Study plan

Name of study plan: Bachelor PIL (CS) Full-Time from 2024/25

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Professional Pilot
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: 170
The role of the block: Z

Code of the group: 1S-BP-PIL-CS-23/24
Name of the group: 1st Sem. Bachelor Full-Time PIL (CS) from 2023/24
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
11CAL1	**Calculus 1** *Olga Vraštilová, Tomáš Třasák, Magdalena Hykšová, Bohumil Kovář, Ondřej Navrátil* ***Bohumil Kovář*** *Ondřej Navrátil (Gar.)*	Z,ZK	7	2P+4C+22B	Z	z
11LA	**Linear Algebra** *Lucie Kárná, Pavel Provinský, Martina Bečvářová* ***Martina Bečvářová*** *Martina Bečvářová (Gar.)*	Z,ZK	3	2P+1C+10B	Z	z
21OBN	**General Navigation** *Radoslav Zozuľák* ***Radoslav Zozuľák***	ZK	5	4P+0C	Z	z
21VFRC	**VFR Communication** *Milan Kameník* ***Milan Kameník***	Z,ZK	4	2P+1C	Z	z
21VFRT	**Theory for VFR Training** *Ladislav Capoušek* ***Ladislav Capoušek***	Z,ZK	6	4P+4C	Z	z
11GIE	**Geometry** *Pavel Provinský, Oldřich Hykš, Šárka Voráčová* ***Oldřich Hykš*** *Oldřich Hykš (Gar.)*	KZ	3	2P+2C+12B	Z	z
15JP1A	**Foreign Language - English for PIL 1** *Marek Tomeček, Dana Boušová, Peter Morpuss, Lenka Monková, Marie Michlová, Eva Rezlerová, Markéta Musilová, Markéta Vojanová, Jitka Heřmanová, ...*	Z	2	0P+2C	Z	z

Characteristics of the courses of this group of Study Plan: Code=1S-BP-PIL-CS-23/24 Name=1st Sem. Bachelor Full-Time PIL (CS) from 2023/24

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. Indefinite integral, Newton integral, Riemann integral, improper Riemann integral. First-order differential equations, linear differential equations.			
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.			
21OBN	General Navigation	ZK	5
The Earth: latitude and longitude. Reference systems. Circles on the Earth and distance. Calculations. Time. Magnetism and sirections. Wind and Speed: Course, heading, track. Calculations: navigation computer conversions, TAS, rates. Calculations: 1 in 60 and navigation computer track and GS. Projections. Charts. VFR navigation. Nav Log preparation and use. Navigation display. Navigation in remote and oceanic areas.			
21VFRC	VFR Communication	Z,ZK	4
Course contents are based on PART FCL, part 090. It defines terms and abbreviations used in VFR communication. Phraseology and procedures in standard and non-standard situations.			

21VFRT	Theory for VFR Training	Z,ZK	6
Course content is based on PPL(A) theory requirements according to Part-FCL. Lectures cover topics that are necessary to commence the practical part of ATP(A) training, such as principles of flight, airframe and powerplant, aircraft systems, instrumentation, mass and balance, performance, air law and ATC procedures, meteorology, operational procedures, navigation, radionavigation, VFR communication, flight planning and monitoring and human factor.			
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.			
15JP1A	Foreign Language - English for PIL 1	Z	2
Improvement of language skills within spoken and written form of the language with the focus on aviation English. Practice of comprehension of authentic materials. Improvement of pronunciation and fluency of spoken language. Aviation phraseology in combination with general English. Revision and improvement of grammar structures, syntax and vocabulary. Topics related to air transport and occupation of pilot and air staff.			

Code of the group: 2S-BP-PIL-CS-23/24
Name of the group: 2nd Sem. Bachelor Full-Time PIL (CS) from 2023/24
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
11CAL2	**Calculus 2** *Olga Vraštilová, Tomáš Třasák, Magdalena Hykšová, Ondřej Navrátil, Oldřich Hykš* ***Magdalena Hykšová*** *Ondřej Navrátil (Gar.)*	Z,ZK	5	2P+3C+20B	L	z
11STAT	**Statistics** *Pavel Provinský, Evženie Uglickich, Pavla Pecherková, Michal Matowicki, Natálie Blahitka, Ivan Nagy, Jana Kuklová* ***Pavla Pecherková*** *Evženie Uglickich (Gar.)*	Z,ZK	4	2P+2C+12B	L	z
21HAV-E	**Weight and Balance of Aircraft** *Ota Hajzler* ***Denisa Svobodová*** *Anna Polánecká (Gar.)*	Z,ZK	3	2P+2C	L	z
21LDA1	**Aircraft 1** *Karel Mündel* ***Karel Mündel*** *Vladimír Plos (Gar.)*	Z,ZK	3	2P+1C	L	z
21LEY1	**Air Law 1** *Radoslav Zozuľák* ***Radoslav Zozuľák*** *Radoslav Zozuľák (Gar.)*	ZK	3	3P+0C	L	z
21ZYT1	**Principles of Flight 1** *Přemysl Vávra, Jakub Trýb* ***Přemysl Vávra*** *Vladimír Socha (Gar.)*	Z,ZK	3	2P+1C	L	z
15JP2A	**Foreign Language - English for PIL 2** *Marek Tomeček, Peter Morpuss, Lenka Monková, Marie Michlová, Eva Rezlerová, Markéta Musilová, Markéta Vojanová, Jitka Heřmanová, Jan Feit, ...*	KZ	3	0P+2C	L	z
21CON-E	**Navigation Calculations** *Milan Kameník, Paul Rousseau* ***Milan Kameník***	KZ	2	0P+2C	L	z
21LPX1	**Flight Training 1** *Iveta Kameníková, Jakub Hospodka*	KZ	2	0P+1C	Z,L	z
21LAP1	**Aviation English for Professional Pilot 1** *Lukáš Zibner, Filip Havrda* ***Filip Havrda***	Z	2	0P+2C	L	z

Characteristics of the courses of this group of Study Plan: Code=2S-BP-PIL-CS-23/24 Name=2nd Sem. Bachelor Full-Time PIL (CS) from 2023/24

11CAL2	Calculus 2	Z,ZK	5
Linear differential equations and their systems, differential calculus of functions of several real variables. Riemann integral in Rn. Line and surface integrals.			
11STAT	Statistics	Z,ZK	4
Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparametric tests Regression and correlation analysis			
21HAV-E	Weight and Balance of Aircraft	Z,ZK	3
Basic terms of mass and balance, basic aircraft masses, weighing and maximum aircrafts masses, overloading of aircraft, standard weights of passenger, baggage and crew, determination of load of aircraft, flight documentation - loadsheet, trimsheet, securing of load, determination of centre of gravity, influence of centre of gravity position on aircarft performance.			
21LDA1	Aircraft 1	Z,ZK	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.			
21LEY1	Air Law 1	ZK	3
Air Law; ICAO Doc 7300; ICAO Doc 7500 and 9626; International Organizations: ICAO, IATA, EASA, EUROCONTROL; airworthiness; ICAO Annexes; Commission regulation (EU) 965/2012.			
21ZYT1	Principles of Flight 1	Z,ZK	3
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.			
15JP2A	Foreign Language - English for PIL 2	KZ	3
Improvement of language skills within spoken and written form of the language with the focus on aviation English. Practice of comprehension of authentic materials. Improvement of pronunciation and fluency of spoken language. Aviation phraseology in combination with general English. Revision and improvement of grammar structures, syntax and vocabulary. Topics related to air transport and occupation of pilot and air staff.			

21CON-E	Navigation Calculations	KZ	2
Projection of maps; times - UTC, Zulu, LT; positioning; sunrise and sunset; distance calculation; projection; maps and symbols; declination; speed; wind components and wind drift; VFR route selection; position plotting.			
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.			
21LAP1	Aviation English for Professional Pilot 1	Z	2
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: 3S-BP-PIL-CS-24/25
Name of the group: 3rd Sem. Bachelor Full-Time PIL (CS) from 2024/25
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
11FYZ	**Physics** *Oldřich Hykš, Jana Kuklová, Pavel Demo, Zuzana Malá, Tomáš Vítů* ***Jana Kuklová*** *Pavel Demo (Gar.)*	Z,ZK	5	2P+2C+18B	Z	z
21LAP2	**Aviation English for Professional Pilot 2** *Lukáš Zibner* ***Lukáš Zibner***	Z,ZK	3	0P+4C	Z	z
21LDA2	**Aircraft 2** *Karel Mündel* ***Karel Mündel***	Z,ZK	4	2P+1C	Z	z
21LPTY-E	**Aircraft Operations** *Ladislav Capoušek* ***Ladislav Capoušek***	ZK	2	2P+0C	Z	z
21PUP1	**Instrumentation 1** *Pavel Hovorka*	ZK	3	2P+0C	Z	z
21RNV	**Radionavigation** *Milan Kameník* ***Milan Kameník***	Z,ZK	4	3P+1C	Z	z
21VL-E	**Aircraft Performance** *Denisa Svobodová* ***Anna Polánecká***	Z,ZK	4	2P+2C	Z	z
21LPX2	**Flight Training 2** *Iveta Kameníková, Jakub Hospodka, Jakub Charezinski, Roman Matyáš* ***Iveta Kameníková***	KZ	2	0P+1C	L,Z	z
15JZ3A	**Foreign Language - English 3** *Dana Boušová, Peter Morpuss, Lenka Monková, Marie Michlová, Eva Rezlerová, Markéta Musilová, Markéta Vojanová, Jitka Heřmanová, Jan Feit*	Z	3	0P+4C	Z	z

Characteristics of the courses of this group of Study Plan: Code=3S-BP-PIL-CS-24/25 Name=3rd Sem. Bachelor Full-Time PIL (CS) from 2024/25

11FYZ	Physics	Z,ZK	5
Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current.			
21LAP2	Aviation English for Professional Pilot 2	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.			
21LDA2	Aircraft 2	Z,ZK	4
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.			
21LPTY-E	Aircraft Operations	ZK	2
Aircraft oepration for cruise, approach, final approach , missed approach, hodling, PBN, augmented GNSS, aviation charts for IFR flight			
21PUP1	Instrumentation 1	ZK	3
Basic construction principles of instrumentation, electronic displays, basics of measurement - sensitivity and errors, engine instrumentation (pressure gauges, thermometers, fuel quantity and fuel flow measurement, torque and EPR measurement), indication in other aircraft systems (position, fire and icing indication, vibration monitoring, pressurisation system monitoring, aerometric instruments (sensors, altimeter, air speed indicator, VSI, ADC).			
21RNV	Radionavigation	Z,ZK	4
Ground direction finder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SSR and transponder. Radar utilization for navigation during the flight. Area navigation (RNAV) - general philosophy, gauges and equipment, indication and sensors for RNAV, VOR/DME (RNAV). Autopilot and flight director. Satellite navigation, systems and backups.			
21VL-E	Aircraft Performance	Z,ZK	4
Basic terms of aircraft performance, basic characteristic speeds, runway characteristics, single and multiengine aircraft performance class B, aircraft performance class A, take off and landing performance, after take off and missed approach climb, noise abatement procedures, range of aircraft, drift down, MEL, ETOPS.			
21LPX2	Flight Training 2	KZ	2
Practical exercises for improvement of theoretical knowledge in a range MEP land and IFR from the relevant subjects in accordance with Part FCL. The basics of instrument flying, dual exercises, emergency 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.			

15JZ3A	Foreign Language - English 3	Z	3

Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study pilot. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written form. Technical texts and their features; terminology.

Code of the group: 4S-BP-PIL-CS-24/25
Name of the group: 4th Sem. Bachelor Full-Time PIL (CS) from 2024/25
Requirement credits in the group: In this group you have to gain 28 credits
Requirement courses in the group: In this group you have to complete 10 courses
Credits in the group: 28
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
11EMO	**Electromagnetic Field and Optics** *Oldřich Hykš, Jana Kuklová, Zuzana Malá, Tomáš Vítů **Zuzana Malá** Pavel Demo (Gar.)*	Z,ZK	4	2P+1C	L	z
21AFL1-E	**Advanced Flying 1** *Viktor Valenta **Viktor Valenta***	Z,ZK	3	2P+1C	L	z
21MEE1	**Meteorology 1** *Iveta Kameníková **Iveta Kameníková***	Z,ZK	3	2P+2C	L	z
21PML-E	**Flight Planning and Monitoring** *Anna Polánecká **Anna Polánecká***	Z,ZK	3	2P+2C	L	z
21PRJ2	**Instrumentation 2** *Pavel Hovorka **Pavel Hovorka***	ZK	3	2P+0C	L,Z	z
14AP	**Algorithm and Programming** *Vít Fábera, Michal Jeřábek **Michal Jeřábek** Vít Fábera (Gar.)*	KZ	4	2P+2C	L	z
21IFRC	**IFR Communication** *Milan Kameník **Milan Kameník***	KZ	2	1P+1C	L	z
21LPX3	**Flight Training 3** *Iveta Kameníková, Jakub Hospodka*	KZ	2	0P+1C	L	z
21SBU1	**Bachelor Thesis Seminar 1** *Lenka Hanáková **Lenka Hanáková** Lenka Hanáková (Gar.)*	Z	1	1P+0C	L	z
15JZ4A	**Foreign Language - English 4** *Peter Morpuss, Lenka Monková, Marie Michlová, Eva Rezlerová, Markéta Musilová, Markéta Vojanová, Jitka Heřmanová, Jan Feit, Barbora Horáčková*	Z,ZK	3	0P+4C	L	z

Characteristics of the courses of this group of Study Plan: Code=4S-BP-PIL-CS-24/25 Name=4th Sem. Bachelor Full-Time PIL (CS) from 2024/25

11EMO	Electromagnetic Field and Optics	Z,ZK	4

Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.

21AFL1-E	Advanced Flying 1	Z,ZK	3

This course supplements Learning objectives laid down in Commission Regulation (EU) No 1178/2011. Instrument flying introduction, threat and error management, procedures for instrument departures, enroute flight, holdings and arrivals, instrument approaches, performance based navigation, weather consideration, flight planning and monitoring, effective briefings, phraseology differences, lost communication procedures, CFIT prevention, decompresion

21MEE1	Meteorology 1	Z,ZK	3

Composition, size and vertical structure of the atmosphere. QNH, QFE, QFF, QNE, density and height measurements. Wind, moisture and adiabatic processes. Creating and types of cloud, fog, haze. Precipitation. Types of air masses, atmospheric fronts. Distribution of pressure, cyclones, anticyclones, non-frontal cyclone.

21PML-E	Flight Planning and Monitoring	Z,ZK	3

Flight planning for VFR flights for small, single- and multi-engine aeroplanes

21PRJ2	Instrumentation 2	ZK	3

Compass, gyroscopic instruments (turn indicator, attitude indicator, directional gyro), inertial instruments, recording and monitoring systems, warning systems (TCAS, GPWS), AFCS (autopilot, flight director, autothrust), FMS, flight envelope protection, communication systems, flight computers.

14AP	Algorithm and Programming	KZ	4

Computers, data representation, algorithms (conditions, loops), high level programming languages, introduction to Python language, lists, searching and sorting algorithms, abstract data types (set, tupple, dictionary), regular expressions, libraries to process date and time, set arrays, functions and procedures, working with files, instroduction into object oriented programming

21IFRC	IFR Communication	KZ	2

Definitions, Terms, Abbreviations, Q-codes, Transport message categories, Transmission technique,, Transmission of letters, numbers, time and symbols, Standard words and phrases for IFR flights, Radar procedural phraseology, Standard phraseology and Morse code, Practical IFR radiotelephony procedures in normal and emergency situations.

21LPX3	Flight Training 3	KZ	2

Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowledge

21SBU1	Bachelor Thesis Seminar 1	Z	1

Types of thesis (review, applied research, basic research, thesis dealing with design proposals). Working with citation sources (citation sources, citation databases, citation styles, how to cite). Analyzing the state of the art (standards of research writing). Defining the limitations of the state of the art. Introduction to the thesis methodology.

15JZ4A	Foreign Language - English 4	Z,ZK	3

Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study - pilot. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written form. Technical texts and their features; terminology.

Code of the group: 5S-BP-PIL-CS-25/26
Name of the group: 5th Sem. Bachelor Full-Time PIL (CS) from 2025/26
Requirement credits in the group: In this group you have to gain 24 credits
Requirement courses in the group: In this group you have to complete 8 courses
Credits in the group: 24
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
21LEY2	**Air Law 2**	ZK	3	3P+0C	Z	z
21LILE	**Human Factors in Aviation**	KZ	3	4P+0C	Z	z
21MET2	**Meteorology 2** *Iveta Kameníková* ***Iveta Kameníková***	Z,ZK	5	2P+2C	L,Z	z
21PPY1-E	**Operational Procedures 1** *Ladislav Capoušek* ***Ladislav Capoušek***	Z,ZK	3	2P+1C	Z	z
21PRKP-E	**Practical Flight Planning** *Anna Polánecká, Jakub Hospodka* ***Ota Hajzler***	Z,ZK	4	2P+2C	Z	z
21ZYT2	**Principles of Flight 2** *Přemysl Vávra, Jakub Trýb* ***Jakub Trýb***	Z,ZK	3	2P+1C	Z	z
21LPX4	**Flight Training 4** *Iveta Kameníková, Jakub Hospodka, Jakub Charezinski, Roman Matyáš* ***Iveta Kameníková***	KZ	2	0P+1C	Z	z
21SBU2	**Bachelor Thesis Seminar 2** *Vladimír Socha, Lenka Hanáková* ***Vladimír Socha***	Z	1	1P+0C	Z	z

Characteristics of the courses of this group of Study Plan: Code=5S-BP-PIL-CS-25/26 Name=5th Sem. Bachelor Full-Time PIL (CS) from 2025/26

21LEY2	Air Law 2	ZK	3
The course is focused on the issue of commercial commercial air transport in accordance with applicable European legislation. Within the course, the issue of EC regulations is analyzed in detail File no. 965/2012, regulation no. 1321/2014 and ICAO Annexes, which significantly affect the form, method and structure of commercial air transport and transportation.			
21LILE	Human Factors in Aviation	KZ	3
Human factors in aviation. Breathing, atmosphere. Heart and circulation. Radiation. Human sensory organs, nervous system. Vision, hearing, illusions. Health and hygiene, fatigue, wakefulness and sleep. Information processing, human error. Cockpit management. Behaviour and workload. Automation. Core competencies.			
21MET2	Meteorology 2	Z,ZK	5
Climatic zones, tropical climatology, meteorological situation of mid-latitudes. Icing, turbulence, wind shear, thunderstorms, tornadoes, flying in the stratosphere, mountain areas, reducing visibility phenomena. Observation, weather maps, important information for flight planning.			
21PPY1-E	Operational Procedures 1	Z,ZK	3
Annex 6, PART-OPS, Air operator, Aircraft operation, Operating procedures, Airplane equipment, Flight management, Airspace			
21PRKP-E	Practical Flight Planning	Z,ZK	4
1. mass and balance 2. fuel planning, PDP, RIF,RCF 3. ATC FPL 4. Preflight procedure and briefing-NOTAM + weather(METAR,SIGMET..) 5. Jeppesen charts 6. VFR flight planning-theory 7. VFR flight planning- ICAO mapa, softwary 8. IFR flight planning- theory 9. PBN- RNAV, RNP 10. IFR flight planning- softwary 11. MRJT- OFP 12. ETOPS a NAT HLA 13. PET, PSR, PNR 14. practical VFR a IFR flight planning			
21ZYT2	Principles of Flight 2	Z,ZK	3
Static & dynamic longitudinal stability, neutral point, location of centre of gravity, static directional & lateral stability, dynamic directional & lateral stability, control pitch (longitudinal), yaw (directional) & 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.			
21LPX4	Flight Training 4	KZ	2
Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowledge			
21SBU2	Bachelor Thesis Seminar 2	Z	1
Methodology of thesis writing (introduction, analysis of the current state, specification of the problem, objectives and hypotheses). Definition of materials and methods, approach to obtaining results, presentation and discussion of results, formulation of thesis conclusions. Basics of LaTeX, working with LaTeX and Word template.			

Code of the group: 6S-BP-PIL-CS-25/26
Name of the group: 6th Sem. Bachelor Full-Time PIL (CS) from 2025/26
Requirement credits in the group: In this group you have to gain 28 credits
Requirement courses in the group: In this group you have to complete 11 courses
Credits in the group: 28
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
11MSP	**Modeling of Systems and Processes** *Bohumil Kovář, Lucie Kárná* ***Bohumil Kovář*** *Bohumil Kovář (Gar.)*	Z,ZK	4	2P+2C+12B	L	z
21ELDO	**Air Transport Economy**	Z,ZK	3	3P+1C	L	z

21KPSL	**Communication and Surveillance Systems in Aviation** *Stanislav Pleninger* ***Stanislav Pleninger***	ZK	3	2P+0C	L	z
21LCM	**Aircraft Engines** *Tomáš Parýzek, Daniel Hanus, Vladimír Machula* ***Daniel Hanus***	Z,ZK	3	2P+1C	Z,L	z
21LEIS	**Aerodromes** *Ladislav Capoušek, Petr Líkař, Slobodan Stojić* ***Ladislav Capoušek*** *Slobodan Stojić (Gar.)*	Z,ZK	3	2P+1C	L	z
21PKL2-E	**Advanced Flying 2** *Viktor Valenta* ***Viktor Valenta***	ZK	2	2P+0C	L,Z	z
21PRY2-E	**Operational Procedures 2**	ZK	3	3P+0C	L	z
21KSA	**KSA Assessment**	KZ	2	0P+2C	L	z
21LPX5	**Flight Training 5** *Iveta Kameníková, Jakub Hospodka*	KZ	2	0P+1C	L	z
21LVIP	**MCC - Multicrew Cooperation**	KZ	2	2P+1C	L	z
21SBU3	**Bachelor Thesis Seminar 3** *Lenka Hanáková* ***Lenka Hanáková***	Z	1	1P+0C	L	z

Characteristics of the courses of this group of Study Plan: Code=6S-BP-PIL-CS-25/26 Name=6th Sem. Bachelor Full-Time PIL (CS) from 2025/26

11MSP	Modeling of Systems and Processes	Z,ZK	4
System and subsystem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differential and differential equations. Linear and nonlinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function. Stability of LTI systems. Discretization of continuous systems. System interconnection.			
21ELDO	Air Transport Economy	Z,ZK	3
21KPSL	Communication and Surveillance Systems in Aviation	ZK	3
The course acquaints students with communication and surveillance systems both from the perspective of the air segment (aircraft systems) and from the perspective of ground infrastructure (ground systems), which together create the necessary prerequisites for ensuring safe, efficient and economical air transport.			
21LCM	Aircraft Engines	Z,ZK	3
Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational characteristics. Engine control.			
21LEIS	Aerodromes	Z,ZK	3
Basic definitions. Applicability. Airport design. Reference code. Declared distances of runways (RWY). Taxiways and aprons. Clearway. Stopway. Markings of movement areas. Markings. Signs. Markers. Visual aids for denoting obstacles. Obstacle restriction, removal. Visual aids for navigation, lights, approach lighting systems. Visual approach slope indicator systems. Runway lights. Taxiway lights. Visual aids for denoting obstacles.			
21PKL2-E	Advanced Flying 2	ZK	2
Learning objectives are based on requirements laid down in Commission Regulation (EU) No 1178/2011, subjects 081 and 100. Multi engine aircraft and jet aircraft characteristics, energy management, stabilized approach and landing errors, jet - performance - engine out flight, jet - handling - engine out flight go around, UPRT, volcanic ash, cold weather operations, operation manuals, MEL procedures and deviations, flight time limitation			
21PRY2-E	Operational Procedures 2	ZK	3
Flight documentation and manuals, Icing and protection of the aircraft against icing, noise abatement procedures, Abnormal and emergency situations and procedures, Runway contamination			
21KSA	KSA Assessment	KZ	2
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.			
21LPX5	Flight Training 5	KZ	2
Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowledge			
21LVIP	MCC - Multicrew Cooperation	KZ	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.			
21SBU3	Bachelor Thesis Seminar 3	Z	1
Formal and graphic design of the thesis. Data collection and presentation, basic statistical reasoning, validation of results and designs. Achieving the objectives of the thesis and evaluation of hypothesis tests. Preparation of the presentation, principles of presentation of the thesis.			

Name of the block: Semestrální projekt
Minimal number of credits of the block: 6
The role of the block: ZP

Code of the group: X1-BP-PIL-CS-22/23
Name of the group: Research Groups Bachelor Full-Time PIL (CS) from 2022/23
Requirement credits in the group: In this group you have to gain 6 credits
Requirement courses in the group: In this group you have to complete 3 courses
Credits in the group: 6
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
11X31	**Project 1** *Michal Matowicki* ***Michal Matowicki***	Z	2	0P+1C	L	ZP
12X31	**Project 1** *Dagmar Kočárková, Martin Höfler*	Z	2	0P+1C	L	ZP
14X31	**Project 1**	Z	2	0P+1C	L	ZP
15X31	**Project 1**	Z	2	0P+1C	L	ZP
16X31	**Project 1**	Z	2	0P+1C	L	ZP
17X31	**Project 1** *Roman Štěrba, Milan Kříž, Václav Baroch, Daniel Pilát, Michal Drábek, Alexandra Dvořáčková, Veronika Faifrová, Petr Fridrišek, Rudolf Franz Heidu, ... Václav Baroch (Gar.)*	Z	2	0P+1C	L	ZP
18X31	**Project 1**	Z	2	0P+1C	L	ZP
20X31	**Project 1**	Z	2	0P+1C	L	ZP
21X31	**Project 1** *Ladislav Capoušek, Iveta Kameníková, Jakub Hospodka, Lenka Hanáková, Stanislav Pleninger, Slobodan Stojić, Jakub Kraus, Andrej Lališ, Terézia Pilmannová, ...*	Z	2	0P+1C	L	ZP
22X31	**Project 1**	Z	2	0P+1C	L	ZP
23X31	**Project 1**	Z	2	0P+1C	L	ZP
11X32	**Project 2**	Z	2	0P+2C	Z	ZP
12X32	**Project 2**	Z	2	0P+2C	Z	ZP
14X32	**Project 2** *Jana Kaliková, Jan Krčál*	Z	2	0P+2C	Z	ZP
15X32	**Project 2**	Z	2	0P+2C	Z	ZP
16X32	**Project 2** *Petr Bouchner, Tereza Kunclová*	Z	2	0P+2C	Z	ZP
17X32	**Project 2** *Roman Štěrba, Milan Kříž, Václav Baroch, Daniel Pilát, Michal Drábek, Alexandra Dvořáčková, Veronika Faifrová, Rudolf Franz Heidu, Tomáš Horák, ...*	Z	2	0P+2C	Z	ZP
18X32	**Project 2**	Z	2	0P+2C	Z	ZP
20X32	**Project 2** *Vladimír Faltus*	Z	2	0P+2C	Z	ZP
21X32	**Project 2** *Radoslav Zozuľák, Vladimír Socha, Iveta Kameníková, Jakub Hospodka, Viktor Valenta, Lenka Hanáková, Stanislav Pleninger, Slobodan Stojić, Jakub Kraus, ...*	Z	2	0P+2C	Z	ZP
22X32	**Project 2**	Z	2	0P+2C	Z	ZP
23X32	**Project 2**	Z	2	0P+2C	Z	ZP
11X33	**Project 3**	Z	2	0P+1C	L	ZP
12X33	**Project 3** *Dagmar Kočárková, Martin Höfler, Josef Kocourek, Tomáš Padělek, Jakub Zajíček, Ivo Novotný*	Z	2	0P+1C	L	ZP
14X33	**Project 3** *Jana Kaliková, Jan Krčál*	Z	2	0P+1C	L	ZP
15X33	**Project 3**	Z	2	0P+1C	L	ZP
16X33	**Project 3** *Petr Bouchner, Dmitrij Rožděstvenský*	Z	2	0P+1C	L	ZP
17X33	**Project 3** *Roman Štěrba, Milan Kříž, Václav Baroch, Daniel Pilát, Michal Drábek, Alexandra Dvořáčková, Veronika Faifrová, Petr Fridrišek, Rudolf Franz Heidu, ... Václav Baroch (Gar.)*	Z	2	0P+1C	L	ZP
18X33	**Project 3** *Tomáš Fíla*	Z	2	0P+1C	L	ZP
20X33	**Project 3**	Z	2	0P+1C	L	ZP
21X33	**Project 3** *Radoslav Zozuľák, Milan Kameník, Iveta Kameníková, Jakub Hospodka, Viktor Valenta, Lenka Hanáková, Stanislav Pleninger, Slobodan Stojić, Andrej Lališ, ...*	Z	2	0P+1C	L	ZP
22X33	**Project 3**	Z	2	0P+1C	L	ZP
23X33	**Project 3**	Z	2	0P+1C	L	ZP

Characteristics of the courses of this group of Study Plan: Code=X1-BP-PIL-CS-22/23 Name=Research Groups Bachelor Full-Time PIL (CS) from 2022/23

11X31	Project 1	Z	2
12X31	Project 1	Z	2
14X31	Project 1	Z	2

15X31	Project 1	Z	2
16X31	Project 1	Z	2
17X31	Project 1	Z	2
18X31	Project 1	Z	2
20X31	Project 1	Z	2
21X31	Project 1	Z	2
22X31	Project 1	Z	2
23X31	Project 1	Z	2
11X32	Project 2	Z	2
12X32	Project 2	Z	2
14X32	Project 2	Z	2
15X32	Project 2	Z	2
16X32	Project 2	Z	2
17X32	Project 2	Z	2
18X32	Project 2	Z	2
20X32	Project 2	Z	2
21X32	Project 2	Z	2
22X32	Project 2	Z	2
23X32	Project 2	Z	2
11X33	Project 3	Z	2
12X33	Project 3	Z	2
14X33	Project 3	Z	2
15X33	Project 3	Z	2
16X33	Project 3	Z	2
17X33	Project 3	Z	2
18X33	Project 3	Z	2
20X33	Project 3	Z	2
21X33	Project 3	Z	2
22X33	Project 3	Z	2
23X33	Project 3	Z	2

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 4
The role of the block: PV

Code of the group: Y1-BP-PIL-CS-24/25
Name of the group: Comp. Sel. Courses Bachelor Full-Time PIL (CS) from 2024/25
Requirement credits in the group: In this group you have to gain 4 credits
Requirement courses in the group: In this group you have to complete 2 courses
Credits in the group: 4
Note on the group:

Code	**Name of the course / Name of the group of courses** ***(in case of groups of courses the list of codes of their members)*** *Tutors,* ***authors*** *and guarantors (gar.)*	**Completion**	**Credits**	**Scope**	**Semester**	**Role**
15Y1EH	**European Integration within Historical Context** *Jan Feit*	KZ	2	2P+0C	Z	PV
15Y1HE	**Work Hygiene and Ergonomics in Traffic** *Petr Musil*	KZ	2	2P+0C	Z	PV
15Y1ZV	**East-West dichotomy: Prelude to the Cold War** *Marie Michlová*	KZ	2	2P+0C	Z	PV
18Y1AM	**Anatomy, Mobility and Safety of Man**	KZ	2	2P+0C	Z	PV
18Y1EM	**Experimental Methods in Mechanics** *Daniel Kytýř* ***Daniel Kytýř*** *Daniel Kytýř (Gar.)*	KZ	2	2P+0C	Z	PV
21Y1MP	**Matlab for project-oriented study** *Vladimír Socha, Lenka Hanáková* ***Lenka Hanáková***	KZ	2	2P+0C	Z	PV
21Y1OH	**Airline Business and Operations** *Eva Endrizalová, Peter Olexa* ***Peter Olexa***	KZ	2	2P+0C	Z	PV
15Y1BO	**Work Safety and Health Protection in Transportation** *Petr Musil*	KZ	2	2P+0C	L	PV
15Y1HL	**History of Civil Aviation** *Vladimír Plos*	KZ	2	2P+0C	L	PV
17Y1LL	**Logistics of Passenger and Freight Air Transport** *Petra Skolilová Petra Skolilová (Gar.)*	KZ	2	2P+0C	L	PV

18Y1MT	**Engineering Materials** *Jaroslav Valach* ***Jaroslav Valach*** *Jaroslav Valach (Gar.)*	KZ	2	2P+0C	L	PV
18Y1PD	**Computer Simulations in Transportation**	KZ	2	2P+0C	L	PV
18Y1PS	**Computer Simulations in Mechanics** *Petr Zlámal* ***Petr Zlámal*** *Petr Zlámal (Gar.)*	KZ	2	2P+0C	L	PV
21Y1BC	**Aviation safety and security** *Andrej Liš, Natalia Guskova, Kateřina Grötschelová* ***Andrej Liš***	KZ	2	2P+0C	L	PV
21Y1BS	**Unmanned aircraft systems 1** *Jakub Kraus, Michal Černý, Tomáš Tlučhoř*	KZ	2	2P+0C	L	PV
21Y1RZ	**Human Resources Management**	KZ	2	2P+0C	L	PV
00Y1XB	**Active participation in a scientific project, workshop, short-term trip abroad** *Patrik Horažďovský* ***Patrik Horažďovský*** *Patrik Horažďovský (Gar.)*	KZ	2	2P+0C		PV

Characteristics of the courses of this group of Study Plan: Code=Y1-BP-PIL-CS-24/25 Name=Comp. Sel. Courses Bachelor Full-Time PIL (CS) from 2024/25

15Y1EH	European Integration within Historical Context	KZ	2

Versailles system, formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism. Little Entente, its principles and goals. Europe after Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and its consequences for Europe. New quality of French-German relationship - a driving power of starting European integration.

15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2

Basic knowledge of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these factors on health of workers. Creation and protection of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to possibilities and skills of a man. Practical examples from the field of transportation; relevant legislature.

15Y1ZV	East-West dichotomy: Prelude to the Cold War	KZ	2

Historical prologue, evolution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and continuity of the international relations in the end of 19th century and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, the causes and consequences. Economic and financial history. Social changes. Discussions on texts, sources.

18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2

Survey of tissues. Anatomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation and nervous system. Structure and biomechanics of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured man and his treatment. Human joint prostheses. Protective means and traffic safety regulations.

18Y1EM	Experimental Methods in Mechanics	KZ	2

The purpose and role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive testing of materials. Design of experimental procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fatigue and lifetime prediction. Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.

21Y1MP	Matlab for project-oriented study	KZ	2

The subject's syllabus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises will be prepared according to particular examples, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvement of students' Matlab skills.

21Y1OH	Airline Business and Operations	KZ	2

The course provides a comprehensive view of the commercial, operational and transportation activities of air transport companies. It focuses on the organizational structure of companies, various aspects of their strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of transportation processes. It provides a basic view of the economic aspects of air transport.

15Y1BO	Work Safety and Health Protection in Transportation	KZ	2

Fundamental legislative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health protection programmes, health insurance of home and foreign business trips, statistics, working practice.

15Y1HL	History of Civil Aviation	KZ	2

Beginnings of flying, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of airports in the Czech Republic. World airports. Famous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era of aviation. Golden era of civil aviation. Modern era of civil aviation. Airline companies. Supersonic flying.

17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2

Logistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transport process passengers and air cargo. Information systems in air transport. Global distribution systems.

18Y1MT	Engineering Materials	KZ	2

Systematic overview of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and composites, attention is paid to biological materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's selection charts.

18Y1PD	Computer Simulations in Transportation	KZ	2

Principles and overview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model development and adaptation of geometry from other CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions and application of the load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.

18Y1PS	Computer Simulations in Mechanics	KZ	2

Principles and overview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model development and adaptation of geometry from other CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions and application of the load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.

21Y1BC	Aviation safety and security	KZ	2

History of safety and security development in aviation. Modern tools for safety and security management. Research and development of safe and secure systems.

21Y1BS	Unmanned aircraft systems 1	KZ	2

Unmanned Aviation Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division. Operational risks and operational procedures. Practical flights.

21Y1RZ	Human Resources Management	KZ	2

The position of human resources in the organization and related disciplines file. Substance, importance and challenges of human resources management. Internal and external environment of human resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and remuneration of staff. Positioning, dismissal and redundancies of employees. Education of employees. Planning career management.

00Y1XB	Active participation in a scientific project, workshop, short-term trip abroad	KZ	2

Name of the block: Elective courses
Minimal number of credits of the block: 0
The role of the block: V

Code of the group: VP-BP-PIL-CS
Name of the group: Bachelor Full-Time PIL (CS) voluntary
Requirement credits in the group:
Requirement courses in the group:
Credits in the group: 0
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
11SEMO	**Seminar of Electromagnetic Field and Optics** *Oldřich Hykš, Zuzana Malá, Tomáš Vítů* ***Zuzana Malá*** *Zuzana Malá (Gar.)*	Z	0	0P+2C	L	V
11SCFZ	**Seminar of Physics** *Oldřich Hykš, Jana Kuklová, Zuzana Malá, Tomáš Vítů* ***Zuzana Malá*** *Zuzana Malá (Gar.)*	Z	0	0P+2C	Z	V

Characteristics of the courses of this group of Study Plan: Code=VP-BP-PIL-CS Name=Bachelor Full-Time PIL (CS) voluntary

11SEMO	Seminar of Electromagnetic Field and Optics	Z	0
Solving problems on electric and magnetic field, electromagnetic field, optics and basics of solid-state physics.			
11SCFZ	Seminar of Physics	Z	0
Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
00Y1XB	Active participation in a scientific project, workshop, short-term trip abroad	KZ	2
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. Indefinite integral, Newton integral, Riemann integral, improper Riemann integral. First-order differential equations, linear differential equations.			
11CAL2	Calculus 2	Z,ZK	5
Linear differential equations and their systems, differential calculus of functions of several real variables. Riemann integral in Rn. Line and surface integrals.			
11EMO	Electromagnetic Field and Optics	Z,ZK	4
Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.			
11FYZ	Physics	Z,ZK	5
Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current.			
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.			
11MSP	Modeling of Systems and Processes	Z,ZK	4
System and subsystem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differential and differential equations. Linear and nonlinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function. Stability of LTI systems. Discretization of continuous systems. System interconnection.			
11SCFZ	Seminar of Physics	Z	0
Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.			
11SEMO	Seminar of Electromagnetic Field and Optics	Z	0
Solving problems on electric and magnetic field, electromagnetic field, optics and basics of solid-state physics.			
11STAT	Statistics	Z,ZK	4
Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparametric tests Regression and correlation analysis			
11X31	Project 1	Z	2
11X32	Project 2	Z	2
11X33	Project 3	Z	2
12X31	Project 1	Z	2

12X32	Project 2	Z	2
12X33	Project 3	Z	2
14AP	Algorithm and Programming	KZ	4
Computers, data representation, algorithms (conditions, loops), high level programming languages, introduction to Python language, lists, searching and sorting algorithms, abstract data types (set, tupple, dictionary), regular expressions, libraries to process date and time, set arrays, functions and procedures, working with files, instroduction into object oriented programming			
14X31	Project 1	Z	2
14X32	Project 2	Z	2
14X33	Project 3	Z	2
15JP1A	Foreign Language - English for PIL 1	Z	2
Improvement of language skills within spoken and written form of the language with the focus on aviation English. Practice of comprehension of authentic materials. Improvement of pronunciation and fluency of spoken language. Aviation phraseology in combination with general English. Revision and improvement of grammar structures, syntax and vocabulary. Topics related to air transport and occupation of pilot and air staff.			
15JP2A	Foreign Language - English for PIL 2	KZ	3
Improvement of language skills within spoken and written form of the language with the focus on aviation English. Practice of comprehension of authentic materials. Improvement of pronunciation and fluency of spoken language. Aviation phraseology in combination with general English. Revision and improvement of grammar structures, syntax and vocabulary. Topics related to air transport and occupation of pilot and air staff.			
15JZ3A	Foreign Language - English 3	Z	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study pilot. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written form. Technical texts and their features; terminology.			
15JZ4A	Foreign Language - English 4	Z,ZK	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study - pilot. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written form. Technical texts and their features; terminology.			
15X31	Project 1	Z	2
15X32	Project 2	Z	2
15X33	Project 3	Z	2
15Y1BO	Work Safety and Health Protection in Transportation	KZ	2
Fundamental legislative, definition of terms, risks and possible health damage, working conditions and health protection with focus on transportation. Health protection programmes, health insurance of home and foreign business trips, statistics, working practice.			
15Y1EH	European Integration within Historical Context	KZ	2
Versailles system, formation of new states. Europe and the powers, League of Nations. European policy in the 1920s. Fascism, nacism, communism. Little Entente, its principles and goals. Europe after Hitler's getting to power, system of bilateral agreements. Decline of the LN. Rearrangement of powers during WWII. Cold war and its consequences for Europe. New quality of French-German relationship - a driving power of starting European integration.			
15Y1HE	Work Hygiene and Ergonomics in Traffic	KZ	2
Basic knowledge of occupational hygiene and ergonomics, and their application in transport. Working environment factors, and the influence of these factors on health of workers. Creation and protection of working conditions that do not damage public health. Mutual links: man-machine-environment. Adaptation of technology to possibilities and skills of a man. Practical examples from the field of transportation; relevant legislature.			
15Y1HL	History of Civil Aviation	KZ	2
Beginnings of flying, development of aircrafts lighter than air. Beginnings of aircrafts heavier than air. Czechoslovak aviation pioneers. Development of airports in the Czech Republic. World airports. Famous aviators. Helicopters. CSA airplanes. Development of aircrafts in Czechoslovakia between the years 1945-1989. Classic era of aviation. Golden era of civil aviation. Modern era of civil aviation. Airline companies. Supersonic flying.			
15Y1ZV	East-West dichotomy: Prelude to the Cold War	KZ	2
Historical prologue, evolution of the "West" and "East" from the 1500s. Focus on the history in the period between 1850 nad 1950. Milestones and continuity of the international relations in the end of 19th century and the beginning of the 20th century. Revolutions, the causes and consequences. Scientific and technological progress, the causes and consequences. Economic and financial history. Social changes. Discussions on texts, sources.			
16X31	Project 1	Z	2
16X32	Project 2	Z	2
16X33	Project 3	Z	2
17X31	Project 1	Z	2
17X32	Project 2	Z	2
17X33	Project 3	Z	2
17Y1LL	Logistics of Passenger and Freight Air Transport	KZ	2
Logistics airline passenger and cargo. Aircraft and airport terminals for passenger and cargo transport. Airlines in terms of logistics systems. Aerial transport process passengers and air cargo. Information systems in air transport. Global distribution systems.			
18X31	Project 1	Z	2
18X32	Project 2	Z	2
18X33	Project 3	Z	2
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2
Survey of tissues. Anatomical structure and growth of bones. Articular joint. Remodelling of bone tissue. Anatomical structure of muscles. Blood circulation and nervous system. Structure and biomechanics of muscular-skeletal system. Injury of human organs and musculo-skeletal system during traffic accidents. Mobility of ill and injured man and his treatment. Human joint prostheses. Protective means and traffic safety regulations.			
18Y1EM	Experimental Methods in Mechanics	KZ	2
The purpose and role of experimental mechanics. Sensors for mechanical testing. Overview of experimental methods. Destructive and non-destructive testing of materials. Design of experimental procedures and sample preparation. Tensile and bending tests. Electrical resistance strain gages. Optical based strain measurement. Fatigue and lifetime prediction. Instrumented hardness testing. Introduction to electron microscopy. Errors in measurement.			

18Y1MT	Engineering Materials	KZ	2
Systematic overview of main classes of materials used in technical design. In addition to main classes of materials, i. e. metals, ceramics, polymers and composites, attention is paid to biological materials and to biomimetics. Integral approach to material selection process is also demonstrated based on so called Ashby's selection charts.			
18Y1PD	Computer Simulations in Transportation	KZ	2
Principles and overview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model development and adaptation of geometry from other CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions and application of the load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.			
18Y1PS	Computer Simulations in Mechanics	KZ	2
Principles and overview of tools for stress analysis of structures. Numerical methods in mechanics, finite element method. Geometric model development and adaptation of geometry from other CAE systems. Assignment of material properties. The types of elements and their use. Discretization of solid model. Boundary conditions and application of the load. Basic tasks of structural and modal analysis. Introduction to complex nonlinear problems.			
20X31	Project 1	Z	2
20X32	Project 2	Z	2
20X33	Project 3	Z	2
21AFL1-E	Advanced Flying 1	Z,ZK	3
This course supplements Learning objectives laid down in Commission Regulation (EU) No 1178/2011. Instrument flying introduction, threat and error management, procedures for instrument departures, enroute flight, holdings and arrivals, instrument approaches, performance based navigation, weather consideration, flight planning and monitoring, effective briefings, phraseology differences, lost communication procedures, CFIT prevention, decompresion			
21CON-E	Navigation Calculations	KZ	2
Projection of maps; times - UTC, Zulu, LT; positioning; sunrise and sunset; distance calculation; projection; maps and symbols; declination; speed; wind components and wind drift; VFR route selection; position plotting.			
21ELDO	Air Transport Economy	Z,ZK	3
21HAV-E	Weight and Balance of Aircraft	Z,ZK	3
Basic terms of mass and balance, basic aircraft masses, weighing and maximum aircrafts masses, overloading of aircraft, standard weights of passenger, baggage and crew, determination of load of aircraft, flight documentation - loadsheet, trimsheet, securing of load, determination of centre of gravity, influence of centre of gravity position on aircarft performance.			
21IFRC	IFR Communication	KZ	2
Definitions, Terms, Abbreviations, Q-codes, Transport message categories, Transmission technique,, Transmission of letters, numbers, time and symbols, Standard words and phrases for IFR flights, Radar procedural phraseology, Standard phraseology and Morse code, Practical IFR radiotelephony procedures in normal and emergency situations.			
21KPSL	Communication and Surveillance Systems in Aviation	ZK	3
The course acquaints students with communication and surveillance systems both from the perspective of the air segment (aircraft systems) and from the perspective of ground infrastructure (ground systems), which together create the necessary prerequisites for ensuring safe, efficient and economical air transport.			
21KSA	KSA Assessment	KZ	2
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.			
21LAP1	Aviation English for Professional Pilot 1	Z	2
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.			
21LAP2	Aviation English for Professional Pilot 2	Z,ZK	3
Exercises focused on repetition and smoother communication within VFR and IFR communication, communication with technical staff at the airport, a fluent conversation within the airlines.			
21LCM	Aircraft Engines	Z,ZK	3
Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational characteristics. Engine control.			
21LDA1	Aircraft 1	Z,ZK	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.			
21LDA2	Aircraft 2	Z,ZK	4
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.			
21LEIS	Aerodromes	Z,ZK	3
Basic definitions. Applicability. Airport design. Reference code. Declared distances of runways (RWY). Taxiways and aprons. Clearway. Stopway. Markings of movement areas. Markings. Signs. Markers. Visual aids for denoting obstacles. Obstacle restriction, removal. Visual aids for navigation, lights, approach lighting systems. Visual approach slope indicator systems. Runway lights. Taxiway lights. Visual aids for denoting obstacles.			
21LEY1	Air Law 1	ZK	3
Air Law; ICAO Doc 7300; ICAO Doc 7500 and 9626; International Organizations: ICAO, IATA, EASA, EUROCONTROL; airworthiness; ICAO Annexes; Commission regulation (EU) 965/2012.			
21LEY2	Air Law 2	ZK	3
The course is focused on the issue of commercial commercial air transport in accordance with applicable European legislation. Within the course, the issue of EC regulations is analyzed in detail File no. 965/2012, regulation no. 1321/2014 and ICAO Annexes, which significantly affect the form, method and structure of commercial air transport and transportation.			
21LILE	Human Factors in Aviation	KZ	3
Human factors in aviation. Breathing, atmosphere. Heart and circulation. Radiation. Human sensory organs, nervous system. Vision, hearing, illusions. Health and hygiene, fatigue, wakefulness and sleep. Information processing, human error. Cockpit management. Behaviour and workload. Automation. Core competencies.			
21LPTY-E	Aircraft Operations	ZK	2
Aircraft oepration for cruise, approach, final approach , missed approach, hodling, PBN, augmented GNSS, aviation charts for IFR flight			
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.			

21LPX2	Flight Training 2	KZ	2
Practical exercises for improvement of theoretical knowledge in a range MEP land and IFR from the relevant subjects in accordance with Part FCL. The basics of instrument flying, dual exercises, emergency 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.			
21LPX3	Flight Training 3	KZ	2
Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowledge			
21LPX4	Flight Training 4	KZ	2
Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowledge			
21LPX5	Flight Training 5	KZ	2
Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowledge			
21LVIP	MCC - Multicrew Cooperation	KZ	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.			
21MEE1	Meteorology 1	Z,ZK	3
Composition, size and vertical structure of the atmosphere. QNH, QFE, QFF, QNE, density and height measurements. Wind, moisture and adiabatic processes. Creating and types of cloud, fog, haze. Precipitation. Types of air masses, atmospheric fronts. Distribution of pressure, cyclones, anticyclones, non-frontal cyclone.			
21MET2	Meteorology 2	Z,ZK	5
Climatic zones, tropical climatology, meteorological situation of mid-latitudes. Icing, turbulence, wind shear, thunderstorms, tornadoes, flying in the stratosphere, mountain areas, reducing visibility phenomena. Observation, weather maps, important information for flight planning.			
21OBN	General Navigation	ZK	5
The Earth: latitude and longitude. Reference systems. Circles on the Earth and distance. Calculations. Time. Magnetism and sirections. Wind and Speed: Course, heading, track. Calculations: navigation computer conversions, TAS, rates. Calculations: 1 in 60 and navigation computer track and GS. Projections. Charts. VFR navigation. Nav Log preparation and use. Navigation display. Navigation in remote and oceanic areas.			
21PKL2-E	Advanced Flying 2	ZK	2
Learning objectives are based on requirements laid down in Commission Regulation (EU) No 1178/2011, subjects 081 and 100. Multi engine aircraft and jet aircraft characteristics, energy management, stabilized approach and landing errors, jet - performance - engine out flight, jet - handling - engine out flight go around, UPRT, volcanic ash, cold weather operations, operation manuals, MEL procedures and deviations, flight time limitation			
21PML-E	Flight Planning and Monitoring	Z,ZK	3
Flight planning for VFR flights for small, single- and multi-engine aeroplanes			
21PPY1-E	Operational Procedures 1	Z,ZK	3
Annex 6, PART-OPS, Air operator, Aircraft operation, Operating procedures, Airplane equipment, Flight management, Airspace			
21PRJ2	Instrumentation 2	ZK	3
Compass, gyroscopic instruments (turn indicator, attitude indicator, directional gyro), inertial instruments, recording and monitoring systems, warning systems (TCAS, GPWS), AFCS (autopilot, flight director, autothrust), FMS, flight envelope protection, communication systems, flight computers.			
21PRKP-E	Practical Flight Planning	Z,ZK	4
1. mass and balance 2. fuel planning, PDP, RIF,RCF 3. ATC FPL 4. Preflight procedure and briefing-NOTAM + weather(METAR,SIGMET..) 5. Jeppesen charts 6. VFR flight planning-theory 7. VFR flight planning- ICAO mapa, softwary 8. IFR flight planning- theory 9. PBN- RNAV, RNP 10. IFR flight planning- softwary 11. MRJT- OFP 12. ETOPS a NAT HLA 13. PET, PSR, PNR 14. practical VFR a IFR flight planning			
21PRY2-E	Operational Procedures 2	ZK	3
Flight documentation and manuals, Icing and protection of the aircraft against icing, noise abatement procedures, Abnormal and emergency situations and procedures, Runway contamination			
21PUP1	Instrumentation 1	ZK	3
Basic construction principles of instrumentation, electronic displays, basics of measurement - sensitivity and errors, engine instrumentation (pressure gauges, thermometers, fuel quantity and fuel flow measurement, torque and EPR measurement), indication in other aircraft systems (position, fire and icing indication, vibration monitoring, pressurisation system monitoring, aerometric instruments (sensors, altimeter, air speed indicator, VSI, ADC).			
21RNV	Radionavigation	Z,ZK	4
Ground direction finder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SSR and transponder. Radar utilization for navigation during the flight. Area navigation (RNAV) - general philosophy, gauges and equipment, indication and sensors for RNAV, VOR/DME (RNAV). Autopilot and flight director. Satellite navigation, systems and backups.			
21SBU1	Bachelor Thesis Seminar 1	Z	1
Types of thesis (review, applied research, basic research, thesis dealing with design proposals). Working with citation sources (citation sources, citation databases, citation styles, how to cite). Analyzing the state of the art (standards of research writing). Defining the limitations of the state of the art. Introduction to the thesis methodology.			
21SBU2	Bachelor Thesis Seminar 2	Z	1
Methodology of thesis writing (introduction, analysis of the current state, specification of the problem, objectives and hypotheses). Definition of materials and methods, approach to obtaining results, presentation and discussion of results, formulation of thesis conclusions. Basics of LaTeX, working with LaTeX and Word template.			
21SBU3	Bachelor Thesis Seminar 3	Z	1
Formal and graphic design of the thesis. Data collection and presentation, basic statistical reasoning, validation of results and designs. Achieving the objectives of the thesis and evaluation of hypothesis tests. Preparation of the presentation, principles of presentation of the thesis.			
21VFRC	VFR Communication	Z,ZK	4
Course contents are based on PART FCL, part 090. It defines terms and abbreviations used in VFR communication. Phraseology and procedures in standard and non-standard situations.			
21VFRT	Theory for VFR Training	Z,ZK	6
Course content is based on PPL(A) theory requirements according to Part-FCL. Lectures cover topics that are necessary to commence the practical part of ATP(A) training, such as principles of flight, airframe and powerplant, aircraft systems, instrumentation, mass and balance, performance, air law and ATC procedures, meteorology, operational procedures, navigation, radionavigation, VFR communication, flight planning and monitoring and human factor.			
21VL-E	Aircraft Performance	Z,ZK	4
Basic terms of aircraft performance, basic characteristic speeds, runway characteristics, single and multiengine aircraft performance class B, aircraft performance class A, take off and landing performance, after take off and missed approach climb, noise abatement procedures, range of aircraft, drift down, MEL, ETOPS.			
21X31	Project 1	Z	2
21X32	Project 2	Z	2

21X33	Project 3	Z	2
21Y1BC	Aviation safety and security	KZ	2
History of safety and security development in aviation. Modern tools for safety and security management. Research and development of safe and secure systems.			
21Y1BS	Unmanned aircraft systems 1	KZ	2
Unmanned Aviation Development. Aircraft design. Legislation in force in the Czech Republic. Planning and execution of the flight. Airspace division. Operational risks and operational procedures. Practical flights.			
21Y1MP	Matlab for project-oriented study	KZ	2
The subject's syllabus is focused on the problem-solving during bachelor's thesis preparation and it is based on students' requests. Individual exercises will be prepared according to particular examples, based on actual students' needs and suggestions. The subject will have a flexible form, which is expected to bring an improvement of students' Matlab skills.			
21Y1OH	Airline Business and Operations	KZ	2
The course provides a comprehensive view of the commercial, operational and transportation activities of air transport companies. It focuses on the organizational structure of companies, various aspects of their strategy, economic and operational indicators. It introduces students in detail to operational processes and the essentials of transportation processes. It provides a basic view of the economic aspects of air transport.			
21Y1RZ	Human Resources Management	KZ	2
The position of human resources in the organization and related disciplines file. Substance, importance and challenges of human resources management. Internal and external environment of human resource management. Human resource planning. Search, recruitment and selection of employees. Motivation, evaluation and remuneration of staff. Positioning, dismissal and redundancies of employees. Education of employees. Planning career management.			
21ZYT1	Principles of Flight 1	Z,ZK	3
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.			
21ZYT2	Principles of Flight 2	Z,ZK	3
Static & dynamic longitudinal stability, neutral point, location of centre of gravity, static directional & lateral stability, dynamic directional & lateral stability, control pitch (longitudinal), yaw (directional) & 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.			
22X31	Project 1	Z	2
22X32	Project 2	Z	2
22X33	Project 3	Z	2
23X31	Project 1	Z	2
23X32	Project 2	Z	2
23X33	Project 3	Z	2

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Generated: day 2025-08-08, time 18:35.