# Study plan

# Name of study plan: PIL bak.prez.20/21

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 20/21 Name of the group: 1.sem.PIL bak.prez.(od) 20/21 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
11CAL1	Calculus 1 Olga Vraštilová, Tomáš Tasák, Magdalena Hykšová, Bohumil Ková, Ond ej Navrátil Bohumil Ková Ond ej Navrátil (Gar.)	Z,ZK	7	2P+4C+22B	Z	Z
11LA	Linear Algebra Lucie Kárná, Pavel Provinský, Martina Be vá ová Martina Be vá ová Martina Be vá ová (Gar.)	Z,ZK	3	2P+1C+10B	Z	Z
12ZYDI	Introduction to Transportation Engineering Vojt ch Novotný, Zuzana arská, Dagmar Ko árková	Z,ZK	2	1P+1C	Z	Z
21TPLV	Theory of the Pilot's Training	Z,ZK	8	4P+4C	Z	Z
21UDVY	Introduction to the Training of Aviation Personnel	Z,ZK	4	2P+2C	Z	Z
11GIE	Geometry Pavel Provinský, Old ich Hykš, Šárka Vorá ová Old ich Hykš Old ich Hykš (Gar.)	KZ	3	2P+2C+12B	Z	Z
21LPX1	Flight Training 1 Roman Matyáš	KZ	2	0P+1C	Z,L	Z
TV-1	Physical Education	Z	1		Z	Z

#### Characteristics of the courses of this group of Study Plan: Code=1.S.BPIL 20/21 Name=1.sem.PIL bak.prez.(od) 20/21

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 sy	stem. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several rea	l variables.			
11LA	Linear Algebra	Z,ZK	3		
Vector spaces (linear co	mbinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and	their solvability. D	eterminants and		
their applications. Scala	r product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.				
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 road	s, public mass tra	nsport. Negative		
impacts of transportatio	n to environment and safety.				
21TPLV	Theory of the Pilot's Training	Z,ZK	8		
Theoretical knowledge i	nstruction required for entry into the first phase of integrated training. Tuition refers to the syllabus provided in the CZ / ATO-C	10 manuals. Sub	jects and their		
minimum range is in acc	cordance with the requirements of EU regulation no. 1178/2011 and objects are numbered in accordance with Part FCL 010	to 090. The course	e is finished with		
unclassified assessmen	t and examination. This course is intended only for long-term student, who are in integrated pilots training and study all cours	ses related to Stud	dy field PIL		
(Professional Pilot) in all three years.					
21UDVY	Introduction to the Training of Aviation Personnel	Z,ZK	4		
Pilot training. History. Dr	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.					

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	e moving on a curved path.					
21LPX1	Flight Training 1	KZ	2			
Practical exercises for improvement of theoretical knowledge in a range of at least PPL(A) of the objects 010 - 090 in accordance with Part FCL. The basics of flight control, dual						
exercises, solo flights and navigation flights. 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.						
TV-1	Physical Education	Z	1			

Code of the group: 2.S.BPIL 18/19 Name of the group: 2.sem.PIL bak.prez (od) 18/19 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
11CAL2	Calculus 2 Olga Vraštilová, Tomáš Tasák, Magdalena Hykšová, Ond ej Navrátil, Old ich Hykš Ond ej Navrátil Ond ej Navrátil (Gar.)	Z,ZK	5	2P+3C+20E	i L	Z
11STAT	Statistics Pavel Provinský, Evženie Uglickich, Pavla Pecherková, Michal Matowicki, Natálie Blahitka, Ivan Nagy <b>Pavla Pecherková</b> Evženie Uglickich (Gar.)	Z,ZK	4	2P+2C+12E	E L	Z
21LIVO	Human Performance and Limitations	Z,ZK	5	2P+2C+14B	L	Z
21N	Navigation	ZK	4	4P+0C	L	Z
21PUPE	Instrumentation	ZK	4	4P+0C	L	Z
21ZYL1	Principles of Flight 1 Vladimír Machula	Z,ZK	5	2P+2C+16B	L	Z
21RTFS	Radiotelephony and Communication	KZ	2	1P+1C	L	Z
TV-2	Physical Education	Z	1		L	Z

#### Characteristics of the courses of this group of Study Plan: Code=2.S.BPIL 18/19 Name=2.sem.PIL bak.prez (od) 18/19

Indefinite integral, Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in Rn. Parametric description k-dimensional surfaces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations or order, linear differential equations with constant coefficients and its systems           11STAT         Statistics           Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparametric tests           21LIVO         Human Performance and Limitations         Z,ZK	on of regular of the first 4 netric tests 5 circulation,
k-dimensional surfaces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations or order, linear differential equations with constant coefficients and its systems         11STAT       Statistics         Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparametric tests Nonparametric         Regression and correlation analysis       Z,ZK         21LIVO       Human Performance and Limitations       Z,ZK	4 netric tests 5 circulation,
order, linear differential equations with constant coefficients and its systems         11STAT       Statistics         Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparametric tests Nonparametric tests         Regression and correlation analysis         21LIVO       Human Performance and Limitations       Z,ZK	4 netric tests 5 circulation,
11STAT       Statistics       Z,ZK         Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparam Regression and correlation analysis       Z,ZK         21LIVO       Human Performance and Limitations       Z,ZK	4 netric tests 5 circulation,
Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparam         Regression and correlation analysis         21LIVO       Human Performance and Limitations         Z,ZK	5 circulation,
Regression and correlation analysis           21LIVO         Human Performance and Limitations         Z.ZK	5 circulation,
21LIVO Human Performance and Limitations Z.ZK	5 circulation,
	circulation,
Human performace & amp; limitations, aptibility & amp; competence, accident statistics, flight safety, basics of flight physiology, man & amp; environment, breathing & amp; d	
sensory system, health & amp; hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & amp; learning	ing, theory
& model of human error, body rhythms & sleep, stress, fatigue, working methods.	
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	ce. Spherical
trigonometry. Mathematical determination of elements rhumb line course and Great-circle distance. Agona, isogona. Projection of maps. ICAO and Jeppeson maps. Times	s - UTC, Zulu,
LT. Time zones. Comparative navigation. Dead reckoning. INS / IRS, FMS.	
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	a parameters.
Earth's magnetic field, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, monitoring and recordin	ng systems,
integrated instrument systems.	
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 wi	/ing, 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	e, devices for
lift and drag increase.	
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	n normal and
emergency procedures, loss of communication, weather information, HF communication.	
TV-2 Physical Education Z	1

Code of the group: 3.S.BPIL 19/20 Name of the group: 3.sem.PIL bak.prez.(od) 19/20 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: Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their Code Completion Credits Scope Semester Role members) Tutors, authors and guarantors (gar.) Physics 11FYZ Z,ZK 5 2P+2C+18B Ζ Z Old ich Hykš, Zuzana Malá, Tomáš Vít, Jana Kuklová Zuzana Malá Zuzana Malá (Gar.) **Human Factors in Aviation** Ζ 21LCVL ΖK 2 2P+0C 7 Lenka Hanáková Lenka Hanáková **Electronics Basics 1** 21ZEL1 Z,ZK 5 3P+2C Ζ Ζ Vít Fábera Vít Fábera Principles of Flight 2 21ZYL2 Z,ZK 5 2P+2C Ζ Z P emysl Vávra, Marek Veselý P emysl Vávra 21MEO1 2P+2C Ζ ΚZ 4 7 Meteorology 1 **Basics of Aircraft Structures and Systems** 21ZLKS ΚZ 4 2P+2C Ζ z Kate ina Stuchlíková, Pavol Hajla Pavol Hajla 21LRF Ζ 2 0P+2C Ζ Ζ Laboratories of Radiotelephony Foreign Language - English 1 Ζ Ζ 15JZ1A Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora Horá ková, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, ..... 3 0P+4C+10B Ζ

#### Characteristics of the courses of this group of Study Plan: Code=3.S.BPIL 19/20 Name=3.sem.PIL bak.prez.(od) 19/20

11FYZ Physics	Z,ZK	5				
Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.						
21LCVL Human Factors in Aviation	ZK	2				
Human performace & amp; limitations, aptibility & amp; competence, accident statistics, flight safety, basics of flight physiology, man & amp; environme	ent, breathing &ar	np; circulation,				
sensory system, health & amp; hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & amp; learning, theory						
& model of human error, body rhythms & sleep, stress, fatigue, working methods.						
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 resi	stance, resistor a	nd performance.				
Capacity and capacitor. Magnetism. Inductance and inductor. DC motors and generators. Theory AC, resistive, capacitive, inductive circuits. Transform	mers. Brushless r	notors and				
generators. Frequency filters.						
21ZYL2 Principles of Flight 2	Z,ZK	5				
Static & amp; dynamic longitudinal stability, neutral point, location of centre of gravity, static directional & amp; lateral stability, dynamic directional & a	np; lateral stability	, control – pitch				
(longitudinal), yaw (directional) & amp; roll (lateral), roll/yaw interaction, trimming, speed of sound, Mach number, compressibility, shock waves, critica	l Mach number, a	aerodynamic				
heating, operating limitations, manoeuvring envelope, gust-load diagram.						
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 way	ves. Moisture				
adiabatic processes. Creating and types of cloud, fog, haze. Precipitation. Types of air masses, frontal interface. Distribution of pressure, cyclones, ar	nticyclones, non-f	rontal cyclone.				
21ZLKS Basics of Aircraft Structures and Systems	KZ	4				
Basics of screening, technical drawing, technological and operational signs. Hydraulic, pneumatic, fuel, electricity and block diagrams in aviation.						
21LRF Laboratories of Radiotelephony	Z	2				
VFR and IFR communication, basic opertional procedures, standard aeronautical frazeology, broadcasting of the numbers, letters, etc., call signs, ra	dio-communicatio	on in normal and				
emergency procedures, loss of communication, weather information, HF communication.						
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 s	kills. Elementary				
stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.						

Code of the group: 4.S.BPIL 16/17 Name of the group: 4.sem.PIL bak.prez. (od) 16/17 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
11MSP	Modeling of Systems and Processes Bohumil Ková, Lucie Kárná, Jana Kuklová Jana Kuklová Bohumil Ková (Gar.)	Z,ZK	4	2P+2C+12B	L	Z
21HVL	Weight and Balance of Aircraft Denisa Svobodová	Z,ZK	4	2P+1C	L	Z
21MET2	Meteorology 2 Iveta Kameníková Iveta Kameníková	Z,ZK	5	2P+2C	L,Z	Z
21RNG	Radionavigation	Z,ZK	7	3P+4C	L	Z
21LL1	Aircraft 1	KZ	3	2P+1C+10B	L	Z

21LPX2	Flight Training 2 Roman Matyáš, Jakub Charezinski <b>Roman Matyáš</b>	KZ	2	0P+1C	L,Z	z	
21ULCT	Aircraft Maintenance Tomáš Parýzek	Z	2	2P+0C+8B	L	Z	
15JZ2A	5JZ2A       Foreign Language - English 2         Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora Horá ková, Marek       Z,ZK         Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková,       Z,ZK						
Characteristics of the courses of this group of Study Plan: Code=4.S.BPIL 16/17 Name=4.sem.PIL bak.prez. (od) 16/17							
11MSP Mo	deling of Systems and Processes			Z	,ZK	4	
System and subsystem, exter	rnal and internal system description, continuous and discrete system, mathematics as a	tool, examples of	formulatior	of differentia	l and differe	ential equations.	
Linear and nonlinear system	, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z	transformations.	Transfer fu	unction. Stabi	lity of LTI s	/stems.	
Discretization of continuous	systems. System interconnection.						
21HVL We	eight and Balance of Aircraft			Z	.ZK	4	
Basic terms of mass and bala	ance, basic aircraft masses, weighing and maximum aircrafts masses, overloading of aircr	aft, standard weig	hts of pass	enger, bagga	ge and crev	, determination	
of load of aircraft, flight docu	mentation - loadsheet, trimsheet, securing of load, determination of centre of gravity, ir	nfluence of centre	of gravity	position on a	ircarft perfo	rmance.	
21MET2 Me	eteorology 2			Z	.ZK	5	
Climatic zones, tropical clima	atology, meteorological situation of mid-latitudes. Icing, turbulence, wind shear, thunder	storms, tornadoe	s, flying in	the stratosph	ere, mount	ain areas,	
reducing visibility phenomen	a. Observation, weather maps, important information for flight planning.						
21RNG Ra	dionavigation			Z	,ZK	7	
Ground direction finder (VDF	;), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SS	R and transpond	er. Radar u	itilization for r	avigation o	luring the flight.	
Area navigation (RNAV) - ge	neral philosophy, gauges and equipment, indication and sensors for RNAV, VOR/DME	(RNAV). Autopilo	t and flight	director. Sate	ellite naviga	tion, systems	
and backups.							
21LL1 Air	craft 1				KZ	3	
Aircraft structural and concept	ptual design types - definitions and basic knowledge of the problem. Development of re	quirements, aircra	aft definitio	ns and categ	orisation. A	ircraft loadings.	
Systems of primary and second	ondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeropl	ane topics.					
21LPX2 Flig	ght Training 2				KZ	2	
Practical exercises for improv	vement of theoretical knowledge in a range MEP land and IFR from the relevant subject	cts in accordance	with Part I	CL. The bas	ics of instru	iment flying,	
dual exercises, emergency p	procedures, descents and navigation flights. This course is intended only for long-term	student, who are	in integrate	ed pilots traini	ng and stu	dy all courses	
related to Study field PIL (Pre	ofessional Pilot) in all three years.						
21ULCT Air	craft Maintenance				Z	2	
Aircraft operations and techn	ical operations. Maintenance and work processes. Defects search methods, status che	ck diagnostic tool	s. Selectior	n and qualifica	ation of avia	ation personnel.	
Basic documentation for mai	intenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part $^{\prime}$	145. Human facto	rs of aircra	ft maintenand	ce. Regulat	ion of director	
EASA for aircraft maintenance. Seminars will be focused on practical application.							
15JZ2A For	reign Language - English 2			Z	,ZK	3	
Grammatical structures and s	style. Selection of conversation topics relating to transportation sciences. Extending voca	abulary, developin	g perceptiv	e and comm	unicative sk	ills. Elementary	
stylistics forms. Oral and writ	tten presentation of original research. Academic text principles and reading compreher	nsion. Principles c	of rhetoric.				

### Code of the group: 5.S.BPIL 19/20

Name of the group: 5.sem.PIL bak.prez.(od) 19/20

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 7 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
21LCM	<b>Aircraft Engines</b> Daniel Hanus, Tomáš Parýzek <b>Daniel Hanus</b>	Z,ZK	3	2P+1C	Z,L	Z
21LGPS	Legislation and Operational Regulations	Z,ZK	8	4P+2C	Z	Z
21LTA2	Aircraft 2 Karel Mündel Karel Mündel	Z,ZK	2	2P+1C	Z	Z
21VL	Aircraft Performance Denisa Svobodová Denisa Svobodová	Z,ZK	4	2P+2C	Z	Z
21ZLS	ATM Systems Vladimír Machula Vladimír Machula	Z,ZK	5	2P+2C	Z	Z
21PDLT	Airport Design and Operation Ladislav Capoušek	KZ	5	2P+2C	Z	Z
21APL1	Aviation English 1 for Professional Pilot Lukáš Zibner, Marek Šudoma Lukáš Zibner	Z	3	0P+4C	Z	Z

#### Characteristics of the courses of this group of Study Plan: Code=5.S.BPIL 19/20 Name=5.sem.PIL bak.prez.(od) 19/20

21LCM	Aircraft Engines	Z,ZK	3				
Aircraft piston engine, th	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.							
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.							

211 TA2	Aircraft 2	7 7K	2			
Manufacturers responsi	bility 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.						
21VL	VL Aircraft Performance Z,ZK 4					
Basic terms of aircraft p	erformance, basic characteristic speeds, runway characteristics, single and multiengine aircraft performance class B, aircraft	performance clas	s A, take off and			
landing performance, at	ter 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 of	assical and modern facilities, systems and technologies designated for ATS. Student obtains knowledge of technical princip	les and solutions	as far as			
communication, navigat	ion and surveillance aviation systems are concerned.					
21PDLT	Airport Design and Operation	KZ	5			
Methods for the new airp	orts design. Existing airports development. A closer look at the development of the airports operational areas. Certification of the	ne operating areas	and procedures			
by ICAO Airports Manu	al. Development planning and project preparation, regulatory basis.					
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.						

#### Code of the group: 6.S.BPIL 20/21

### Name of the group: 6.sem.PIL bak.prez. (od) 20/21

## 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
21APL2	Aviation English 2 for Professional Pilot Lukáš Zibner, Marek Šudoma	Z,ZK	3	0P+4C	L	Z
21EBLP	European Air Transport Safety Attitude	Z,ZK	4	2P+2C	L	Z
21PAP	Flight Planning and Performance Ladislav Capoušek Anna Polánecká (Gar.)	Z,ZK	4	2P+2C+14B	L	Z
21PPLP	Operational Procedures and IFR Flights	Z,ZK	7	4P+2C	L	Z
21ZDP	Knowledge, Skills and Attitudes	Z,ZK	5	2P+2C	L	Z
21DKL	Aviation Data Link Communication Vladimír Machula, Jakub Steiner, Stanislav Pleninger	KZ	3	2P+1C	L	Z
21LPX3	Flight Training 3 Roman Matyáš	KZ	2	0P+1C	L	Z
21LVP	MCC - Multicrew Cooperation	Z	2	2P+0C	L	Z

#### Characteristics of the courses of this group of Study Plan: Code=6.S.BPIL 20/21 Name=6.sem.PIL bak.prez. (od) 20/21

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.					
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 sa	fety and quality, th	he basic concept		
of security, safety mana	gement, security management strategy, hazard, risk, risk management.				
21PAP	Flight Planning and Performance	Z,ZK	4		
Mass and balance. Load	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 pe	rformance. Drift down. ETOPS. MEL. Flight planning and monitoring. Routing. FL and speeds selection. Charts. ICAO ATC FP	L. Aerodrom oper	ation minimums.		
Fuel plan. Operational f	light plan.				
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 operation	al minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight proced	dures. RNAV appr	oach procedures		
and other operation. CE	VFA procedures and principles of increasing airspace capacity.				
21ZDP	Knowledge, Skills and Attitudes	Z,ZK	5		
Communication. Management of flight path. Automation of flight. Leadership and teamwork. Problem solving. Decision making. Situation awarness. Workload management. Upset					
preventation and recovery training. Mental math.					
21DKL	Aviation Data Link Communication	KZ	3		
21LPX3	Flight Training 3	KZ	2		
Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowledge					
21LVP	MCC - Multicrew Cooperation	Z	2		
Flight safety analysis in relation to human factor. MCC - basic principles, phases and methods within the area of air transport. CRM - leadership, situational awareness, decision making					
process, communication, effect of stress to the multi-crew performance, standard operational procedures, automation.					

# List of courses of this pass:

Code	Name of the course	Completion	Credits		
11CAL1	Calculus 1	Z,ZK	7		
Sequence of real nu	umbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dim	ensional Euklidea	n space and		
	an coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of sev	erai real variables	F		
I ICALZ	Galculus 2 Vewtonian integral. Riemannian integral of the function of one variable, improper Riemannian integral. Riemannian integral in Rn. Pa	∣ ∠,∠n rametric descriptio	ס n of regular		
k-dimensional sur	faces in Rn, Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary diff	erential equations	of the first		
	order, linear differential equations with constant coefficients and its systems				
11FYZ	Physics	Z,ZK	5		
11015	Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.	V7	2		
	Geometry try of curves - parameterization, the arc of the curve, torsion and curvature. Frenet's tribedron, Kinematics - a curve as a trajectory o	f the motion the v	3 elocity and		
	acceleration of a particle moving on a curved path.	i ule illeuell, ule i	oroony, and		
11LA	Linear Algebra	Z,ZK	3		
Vector spaces (line	ar combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their	ir solvability. Deteri	minants and		
11100	their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classifications.	on.	4		
System and subsys	IVIODEIING OF Systems and Processes tem external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differe	∠,∠K ential and differentia	4 al equations		
Linear and non	inear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function	n. Stability of LTI s	ystems.		
	Discretization of continuous systems. System interconnection.				
11STAT	Statistics	Z,ZK	4		
Basics of probabil	ty Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Paramet Regression and correlation analysis	ric tests Nonparan	netric tests		
12ZYDI	Introduction to Transportation Engineering	Z.ZK	2		
Role of transportati	on in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, p	ublic mass transpo	ort. Negative		
	impacts of transportation to environment and safety.				
15JZ1A	Foreign Language - English 1	Z	3		
Grammatical Struct	ures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and co stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles (	mmunicative skills. of rhetoric	Elementary		
15JZ2A	Foreign Language - English 2	Z.ZK	3		
Grammatical struct	ares and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and co	mmunicative skills.	Elementary		
	stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of	of rhetoric.			
21APL1	Aviation English 1 for Professional Pilot	L Z	3 ht. aircraft		
Exercises locuser	ingines, instruments and systems, analyzes relating to topics of air traffic, operational procedures, relevant legislation and operators	procedures.	ni, ancian		
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 conversatior	within the		
		1/7	0		
21DKL	Aviation Data Link Communication	KZ	3		
ZIEDLP Reliability and life c	CUIDPEAN AIL HAISPON Salety Allitude vole systems reliability theory mathematics tools for reliability reliability analysis maintenance systems, theory of operational safety	∠,∠n and quality the ba	4 sic concept		
	of security, safety management, security management strategy, hazard, risk, risk management.		loio concept		
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, ba	ggage and crew, de	etermination		
of load of aircrat	t, flight documentation - loadsneet, trimsheet, securing of load, determination of centre of gravity, influence of centre of gravity positie	on on aircarft perfo	rmance.		
Aircraft piston eng	ine, theoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Turbine en	∠,∠r∖ gine, theoretical b	ackground,		
thermal cycles, co	onstruction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational ch	aracteristics. Engi	ne control.		
21LCVL	Human Factors in Aviation	ZK	2		
Human performace	e & limitations, aptibility & competence, accident statistics, flight safety, basics of flight physiology, man & environment	, breathing &	circulation,		
sensory system, r	earch & amp, nygiene, nearch preservation, intoxication, incapacitation, basics of high psychology, numan information processing, me & amp: model of human error, body rhythms & amp: sleep, stress, fatigue, working methods.	emory & learn	ing, theory		
21LGPS	Legislation and Operational Regulations	Z,ZK	8		
Introduction into a	viation regulations. The scope of international and national organizations in civil aviation. Analysis and interpretation of the ICAO Ann	exes 1-19, ICAO E	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 performac	e & limitations, aptibility & competence, accident statistics, flight safety, basics of flight physiology, man & environment	, breathing &	circulation,		
sensory system, h	ealth & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, me & model of human error, body rhythms & sleep, stross, fating, working methods	emory & learn	ing, theory		
2111 Aircraft 1 K7 3					
Aircraft structural a	nd conceptual design types - definitions and basic knowledge of the problem. Development of requirements, aircraft definitions and ca	ategorisation. Aircr	aft loadings.		
	Systems of primary and secondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeroplane topic	cs.	-		

Practical exercis exercises, solo fl	Flight Training 1	KZ	2
exercises, solo fl	ses for improvement of theoretical knowledge in a range of at least PPL(A) of the objects 010 - 090 in accordance with Part FCL. The	basics of flight con	trol. dual
	ights and navigation flights. This course is intended only for long-term student, who are in integrated pilots training and study all course	ses related to Stud	y field PIL
	(Professional Pilot) in all three years.		
21LPX2	Flight Training 2	KZ	2
Practical exercise	s for improvement of theoretical knowledge in a range MEP land and IFR from the relevant subjects in accordance with Part FCL. Th	ne basics of instrum	nent flying,
dual exercises, er	nergency procedures, descents and navigation flights. 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.	с ,	
21LPX3	Flight Training 3	KZ	2
21217.0	Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowl	ledae	-
211 RF	Laboratories of Radiotelenhony	7	2
VER and IER com	munication basic opertional procedures, standard aeronautical frazeology, broadcasting of the numbers, letters, etc., call signs, radio	<u>~</u> -communication in	
	emergency parallels loss of communication, weather information. HE communication,		normarana
211 TA 2	Aircraft 2	7.7K	2
ZILIAZ Manufacturers resi	Antional 2 possibility responsibilities of operator and professional supervision. Legislation in area of ainvorthiness. International and national stat	∠,∠r∖   ndarde Static solidi	∠ tv of aircraft
	structures. Aeroelasticity Inherent and operational reliability of aircraft structure. Eatinue strength. Aircraft structure lifetime presu	Imption	ty of anotart
211.V/D	Indicates Anticipation and polation and polation and polation and and a state of the state of th	7	2
ZILVF Flight sofety apply	MICE = Widther ew Cooperation in the second state of the second		Z sion making
	as interaction to numan ractor, into - basic principles, priases and methods within the area of an insport. chim - leadership, studation process, communication, effect of stress to the multi-crew performance, standard operational procedures, automation	iai awareness, ueci	SION MAKING
	process, communication, enerci of stress to the monitories performance, standard operational procedures, automation.	V7	4
21IVIEU1	Mieteorology   a and varies statutors of the etacophere ONU OFF OFF description desight measurements. Wind turbulance interference		4 Maiatura
Composition, size	e and venical structure of ine amosphere. QNR, QFF, QFF, QFF, Gensity and neight measurements, whild, undulence, jet streams a	and standing waves	
	es. Oreaning and types of cloud, log, haze. Precipitation: types of an intasses, inortai interface. Distribution of pressure, cyclones, anti-		
21ME12	Meteorology 2	<u>Z</u> ,ZK	. 5
Climatic zones,	tropical climatology, meteorological situation of mid-latitudes. Icing, turbulence, wind shear, thunderstorms, tornadoes, tiying in the str	ratosphere, mounta	ain areas,
	reducing visibility pnenomena. Observation, weather maps, important information for flight planning.		-
21N	Navigation	ZK	4
Earth - shape, dime	ansions of the reference ellipsoid and geoid, position reference system (grid), large and small circles. Great-circle distance and the rhum	nb line. Convergenc	e. Spherical
trigonometry. Math	ematical determination of elements rhumb line course and Great-circle distance. Agona, isogona. Projection of maps. ICAO and Jeppe	eson maps. Times -	UTC, Zulu,
	LT. Time zones. Comparative navigation. Dead reckoning. INS / IRS, FMS.		
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 s	speeds. Runway cha	aracteristics.
Take off and landin	ig performance. Drift down. ETOPS. MEL. Flight planning and monitoring. Routing. FL and speeds selection. Charts. ICAO ATC FPL. A	Aerodrom operation	minimums.
	Fuel plan. Operational flight plan.		
21PDLT	Airport Design and Operation	KZ	5
Methods for the ne	w airports design. Existing airports development. A closer look at the development of the airports operational areas. Certification of the o	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 Je	ppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS with	Z,ZK ithout GP, VOR/DMI	7 E, NDB and
Documentation Je SRA. Airport's ope	ppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS will rational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedure	│ Z,ZK ithout GP, VOR/DMI es. RNAV approach	7 E, NDB and procedures
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Documentation Je SRA. Airport's ope 21PUPE	ppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS wi rational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedure and other operation. CDFA procedures and principles of increasing airspace capacity. Instrumentation	L,ZK thout GP, VOR/DMI es. RNAV approach	7 E, NDB and procedures 4
Documentation Je SRA. Airport's ope 21PUPE Basic classification	ppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS wi rational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedures and other operation. CDFA procedures and principles of increasing airspace capacity. Instrumentation and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measu	Z,ZK thout GP, VOR/DMI es. RNAV approach ZK urement of air data	7 E, NDB and procedures 4 parameters.
Documentation Je SRA. Airport's ope 21PUPE Basic classification Earth's magnetic f	ppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS wi rational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedures and other operation. CDFA procedures and principles of increasing airspace capacity. Instrumentation and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measu ield, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, moni	∠,∠K thout GP, VOR/DMi es. RNAV approach ZK urement of air data itoring and recordin	7 E, NDB and procedures 4 parameters. og systems,
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Documentation Je SRA. Airport's ope 21PUPE Basic classification Earth's magnetic f 21RNG Ground direction fi	ppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS wi rational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedures and other operation. CDFA procedures and principles of increasing airspace capacity. Instrumentation and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measu ield, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, moni integrated instrument systems. Radionavigation nder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SSR and transponder. Radar utilization	Z,ZK thout GP, VOR/DMI es. RNAV approach ZK urement of air data itoring and recordin Z,ZK for navigation durir	7 E, NDB and procedures 4 parameters. Ig systems, 7 ng the flight.
Documentation Je SRA. Airport's ope 21PUPE Basic classification Earth's magnetic f 21RNG Ground direction fi Area navigation (F	ppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS wi rational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedure and other operation. CDFA procedures and principles of increasing airspace capacity. Instrumentation and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measu iteld, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, moni integrated instrument systems. Radionavigation nder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SSR and transponder. Radar utilization RNAV) - general philosophy, gauges and equipment, indication and sensors for RNAV, VOR/DME (RNAV). Autopilot and flight director	Z,ZK thout GP, VOR/DMI es. RNAV approach ZK urement of air data itoring and recordin Z,ZK for navigation durir r. Satellite navigatio	7 E, NDB and procedures 4 parameters. Ig systems, 7 ng the flight. n, systems
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Documentation Je SRA. Airport's ope 21PUPE Basic classification Earth's magnetic 1 21RNG Ground direction fi Area navigation (F 21RTFS VFR and IFR comr	ppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS wirational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedure and other operation. CDFA procedures and principles of increasing airspace capacity.         Instrumentation         and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measu integrated instrument systems.         Radionavigation         nder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SSR and transponder. Radar utilization and backups.         Radiotelephony and Communication         nunication, basic operational procedures, standard aeronautical frazeology, broadcasting of the numbers, letters, etc., call signs, radio emergency procedures, loss of communication, weather information, HF communication.		7 E, NDB and procedures 4 parameters. Ig systems, 7 ng the flight. n, systems 2 normal and
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Documentation Je SRA. Airport's ope 21PUPE Basic classification Earth's magnetic 1 21RNG Ground direction fi Area navigation (F 21RTFS VFR and IFR comr 21TPLV Theoretical knowl	ppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS wi rational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedure and other operation. CDFA procedures and principles of increasing airspace capacity. Instrumentation and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measu field, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, moni integrated instrument systems. Radionavigation nder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SSR and transponder. Radar utilization RNAV) - general philosophy, gauges and equipment, indication and sensors for RNAV, VOR/DME (RNAV). Autopilot and flight director and backups. Radiotelephony and Communication nunication, basic operational procedures, standard aeronautical frazeology, broadcasting of the numbers, letters, etc., call signs, radio emergency procedures, loss of communication, weather information, HF communication. Theory of the Pilot's Training edge instruction required for entry into the first phase of integrated training. Tuition refers to the syllabus provided in the CZ / ATO-010	Z,ZK         thout GP, VOR/DMI         es. RNAV approach         ZK         urement of air data i         itoring and recordin         Z,ZK         of or navigation during         KZ         o-communication in         Z,ZK         0 manuals. Subject	7 E, NDB and procedures 4 parameters. Ig systems, 7 ng the flight. n, systems 2 normal and 8 s and their
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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.					
21ZLKS	Basics of Aircraft Structures and Systems	KZ	4		
	Basics of screening, technical drawing, technological and operational signs. Hydraulic, pneumatic, fuel, electricity and block diagrams in aviation.				
21ZLS	ATM Systems	Z,ZK	5		
The course intr	oduces classical and modern facilities, systems and technologies designated for ATS. Student obtains knowledge of technical princip	les and solutions a	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		
Static & amp; dynamic longitudinal stability, neutral point, location of centre of gravity, static directional & amp; lateral stability, dynamic directional & amp; lateral stability, control - pitch					
(longitudinal), yaw (directional) & amp; roll (lateral), roll/yaw interaction, trimming, speed of sound, Mach number, compressibility, shock waves, critical Mach number, aerodynamic					
heating, operating limitations, manoeuvring envelope, gust-load diagram.					
TV-1	Physical Education	Z	1		
TV-2	Physical Education	Z	1		

For updated information see <u>http://bilakniha.cvut.cz/en/FF.html</u> Generated: day 2024-05-19, time 12:13.