Airlines bankrupcty. Crew planning. Marketing in Air Transport. Cargo tariff and rates. Air network configuration.			
21HVL	Weight and Balance of Aircraft	Z,ZK	4
Basic terms of mass and balance, basic aircraft masses, weighing and maximum aircrafts masses, overloading of aircraft, standard weights of passenger, baggage and crew, determination of load of aircraft, flight documentation - loadsheet, trimsheet, securing of load, determination of centre of gravity, influence of centre of gravity position on aircarft performance.			
21LAG1	English for Aviation 1	KZ	3
Familiarity with the terminology used in civil aviation in the general context and emphasizing the ability to receive information only in English.			
21LAG2	English in Aviation 2	KZ	3
Terminology in the sphere of aircraft construction, principles of flight, aircraft engines, instruments and systems.			
21LCM	Aircraft Engines	Z,ZK	3
Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational characteristics. Engine control.			
21LCVL	Human Factors in Aviation	ZK	2
Human performace & limitations, aptibility & competence, accident statistics, flight safety, basics of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods.			
21LGP	Legislation and Operational Regulations	Z,ZK	5
Introduction into aviation regulations. The scope of international and national organizations in civil aviation. Analysis and interpretation of the ICAO Annexes 1-19, ICAO Docs. 4444, 7030, 8168. Introduction to the European Parliament and Council Regulation (EC), Commission Regulation (EU) and the Decisions of the Executive Director of EASA.			
21LGPS	Legislation and Operational Regulations	Z,ZK	8
Introduction into aviation regulations. The scope of international and national organizations in civil aviation. Analysis and interpretation of the ICAO Annexes 1-19, ICAO Docs. 4444, 7030, 8168, analyses and interpretation of the European Parliament and Council Regulations (EC), European Commission Regulations (EU) and the Decisions of the Executive Director of EASA.			
21LIVO	Human Performance and Limitations	Z,ZK	5
Human performace & limitations, aptibility & competence, accident statistics, flight safety, basics of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods.			
21LL1	Aircraft 1	KZ	3
Aircraft structural and conceptual design types - definitions and basic knowledge of the problem. Development of requirements, aircraft definitions and categorisation. Aircraft loadings. Systems of primary and secondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeroplane topics.			
21LRF	Laboratories of Radiotelephony	Z	2
VFR and IFR communication, basic opertional procedures, standard aeronautical frazeology, broadcasting of the numbers, letters, etc., call signs, radio-communication in normal and emergency procedures, loss of communication, weather information, HF communication.			
21LTA2	Aircraft 2	Z,ZK	2
Manufacturers responsibility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national standards. Static solidity of aircraft structures. Aeroelasticity. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presumption.			
21LTTE	Aerodromes	Z,ZK	4
Aerodrome reference point and temperature, TORA, TODA, ASDA, LDA. Taxiway and apron. Clearway. Stopway. Obstacle limitation surfaces. Runway marking. Runway zone lights. Environmental conditions. Public traffic.			
21MEO1	Meteorology 1	KZ	4
Composition, size and vertical structure of the atmosphere. QNH, QFE, QFF, QNE, density and height measurements. Wind, turbulence, jet streams and standing waves. Moisture adiabatic processes. Creating and types of cloud, fog, haze. Precipitation. Types of air masses, frontal interface. Distribution of pressure, cyclones, anticyclones, non-frontal cyclone.			
21MET2	Meteorology 2	Z,ZK	5
Climatic zones, tropical climatology, meteorological situation of mid-latitudes. Icing, turbulence, wind shear, thunderstorms, tornadoes, flying in the stratosphere, mountain areas, reducing visibility phenomena. Observation, weather maps, important information for flight planning.			

21N	Navigation	ZK	4
Earth - shape, dimensions of the reference ellipsoid and geoid, position reference system (grid), large and small circles. Great-circle distance and the rhumb line. Convergence. Spherical trigonometry. Mathematical determination of elements rhumb line course and Great-circle distance. Agona, isogona. Projection of maps. ICAO and Jeppeson maps. Times - UTC, Zulu, LT. Time zones. Comparative navigation. Dead reckoning. INS / IRS, FMS.			
21OBP	Airline Business and Operations	Z,ZK	3
Airline business and operation abbreviations and terminology. Civil aviation structure in the Czech republic. Act No. 49/1997 Coll., on civil aviation. Air transport regulations ICAO, EU. IATA, ICAO, ECAC, JAA, EUROCONTROL. Air operators. Air transport distribution. Global distribution and reservation systems. Agreements among air operators. Air traffic manuals and publications. Passenger and cargo air transport.			
21PAP	Flight Planning and Performance	Z,ZK	4
Mass and balance. Load of aircraft. Determination of centre of gravity - loadsheet, trimsheet. Aircraft weighing. Overloading of aircraft. Basic characteristic speeds. Runway characteristics. Take off and landing performance. Drift down. ETOPS. MEL. Flight planning and monitoring. Routing. FL and speeds selection. Charts. ICAO ATC FPL. Aerodrom operation minimums. Fuel plan. Operational flight plan.			
21PDLT	Airport Design and Operation	KZ	5
Methods for the new airports design. Existing airports development. A closer look at the development of the airports operational areas. Certification of the operating areas and procedures by ICAO Airports Manual. Development planning and project preparation, regulatory basis.			
21PJE	Aircraft Instruments	KZ	2
Overview of aircraft instrumentation and its principles and construction, aircraft electrical systems, engine measuring and monitoring systems, air data computer, icing monitoring systems, gyroscopic indicators, inertial and radio navigation means, communication means, data recorders, complex flight and navigation data processing systems.			
21PPLP	Operational Procedures and IFR Flights	Z,ZK	7
Documentation Jeppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS without GP, VOR/DME, NDB and SRA. Airport's operational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedures. RNAV approach procedures and other operation. CDFA procedures and principles of increasing airspace capacity.			
21PUPE	Instrumentation	ZK	4
Basic classification and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measurement of air data parameters. Earth's magnetic field, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, monitoring and recording systems, integrated instrument systems.			
21RILP	Air Traffic Control	Z	2
Air traffic services and their distribution. Organization of air traffic, flow and capacity management. Airspace management. System support for aircraft flying through space. Flight plan, the form, content. Separation of aircraft. Reports of air traffic services, the form, content. Harmonization and integration of ATC. CFMU and its subsystems. Flexible use of airspace - FUA. RVSM, RNP. New trends in the area of ATC.			
21RNG	Radionavigation	Z,ZK	7
Ground direction finder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SSR and transponder. Radar utilization for navigation during the flight. Area navigation (RNAV) - general philosophy, gauges and equipment, indication and sensors for RNAV, VOR/DME (RNAV). Autopilot and flight director. Satellite navigation, systems and backups.			
21RTFS	Radiotelephony and Communication	KZ	2
VFR and IFR communication, basic operational procedures, standard aeronautical frazeology, broadcasting of the numbers, letters, etc., call signs, radio-communication in normal and emergency procedures, loss of communication, weather information, HF communication.			
21TPLV	Theory of the Pilot's Training	Z,ZK	8
Theoretical knowledge instruction required for entry into the first phase of integrated training. Tuition refers to the syllabus provided in the CZ / ATO-010 manuals. Subjects and their minimum range is in accordance with the requirements of EU regulation no. 1178/2011 and objects are numbered in accordance with Part FCL 010 to 090. The course is finished with unclassified assessment and examination. This course is intended only for long-term student, who are in integrated pilots training and study all courses related to Study field PIL (Professional Pilot) in all three years.			
21UDVY	Introduction to the Training of Aviation Personnel	Z,ZK	4
Pilot training. History. Drive. Meteorology. Airports. Navigation. Aircraft Design. Space technology. Practical training. Flying Rules. Airspace. Presentation ATO. This course is intended only for long-term student, who are in integrated pilots training and study all courses related to Study field PIL (Professional Pilot) in all three years.			
21ULCT	Aircraft Maintenance	Z	2
Aircraft operations and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and qualification of aviation personnel. Basic documentation for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft maintenance. Regulation of director EASA for aircraft maintenance. Seminars will be focused on practical application.			
21VL	Aircraft Performance	Z,ZK	4
Basic terms of aircraft performance, basic characteristic speeds, runway characteristics, single and multiengine aircraft performance class B, aircraft performance class A, take off and landing performance, after take off and missed approach climb, noise abatement procedures, range of aircraft, drift down, MEL, ETOPS.			
21ZALD	Basics of Air Transport	KZ	2
History, definitions, terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation. Weight, balance, performance. Flight planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ground handling, security. Air crew. Airlines and economics. Space technologies.			
21ZEL1	Electronics Basics 1	Z,ZK	5
Electron theory. Static electricity, electrical conductivity and terminology. Production of electricity and the DC power source. DC Circuits. Electrical resistance, resistor and performance. Capacity and capacitor. Magnetism. Inductance and inductor. DC motors and generators. Theory AC, resistive, capacitive, inductive circuits. Transformers. Brushless motors and generators. Frequency filters.			
21ZLS	ATM Systems	Z,ZK	5
The course introduces classical and modern facilities, systems and technologies designated for ATS. Student obtains knowledge of technical principles and solutions as far as communication, navigation and surveillance aviation systems are concerned.			
21ZYL1	Principles of Flight 1	Z,ZK	5
Aerodynamic drag, relation between drag and speed, streamline, boundary layer, formula of continuity, formula of Bernoulli, lift and drag, air flow and pressures around wing, angle of attack, reactions of wing in air flow, lift and drag of a wing and an aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, induced drag, interference, devices for lift and drag increase.			

21ZYL2	Principles of Flight 2	Z,ZK	5
Ways of producing thrust, propeller, jet propulsion, thrust and momentum, propulsion efficiency, aerodynamics of fixed and variable pitch propeller, propeller operation modes, propeller airstream effect, gyroscopic effect, balance of forces in horizontal flight, glide and landing, performances, take off an climb, acceleration, positive load, manoevures, stability and controllability, transsonic speeds.			

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