Study plan

Name of study plan: PIL bak.prez.13/14

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 full-time
Required credits: 180
Elective courses credits: 0
Sum of credits in the plan: 180
Note on the plan:

Name of the block: Compulsory courses
Minimal number of credits of the block: 180
The role of the block: Z

Code of the group: 1.S.BPIL 13/14
Name of the group: 1.sem.PIL bak.prez.13/14
Requirement credits in the group: In this group you have to gain 30 credits
Requirement courses in the group: In this group you have to complete 10 courses
Credits in the group: 30
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
17E	**Economics**	Z,ZK	3	2+1	Z	z
11GIE	**Geometry** *Oldřich Hykš, Pavel Provinský, Šárka Voráčová* ***Oldřich Hykš*** *Oldřich Hykš (Gar.)*	KZ	3	2P+2C+12B	Z	z
11LA	**Linear Algebra** *Pavel Provinský, Lucie Kárná, Martina Bečvářová* ***Martina Bečvářová*** *Martina Bečvářová (Gar.)*	Z,ZK	3	2P+1C+10B	Z	z
11MTA	**Mathematical Analysis**	Z,ZK	4	2+2	Z	z
18MRI1	**Materials 1**	Z,ZK	3	2+1	Z	z
TV-1	**Physical Education**	Z	1		Z	z
18TTED	**Creation of Technical Documentation**	KZ	2	2+1	Z	z
21UVP	**Theory for Starting of The Pilot´s Training**	Z,ZK	6	2+1	Z	z
12ZADI	**Introduction to Transportation Engineering**	Z,ZK	3	2+1	Z	z
14ZINF	**Fundamentals of Informatics**	KZ	2	0+2	Z	z

Characteristics of the courses of this group of Study Plan: Code=1.S.BPIL 13/14 Name=1.sem.PIL bak.prez.13/14

17E	Economics	Z,ZK	3
Microeconomic and macroeconomic interpretation of economic relations. Method and subject of the economics. Economic decision making of consumers and producers. Market structures. Labour and capital, efficiency, ownership, public choice.			
11GIE	Geometry	KZ	3
Differential geometry of curves - parameterization, the 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.			
11MTA	Mathematical Analysis	Z,ZK	4
Sequences and series of real numbers and its convergence. Basic properties of functions. Differential and integral calculus of the real function of one real variable. Power series, Fourier series and foundations of Fourier transform.			
18MRI1	Materials 1	Z,ZK	3
Crystal structure. Basics of thermodynamics of metals and their alloys. Balanced binary diagrams. Alloys of iron with carbon. Deterioration of solid solutions. Heating processing of steel and cast irons. Physical features. Mechanical features. Dephectostopic testing. Corosion.			
TV-1	Physical Education	Z	1

18TTED	Creation of Technical Documentation	KZ	2
Technical standards, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy, arrangement of drawing sheets, types of schemes and their creation.			
21UVP	Theory for Starting of The Pilot´s Training	Z,ZK	6
Air Transport as a component of complex transport system. International status of Civil Aviation. International Organizations in Europe and worldwide. Charakteristics of Air Transport. Business aviation. Technical Operating of Aircrafts.			
12ZADI	Introduction to Transportation Engineering	Z,ZK	3
Traffic survey. Terrestrial roads. Residential zone. Land - use planning. Railway transport. Public mass transport. Integrated traffic systems. Traffic prognosis. Traffic safety. Air transport. Traffic and environment.			
14ZINF	Fundamentals of Informatics	KZ	2
Introduction to faculty network, MS-Word and Open Office, use of styles and advanced features, computer functions and information transmission. Number systems incl. arithmetic calculations. Algorithms and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and procedures. Work with MS-Excel - tables, graphs, calculations, functions.			

Code of the group: 2.S.BPIL 13/14
Name of the group: 2.sem.PIL bak.prez 13/14
Requirement credits in the group: In this group you have to gain 30 credits
Requirement courses in the group: In this group you have to complete 10 courses
Credits in the group: 30
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
11FY1	**Physics 1**	Z,ZK	4	2P+2C	L	z
18MRI2	**Materials 2**	KZ	2	2+0	L	z
21N	**Navigation**	ZK	4	4P+0C	L	z
21PVY1	**Practical Pilot´s Training 1**	Z	2	0+1	L	z
21RATS	**Radiotelephony and Communication**	KZ	3	1+2	L	z
14SIAP	**Networks and Protocols**	KZ	2	1+1	L	z
18ST	**Statics**	Z,ZK	3	2+1	L	z
TV-2	**Physical Education**	Z	1		L	z
21TPIL	**Theory of Pilot´s Training**	Z,ZK	7	4+4	L	z
14UPRO	**Introduction to Programming**	KZ	2	0+2	L	z

Characteristics of the courses of this group of Study Plan: Code=2.S.BPIL 13/14 Name=2.sem.PIL bak.prez 13/14

11FY1	Physics 1	Z,ZK	4
Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed electric current.			
18MRI2	Materials 2	KZ	2
Fundamental concepts, notions. The main materials groups. Semiconductors. Polymers. Special types of steel. Properties and application of the composite materials.			
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.			
21PVY1	Practical Pilot´s Training 1	Z	2
Practical exercises for improvement of theoretical knowledges within the minimum range of PPL(A), courses 010 to 090 in compliance with JAR FCL 1. This course is completed by verification of theoretical knowledge and practical exam with FTO examinator for practical training.			
21RATS	Radiotelephony and Communication	KZ	3
English for IFR pilots, Ing.Ivan Janouš, Theodore Mikrut, Premisa s.r.o., Praha 1995VFR 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.			
14SIAP	Networks and Protocols	KZ	2
Basic communication model, history and development of the Internet, principle of data transfer through computer networks (TCP/IP), performance of basic network protocols (ARP, RARP, TCP, UDP, Telnet, FTP, DNS, DHCP POP3, IMAP), data acquirement from the Internet sources, communicating ability via the Internet and fundamentals of own web presentation design by the means of web sites.			
18ST	Statics	Z,ZK	3
General system of forces. Calculation of reactions of mass objects and compound systems. Assessment of internal forces on statically determinate beam and simple framework. Principle of virtual works. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction, method of joints and method of sections. Geometry of cross sections. Plane fiber polygons and catenary cables.			
TV-2	Physical Education	Z	1
21TPIL	Theory of Pilot´s Training	Z,ZK	7
Teaching of theoretical knowledge needed to enter the first phase of integrated training. The education acts to syllabi listed in FTO manual. The subjects and their minimum range is in accordance with requirements of JAR FCL regulation and the subjects are numbered from 010 to 090 in accordance with the same regulation. The course is finished with unclassified assessment and exam.			
14UPRO	Introduction to 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.			

Code of the group: 3.S.BPIL 13/14
Name of the group: 3.sem.PIL bak.prez.13/14
Requirement credits in the group: In this group you have to gain 30 credits
Requirement courses in the group: In this group you have to complete 9 courses
Credits in the group: 30
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
15JZ1A	**Foreign Language - English 1** *Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora Horáčková, Marek Tomeček, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, ...*	Z	3	0P+4C+10B	Z	z
11FY2	**Physics 2**	Z,ZK	4	2+2	Z	z
21PLL1	**Flight Planning and Performance 1**	KZ	4	2+1	Z	z
12PPOK	**Designing Roads, Highways and Motorways** *Petr Šatra, Josef Kocourek, Tomáš Padělek, Petr Kumpošt*	KZ	3	1P+2C+10B	Z	z
21PPSL	**Operational Procedures and Related Legislature**	KZ	4	2+1	Z	z
21RN	**Radionavigation**	Z,ZK	6	2+2	Z	z
14UATT	**Introduction to Automatization and Telecommunication Systems**	KZ	2	3+0	Z	z
16UDDM	**Introduction to Transportation and Manipulation Technics**	ZK	2	2+0	Z	z
14ZAET	**Fundamentals of Electrotechnics**	KZ	2	2+1	Z	z

Characteristics of the courses of this group of Study Plan: Code=3.S.BPIL 13/14 Name=3.sem.PIL bak.prez.13/14

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.			
11FY2	Physics 2	Z,ZK	4
Magnetic field, electromagnetic field. Optics, quantum character of electromagnetic radiation. Introduction into quantization, hydrogen atom. Multi-electron atoms, the nuclei. Basics of solid body physics.			
21PLL1	Flight Planning and Performance 1	KZ	4
Basic terms of mass and balance, basic aircraft masses, maximum aircrafts masses, standard weights of passenger, baggage and crew, determination of load of aircraft, loadsheet, trimsheet, determination of centre of gravity, aircraft weighing, overloading of aircraft, influence of centre of gravity position on aircarft performance.			
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.			
21PPSL	Operational Procedures and Related Legislature	KZ	4
General requirements of ANNEX 6 ICAO, EU-OPS rules. Operational procedures requirements. Requirements for long-haul flights. Special operational procedures and danger.			
21RN	Radionavigation	Z,ZK	6
Ground direction finder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar. Airborne Weather Radar, SSR and transponder. Radar utilization for navigation during the flight. Area navigation (RNAV) - general philosophy, particular airborna equipment, indication and sensors for RNAV, VOR/DME (RNAV), adjuction to autopilot and flight director. Satellite navigation.			
14UATT	Introduction to Automatization and Telecommunication Systems	KZ	2
Basic axioms of technical cybernetics, automatization in transportation, human as the weakest element, signalling in transpotation, modelling and projecting of transport systems, integrated technological and infromation system in post, principle of telecommunication signal transmission, solving of telecommunication networks, modulating methods, multimedial networks and services, NGN networks.			
16UDDM	Introduction to Transportation and Manipulation Technics	ZK	2
Means of transportation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Water transportation. Manipulating technics. Principles of lifting machines and conveyors. Legislature.			
14ZAET	Fundamentals of Electrotechnics	KZ	2
Basic electrotechnic terms, circuit quantities. Periodic courses characteristics. Electric circuits elements and basic circuit members. Assignating of bipoles and basic circuit elements. Solution to direct current circuits with a help of circuit analysis elementar methods: method of consecutive reduction, unloaded voltage divider, current divider. Transfiguration star-triplangel and principle of superposition in direct current circuits.			

Code of the group: 4.S.BPIL 13/14
Name of the group: 4.sem.PIL bak.prez. 13/14
Requirement credits in the group: In this group you have to gain 30 credits
Requirement courses in the group: In this group you have to complete 10 courses
Credits in the group: 30
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
15JZ2A	**Foreign Language - English 2** *Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora Horáčková, Marek Tomeček, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, ...*	Z,ZK	3	0P+4C+10B		z
21CNV	**Flight Navigation Training**	Z	2	0+2	L	z
21LL1	**Aircraft 1**	KZ	3	2P+1C+10B	L	z
21LPVL	**IFR Flights, Night´s Flying and Multiengine Aircrafts Flying**	KZ	3	2+0	L	z
21LR	**Radio Technology in Aviation**	ZK	2	2+0	L	z
21MGI	**Meteorology**	Z,ZK	5	4+2	L	z
21PJE1	**Instrumentation 1**	Z,ZK	2	2+1	L	z
21PLL2	**Flight Planning and Performance 2**	KZ	4	2+1	L	z
21PVY2	**Practical Pilot´s Training 2**	KZ	3	0+1	L	z
21ZLE1	**Principles of Flight 1**	KZ	3	2+1	L	z

Characteristics of the courses of this group of Study Plan: Code=4.S.BPIL 13/14 Name=4.sem.PIL bak.prez. 13/14

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.			
21CNV	Flight Navigation Training	Z	2
Navigation systems destricption and device handling navigation systems, standard arrival and departures routes (STAR, SID), ILS, MLS approach procedures, PAR, SRE approach procedures, VOR / DME, NDB approach procedures, approach by circuit, visual approach, altimeteres setting procedures, holding procedures, low visibility procedures. IFR flight preparation and operation, examples from General navigation and Radionavigation.			
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.			
21LPVL	IFR Flights, Night´s Flying and Multiengine Aircrafts Flying	KZ	3
Basic night flying, multiengine flying and instrument flying. Instrumentation, airport, lightning, signals. Normal operations and emergency operations night. Instrumentation, aerodynamics, aeroplane specification. Normal operations and emergency operations multiengines. Avionics, instrument panel, cockpit ergonomy. Normal operations and emefgency operations instrument flying. Connections in operations multiengines in IMC and night.			
21LR	Radio Technology in Aviation	ZK	2
Electric signals and the wave spectrum, Analog and digital modulations, Noises, Filters, Resonance circuits. Electromagnetic field. Electromagnetic wave propagation. Wave ranges in aviation, radiation and reception of electromagnetic field, antennas in aviation, receivers and transmitters.			
21MGI	Meteorology	Z,ZK	5
Structure of atmosphere. Vertical stratification. Pressures QNH, QFE, QFF, QME. Instability. Atmospherical fronts. Atmospherical rainfall, origin fission. Turbulence. Powers causing wind. Cyclone and anticyclone. Gradient wind. Geostrofical and geocyklostrofical wind. Visibilities in air transport. Dangerous meteorological aspects. Meteorological maps. Climatology. Circulation. Intertropical front. Meteorological informations.			
21PJE1	Instrumentation 1	Z,ZK	2
Basic classification and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measurement of air data parameters.			
21PLL2	Flight Planning and Performance 2	KZ	4
Basic terms in 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.			
21PVY2	Practical Pilot´s Training 2	KZ	3
Practical exercises for improvement of theoretical knowledges needed for commencement of training for acquisition of IR(A) qualification in courses 010 to 090 in compliance with JAR FCL 1. This course is finished in verification of teoretical knowledge and practical exam with FTO examinator for practical training.			
21ZLE1	Principles of Flight 1	KZ	3
Aerodynamic drag, relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, 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.			

Code of the group: 5.S.BPIL 13/14
Name of the group: 5.sem.PIL bak.prez.13/14
Requirement credits in the group: In this group you have to gain 30 credits
Requirement courses in the group: In this group you have to complete 9 courses
Credits in the group: 30
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
21LTA2	**Aircraft 2** *Karel Mündel* ***Karel Mündel***	Z,ZK	2	2P+1C	Z	z
21PJE2	**Instrumentation 2**	Z,ZK	4	2+1	Z	z
21PLL3	**Flight Planning and Performance 3**	Z,ZK	7	2+1	Z	z

21ZLE2	**Principles of Flight 2**	Z,ZK	4	2+1	Z	z
14DB	**Database Systems**	KZ	2	0+2	Z	z
21DKV	**Aviation Datalink Communication**	KZ	2	2+0	Z	z
21LICL	**Human Factors in Aviation**	KZ	2	2+0	Z	z
21PPJ	**IFR Flights Procedures**	KZ	4	2+1	Z	z
21LAB1	**Aviation English for Bachelor Studies 1**	Z	3	0+4	Z	z

Characteristics of the courses of this group of Study Plan: Code=5.S.BPIL 13/14 Name=5.sem.PIL bak.prez.13/14

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.			
21PJE2	Instrumentation 2	Z,ZK	4
Earth's magnetic field, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, monitoring and recording systems, integrated instrument systems.			
21PLL3	Flight Planning and Performance 3	Z,ZK	7
Flight planning and monitoring, routing, FL and speeds selection, prohibited, restricted and temporary separated areas, ATS routes and conditional routes, route availability documents, CFMU messages - AIM, ANM, CRAM, NAT MNPS, charts, ICAO ATC FPL, RPL, aerodrom operation minimums, fuel plan, decission point procedures, operationa flight plan.			
21ZLE2	Principles of Flight 2	Z,ZK	4
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 and climb, acceleration, positive load, manoeuvres, stability and controllability, transsonic speeds.			
14DB	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.			
21DKV	Aviation Datalink Communication	KZ	2
The subject acquaints students with aviation communication domain. Stress is put on the datalink systems. Students are acquainted both with technical aspect and with operation problem so that they are able to understand data flows necessary for provision safe, fluent and economic air traffic.			
21LICL	Human Factors in Aviation	KZ	2
Human performace & limitations, capability & competence, accident statistics, flight safety, fundamentals of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, fundamentals of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods.			
21PPJ	IFR Flights Procedures	KZ	4
Documentation Jeppesen. IFR aqqroach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS without GP, VOR/DME, NDB and SRA. Airport´s operation minima. Circuit´s approach and approach by ground contact. Holding paterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flights operation. RNAV approach procedures and other operation.			
21LAB1	Aviation English for Bachelor Studies 1	Z	3
Aircrafts, flight basics, airports, meteorology, navigation, airspace management, emergency procedures, avition accidents, flight planning, human factor, civil avition organization, history of aviation, enviromental aspects of aviation.			

Code of the group: 6.S.BPIL 13/14
Name of the group: 6.sem.PIL bak.prez. 13/14
Requirement credits in the group: In this group you have to gain 30 credits
Requirement courses in the group: In this group you have to complete 8 courses
Credits in the group: 30
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**
12PKD	**Rail Transport Designing**	Z,ZK	3	2+2	L	z
21LAB2	**Aviation English for Bachelor Studies 2**	Z,ZK	3	0+4	L	z
21LCP	**Human Factor for Pilots**	Z,ZK	5	2+1	L	z
21LPS	**Flight Operation & Requirements and Legislation**	Z,ZK	7	3+1	L	z
21LRY	**Aircraft Engines**	Z,ZK	2	2+1	L	z
14ISYS	**Information Systems**	KZ	2	2+0	L	z
21MCC	**MCC - Multicrew Cooperation**	KZ	4	2+0	L	z
21PVY3	**Practical Pilot´s Training 3**	KZ	4	0+1	L	z

Characteristics of the courses of this group of Study Plan: Code=6.S.BPIL 13/14 Name=6.sem.PIL bak.prez. 13/14

12PKD	Rail Transport Designing	Z,ZK	3
Railway lines network. Vehicle and track relation. Traction. Track geometrical parameters. Clearance profile. Railway lines routing. Superstructure and substructure of the railway lines. Switches. Railway stations. City rail transport.			
21LAB2	Aviation English for Bachelor Studies 2	Z,ZK	3
Aircrafts, flight basics, airports, meteorology, navigation, airspace management, emergency procedures, avition accidents, flight planning, human factor, civil avition organization, history of aviation, enviromental aspects of aviation, IFR / VFR communication, abbreviations in aviation, Q-codes.			

21LCP	Human Factor for Pilots	Z,ZK	5
Human factors in aviation, flight safety, competence of flying personnel, problem areas for pilots, situational awareness, sensory illusions, origins of errors and their prevention, personality predispositions, risky behaviour, interpersonal communication, cooperatin & coordination, toxic substances & drugs, ergonomics, automation.			
21LPS	Flight Operation & Requirements and Legislation	Z,ZK	7
Introduction to aviation requirements. Ministry of Transport and Civil Aviation Authority action. ICAO Annexes 1-18. Aviation Requirements of Czech Republic L1-L18. Rquirements of ICAO Doc. 8168 and ICAO Doc. 4444 analysis and exposition, introduction to new legislation flowing from European Community Directives and Regulations.			
21LRY	Aircraft Engines	Z,ZK	2
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.			
14ISYS	Information Systems	KZ	2
State-of-the-art tools of objects control (control and planning) including problems related to these toole use, theory of information and knowledge, knowledge and expert systems, IS planning methodologies, transaction systems, theory of computer networks, semantic webs and sensitivity analysis.			
21MCC	MCC - Multicrew Cooperation	KZ	4
Flight safety analysis. MCC - basic principles, phases and methods. CRM - leadership, situational awareness, decision making process, communication, stress, standard operational procedures, automatition.			
21PVY3	Practical Pilot´s Training 3	KZ	4
Practical exercises for improvement of theoretical knowledges needed for finalization of integrated training for acquisition of ATPL(A) qualification in courses 010 to 090 in compliance with JAR FCL 1. This course is finished in verification of teoretical knowledge and practical exam with FTO examinator for practical training. Based on examination by CAA, the certificate ATPL(A) is issued.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
11FY1	Physics 1	Z,ZK	4
Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed electric current.			
11FY2	Physics 2	Z,ZK	4
Magnetic field, electromagnetic field. Optics, quantum character of electromagnetic radiation. Introduction into quantization, hydrogen atom. Multi-electron atoms, the nuclei. Basics of solid body physics.			
11GIE	Geometry	KZ	3
Differential geometry of curves - parameterization, the 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.			
11MTA	Mathematical Analysis	Z,ZK	4
Sequences and series of real numbers and its convergence. Basic properties of functions. Differential and integral calculus of the real function of one real variable. Power series, Fourier series and foundations of Fourier transform.			
12PKD	Rail Transport Designing	Z,ZK	3
Railway lines network. Vehicle and track relation. Traction. Track geometrical parameters. Clearance profile. Railway lines routing. Superstructure and substructure of the railway lines. Switches. Railway stations. City rail transport.			
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.			
12ZADI	Introduction to Transportation Engineering	Z,ZK	3
Traffic survey. Terrestrial roads. Residential zone. Land - use planning. Railway transport. Public mass transport. Integrated traffic systems. Traffic prognosis. Traffic safety. Air transport. Traffic and environment.			
14DB	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.			
14ISYS	Information Systems	KZ	2
State-of-the-art tools of objects control (control and planning) including problems related to these toole use, theory of information and knowledge, knowledge and expert systems, IS planning methodologies, transaction systems, theory of computer networks, semantic webs and sensitivity analysis.			
14SIAP	Networks and Protocols	KZ	2
Basic communication model, history and development of the Internet, principle of data transfer through computer networks (TCP/IP), performance of basic network protocols (ARP, RARP, TCP, UDP, Telnet, FTP, DNS, DHCP POP3, IMAP), data acquirement from the Internet sources, communicating ability via the Internet and fundamentals of own web presentation design by the means of web sites.			
14UATT	Introduction to Automatization and Telecommunication Systems	KZ	2
Basic axioms of technical cybernetics, automatization in transportation, human as the weakest element, signalling in transpotation, modelling and projecting of transport systems, integrated technological and infromation system in post, principle of telecommunication signal transmission, solving of telecommunication networks, modulating methods, multimedial networks and services, NGN networks.			
14UPRO	Introduction to 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.			

14ZAET	Fundamentals of Electrotechnics	KZ	2
Basic electrotechnic terms, circuit quantities. Periodic courses characteristics. Electric circuits elements and basic circuit members. Assignating of bipoles and basic circuit elements. Solution to direct current circuits with a help of circuit analysis elementar methods: method of consecutive reduction, unloaded voltage divider, current divider. Transfiguration star-triplangel and principle of superposition in direct current circuits.			
14ZINF	Fundamentals of Informatics	KZ	2
Introduction to faculty network, MS-Word and Open Office, use of styles and advanced features, computer functions and information transmission. Number systems incl. arithmetic calculations. Algorithms and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and procedures. Work with MS-Excel - tables, graphs, calculations, functions.			
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.			
16UDDM	Introduction to Transportation and Manipulation Technics	ZK	2
Means of transportation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Water transportation. Manipulating technics. Principles of lifting machines and conveyors. Legislature.			
17E	Economics	Z,ZK	3
Microeconomic and macroeconomic interpretation of economic relations. Method and subject of the economics. Economic decision making of consumers and producers. Market structures. Labour and capital, efficiency, ownership, public choice.			
18MRI1	Materials 1	Z,ZK	3
Crystal structure. Basics of thermodynamics of metals and their alloys. Balanced binary diagrams. Alloys of iron with carbon. Deterioration of solid solutions. Heating processing of steel and cast irons. Physical features. Mechanical features. Dephectostopic testing. Corosion.			
18MRI2	Materials 2	KZ	2
Fundamental concepts, notions. The main materials groups. Semiconductors. Polymers. Special types of steel. Properties and application of the composite materials.			
18ST	Statics	Z,ZK	3
General system of forces. Calculation of reactions of mass objects and compound systems. Assessment of internal forces on statically determinate beam and simple framework. Principle of virtual works. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction, method of joints and method of sections. Geometry of cross sections. Plane fiber polygons and catenary cables.			
18TTED	Creation of Technical Documentation	KZ	2
Technical standards, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy, arrangement of drawing sheets, types of schemes and their creation.			
21CNV	Flight Navigation Training	Z	2
Navigation systems destricption and device handling navigation systems, standard arrival and departures routes (STAR, SID), ILS, MLS approach procedures, PAR, SRE approach procedures, VOR / DME, NDB approach procedures, approach by circuit, visual approach, altimeteres setting procedures, holding procedures, low visibility procedures. IFR flight preparation and operation, examples from General navigation and Radionavigation.			
21DKV	Aviation Datalink Communication	KZ	2
The subject acquaints students with aviation communication domain. Stress is put on the datalink systems. Students are acquainted both with technical aspect and with operation problem so that they are able to understand data flows necessary for provision safe, fluent and economic air traffic.			
21LAB1	Aviation English for Bachelor Studies 1	Z	3
Aircrafts, flight basics, airports, meteorology, navigation, airspace management, emergency procedures, avition accidents, flight planning, human factor, civil avition organization, history of aviation, enviromental aspects of aviation.			
21LAB2	Aviation English for Bachelor Studies 2	Z,ZK	3
Aircrafts, flight basics, airports, meteorology, navigation, airspace management, emergency procedures, avition accidents, flight planning, human factor, civil avition organization, history of aviation, enviromental aspects of aviation, IFR / VFR communication, abbreviations in aviation, Q-codes.			
21LCP	Human Factor for Pilots	Z,ZK	5
Human factors in aviation, flight safety, competence of flying personnel, problem areas for pilots, situational awareness, sensory illusions, origins of errors and their prevention, personality predispositions, risky behaviour, interpersonal communication, cooperatin & coordination, toxic substances & drugs, ergonomics, automation.			
21LICL	Human Factors in Aviation	KZ	2
Human performace & limitations, capability & competence, accident statistics, flight safety, fundamentals of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, fundamentals 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.			
21LPS	Flight Operation & Requirements and Legislation	Z,ZK	7
Introduction to aviation requirements. Ministry of Transport and Civil Aviation Authority action. ICAO Annexes 1-18. Aviation Requirements of Czech Republic L1-L18. Rquirements of ICAO Doc. 8168 and ICAO Doc. 4444 analysis and exposition, introduction to new legislation flowing from European Community Directives and Regulations.			
21LPVL	IFR Flights, Night´s Flying and Multiengine Aircrafts Flying	KZ	3
Basic night flying, multiengine flying and instrument flying. Instrumentation, airport, lightning, signals. Normal operations and emergency operations night. Instrumentation, aerodynamics, aeroplane specification. Normal operations and emergency operations multiengines. Avionics, instrument panel, cockpit ergonomy. Normal operations and emefgency operations instrument flying. Connections in operations multiengines in IMC and night.			
21LR	Radio Technology in Aviation	ZK	2
Electric signals and the wave spectrum, Analog and digital modulations, Noises, Filters, Resonance circuits. Electromagnetic field. Electromagnetic wave propagation. Wave ranges in aviation, radiation and reception of electromagnetic field, antennas in aviation, receivers and transmitters.			
21LRY	Aircraft Engines	Z,ZK	2
Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational charactericties. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational characteristics. Engine control.			
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.			

21MCC	MCC - Multicrew Cooperation	KZ	4
Flight safety analysis. MCC - basic principles, phases and methods. CRM - leadership, situational awareness, decision making process, communication, stress, standard operational procedures, automatition.			
21MGI	Meteorology	Z,ZK	5
Structure of atmosphere. Vertical stratification. Pressures QNH, QFE, QFF, QME. Instability. Atmospherical fronts. Atmospherical rainfall, origin fission. Turbulence. Powers causing wind. Cyclone and anticyclone. Gradient wind. Geostrofical and geocyklostrofical wind. Visibilities in air transport. Dangerous meteorological aspects. Meteorological maps. Climatology. Circulation. Intertropical front. Meteorological informations.			
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.			
21PJE1	Instrumentation 1	Z,ZK	2
Basic classification and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measurement of air data parameters.			
21PJE2	Instrumentation 2	Z,ZK	4
Earth's magnetic field, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, monitoring and recording systems, integrated instrument systems.			
21PLL1	Flight Planning and Performance 1	KZ	4
Basic terms of mass and balance, basic aircraft masses, maximum aircrafts masses, standard weights of passenger, baggage and crew, determination of load of aircraft, loadsheet, trimsheet, determination of centre of gravity, aircraft weighing, overloading of aircraft, influence of centre of gravity position on aircarft performance.			
21PLL2	Flight Planning and Performance 2	KZ	4
Basic terms in 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.			
21PLL3	Flight Planning and Performance 3	Z,ZK	7
Flight planning and monitoring, routing, FL and speeds selection, prohibited, restricted and temporary separated areas, ATS routes and conditional routes, route availability documents, CFMU messages - AIM, ANM, CRAM, NAT MNPS, charts, ICAO ATC FPL, RPL, aerodrom operation minimums, fuel plan, decission point procedures, operationa flight plan.			
21PPJ	IFR Flights Procedures	KZ	4
Documentation Jeppesen. IFR aqqroach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS without GP, VOR/DME, NDB and SRA. Airport´s operation minima. Circuit´s approach and approach by ground contact. Holding paterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flights operation. RNAV approach procedures and other operation.			
21PPSL	Operational Procedures and Related Legislature	KZ	4
General requirements of ANNEX 6 ICAO, EU-OPS rules. Operational procedures requirements. Requirements for long-haul flights. Special operational procedures and danger.			
21PVY1	Practical Pilot´s Training 1	Z	2
Practical exercises for improvement of theoretical knowledges within the minimum range of PPL(A), courses 010 to 090 in compliance with JAR FCL 1. This course is completed by verification of theoretical knowledge and practical exam with FTO examinator for practical training.			
21PVY2	Practical Pilot´s Training 2	KZ	3
Practical exercises for improvement of theoretical knowledges needed for commencement of training for acquisition of IR(A) qualification in courses 010 to 090 in compliance with JAR FCL 1. This course is finished in verification of teoretical knowledge and practical exam with FTO examinator for practical training.			
21PVY3	Practical Pilot´s Training 3	KZ	4
Practical exercises for improvement of theoretical knowledges needed for finalization of integrated training for acquisition of ATPL(A) qualification in courses 010 to 090 in compliance with JAR FCL 1. This course is finished in verification of teoretical knowledge and practical exam with FTO examinator for practical training. Based on examination by CAA, the certificate ATPL(A) is issued.			
21RATS	Radiotelephony and Communication	KZ	3
English for IFR pilots, Ing.Ivan Janouš, Theodore Mikrut, Premisa s.r.o., Praha 1995VFR 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.			
21RN	Radionavigation	Z,ZK	6
Ground direction finder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar. Airborne Weather Radar, SSR and transponder. Radar utilization for navigation during the flight. Area navigation (RNAV) - general philosophy, particular airborna equipment, indication and sensors for RNAV, VOR/DME (RNAV), adjuction to autopilot and flight director. Satellite navigation.			
21TPIL	Theory of Pilot´s Training	Z,ZK	7
Teaching of theoretical knowledge needed to enter the first phase of integrated training. The education acts to syllabi listed in FTO manual. The subjects and their minimum range is in accordance with requirements of JAR FCL regulation and the subjects are numbered from 010 to 090 in accordance with the same regulation. The course is finished with unclassified assessment and exam.			
21UVP	Theory for Starting of The Pilot´s Training	Z,ZK	6
Air Transport as a component of complex transport system. International status of Civil Aviation. International Organizations in Europe and worldwide. Charakteristics of Air Transport. Business aviation. Technical Operating of Aircrafts.			
21ZLE1	Principles of Flight 1	KZ	3
Aerodynamic drag, relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, 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.			
21ZLE2	Principles of Flight 2	Z,ZK	4
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 and climb, acceleration, positive load, manoeuvres, stability and controllability, transsonic speeds.			
TV-1	Physical Education	Z	1
TV-2	Physical Education	Z	1

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