

Study plan

Name of study plan: Bachelor PIL (CS) Full-Time from 2022/23

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-22/23

Name of the group: 1st Sem. Bachelor Full-Time PIL (CS) from 2022/23

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 6 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, Ondřej Navrátil Bohumil Ková Ondřej Navrátil (Gar.)	Z,ZK	7	2P+4C+2B	Z	z
11LA	Linear Algebra Lucie Kárná, Pavel Provinský, Martina Beváová Martina Beváová Martina Beváová (Gar.)	Z,ZK	3	2P+1C+10B	Z	z
21OBN	General Navigation Jan Slezáček, Radoslav Zozuák Radoslav Zozuák	ZK	5	4P+0C	Z	z
21TVFR	Theory for VFR Training Ladislav Capoušek	Z,ZK	8	4P+4C	Z	z
11GIE	Geometry Pavel Provinský, Oldřich Hykš, Šárka Voráová Oldřich Hykš Oldřich Hykš (Gar.)	KZ	3	2P+2C+12B	Z	z
21SVFR	VFR Communication Milan Kameník	Z	4	2P+1C	Z	z

Characteristics of the courses of this group of Study Plan: Code=1S-BP-PIL-CS-22/23 Name=1st Sem. Bachelor Full-Time PIL (CS) from 2022/23

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 directions. 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.			
21TVFR	Theory for VFR Training	Z,ZK	8
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.			

21SVFR	VFR Communication	Z	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.			

Code of the group: 2S-BP-PIL-CS-22/23

Name of the group: 2nd Sem. Bachelor Full-Time PIL (CS) from 2022/23

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 Tasák, Magdalena Hykšová, Ondřej Navrátil, Oldřich Hykš Magdalena Hykšová Ondřej Navrátil (Gar.)	Z,ZK	5	2P+3C+2B	L	z
11STAT	Statistics Pavel Provinský, Evžen Uglickich, Pavla Pečerková, Michal Matowicki, Natálie Blahitka, Ivan Nagy, Jana Kuklová Pavla Pečerková Evžen Uglickich (Gar.)	Z,ZK	4	2P+2C+1B	L	z
21HAV	Weight and Balance of Aircraft	Z,ZK	3	2P+2C	L	z
21LDA1	Aircraft 1 Karel Mündel Karel Mündel Vladimír Plos (Gar.)	Z,ZK	3	2P+1C	L	z
21PRJ1	Instrumentation 1	ZK	2	2P+0C	L,Z	z
21ZKL1	Principles of Flight 1 P emysl Vávra, Jakub Trýb, Vladimír Machula P emysl Vávra P emysl Vávra (Gar.)	ZK	3	2P+1C	L	z
21CON	Navigation Calculations	KZ	2	0P+2C	L	z
21LPX1	Flight Training 1 Iveta Kameníková, Jakub Hospodka	KZ	2	0P+1C	Z,L	z
21LTP1	Air Law 1	KZ	3	3P+0C	L	z
15JZ1A	Foreign Language - English 1 Markéta Vojanová, Dana Boušová, Marie Michlová, Marek Tomek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, Jitka Heřmanová,	Z	3	0P+4C+10B	Z	z

Characteristics of the courses of this group of Study Plan: Code=2S-BP-PIL-CS-22/23 Name=2nd Sem. Bachelor Full-Time PIL (CS) from 2022/23

11CAL2	Calculus 2	Z,ZK	5
Linear differential equations and their systems, differential calculus of functions of several real variables. Riemann integral in R ⁿ . 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	Weight and Balance of Aircraft	Z,ZK	3
Basic terms of mass and balance, basic aircraft masses, weighing and maximum aircraft masses, overloading, standard weights of passenger, baggage and crew, determination of aircraft load, flight documentation - loadsheet, trimsheet, load securing, determination of centre of gravity, influence of centre of gravity on the aircraft 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.			
21PRJ1	Instrumentation 1	ZK	2
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).			
21ZKL1	Principles of Flight 1	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.			
21CON	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.			
21LTP1	Air Law 1	KZ	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.			
15JZ1A	Foreign Language - English 1	Z	3
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.			

Code of the group: 3S-BP-PIL-CS-23/24

Name of the group: 3rd 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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
11FYZ	Physics <i>Oldřich Hykš, Jana Kuklová, Pavel Demo, Zuzana Malá, Tomáš Vít Jana Kuklová Pavel Demo (Gar.)</i>	Z,ZK	5	2P+2C+1B	Z	z
21EKL	Air Transport Economy	Z,ZK	3	2P+1C	Z	z
21LPTY	Aircraft Operations <i>Ladislav Capoušek</i>	ZK	2	2P+0C	Z	z
21LTA2	Aircraft 2 <i>Karel Mündel</i>	Z,ZK	2	2P+1C	Z	z
21PRJ2	Instrumentation 2 <i>Pavel Hovorka Pavel Hovorka</i>	ZK	3	2P+0C	L,Z	z
21RDN	Radionavigation <i>Milan Kameník</i>	Z,ZK	3	3P+1C	Z	z
21VL	Aircraft Performance <i>Denisa Svobodová Denisa Svobodová</i>	Z,ZK	4	2P+2C	Z	z
21LPX2	Flight Training 2 <i>Iveta Kameníková, Jakub Hospodka, Jakub Charežinskí, Roman Matyáš Iveta Kameníková</i>	KZ	2	0P+1C	L,Z	z
21APL1	Aviation English 1 for Professional Pilot	Z	3	0P+4C	Z	z
15JZ2A	Foreign Language - English 2 <i>Markéta Vojanová, Marie Michlová, Marek Tomek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, Jitka Hejmanová, Eva Rezlerová,</i>	Z,ZK	3	0P+4C+1B	L	z

Characteristics of the courses of this group of Study Plan: Code=3S-BP-PIL-CS-23/24 Name=3rd Sem. Bachelor Full-Time PIL (CS) from 2023/24

11FYZ	Physics Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current.	Z,ZK	5
21EKL	Air Transport Economy The aim of the course is to introduce students to the basic issues of economics and then to follow up on more complex problems of air transport. Students will thus understand the principles of demand and supply in air transport and the specific problems related to these topics. At the same time, they will gain a comprehensive understanding of costs and their different types as well as airline revenues and yields.	Z,ZK	3
21LPTY	Aircraft Operations Aircraft operation for cruise, approach, final approach, missed approach, holding, PBN, augmented GNSS, aviation charts for IFR flight	ZK	2
21LTA2	Aircraft 2 Manufacturers responsibility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national standards. Static solidity of aircraft structures. Aeroelasticity. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presumption.	Z,ZK	2
21PRJ2	Instrumentation 2 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.	ZK	3
21RDN	Radionavigation 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.	Z,ZK	3
21VL	Aircraft Performance 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.	Z,ZK	4
21LPX2	Flight Training 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.	KZ	2
21APL1	Aviation English 1 for Professional Pilot 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.	Z	3
15JZ2A	Foreign Language - English 2 Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistic forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.	Z,ZK	3

Code of the group: 4S-BP-PIL-CS-22/23

Name of the group: 4th Sem. Bachelor Full-Time PIL (CS) from 2022/23

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 9 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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
11EMO	Electromagnetic Field and Optics <i>Oldřich Hykš, Jana Kuklová, Zuzana Malá, Tomáš Vít Zuzana Malá Pavel Demo (Gar.)</i>	Z,ZK	4	2P+1C	L	z
11MSP	Modeling of Systems and Processes <i>Bohumil Ková, Lucie Kárná Bohumil Ková Bohumil Ková (Gar.)</i>	Z,ZK	4	2P+2C+12B	L	z
21APL2	Aviation English 2 for Professional Pilot	Z,ZK	3	0P+4C	L	z
21LCLT	Human Factors in Aviation	ZK	3	3P+0C	L	z
21PML	Flight Planning and Monitoring <i>Anna Polánecká Anna Polánecká (Gar.)</i>	Z,ZK	3	2P+2C	L	z
21LPX3	Flight Training 3 <i>Iveta Kameníková, Jakub Hospodka</i>	KZ	2	0P+1C	L	z
21MRG1	Meteorology 1	KZ	3	2P+2C	L	z
21PKL1	Advanced Flying 1	KZ	4	2P+2C	L	z
21SIFR	IFR Communication	Z	2	1P+1C	L	z

Characteristics of the courses of this group of Study Plan: Code=4S-BP-PIL-CS-22/23 Name=4th Sem. Bachelor Full-Time PIL (CS) from 2022/23

11EMO	Electromagnetic Field and Optics Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.	Z,ZK	4
11MSP	Modeling of Systems and Processes 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.	Z,ZK	4
21APL2	Aviation English 2 for Professional Pilot 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.	Z,ZK	3
21LCLT	Human Factors in Aviation 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.	ZK	3
21PML	Flight Planning and Monitoring Mass and balance. Load of aircraft. Determination of centre of gravity - loadsheets, trim sheets. Aircraft weighing. Overloading of aircraft. Basic characteristic speeds. Runway characteristics. Take off and landing performance. Drift down. ETOPS. MEL. Flight planning and monitoring. Routing. FL and speeds selection. Charts. ICAO ATC FPL. Aerodrom operation minimums. Fuel plan. Operational flight plan.	Z,ZK	3
21LPX3	Flight Training 3 Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowledge	KZ	2
21MRG1	Meteorology 1 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.	KZ	3
21PKL1	Advanced Flying 1 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, decompression	KZ	4
21SIFR	IFR Communication 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.	Z	2

Code of the group: 5S-BP-PIL-CS-23/24
Name of the group: 5th Sem. Bachelor Full-Time PIL (CS) from 2023/24
Requirement credits in the group: In this group you have to gain 26 credits
Requirement courses in the group: In this group you have to complete 9 courses
Credits in the group: 26
Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
21LTP2	Air Law 2 <i>Radoslav Zozuák Radoslav Zozuák</i>	Z,ZK	3	3P+0C	Z	z

21MET2	Meteorology 2 <i>Iveta Kameníková Iveta Kameníková</i>	Z,ZK	5	2P+2C	L,Z	z
21PKL2	Advanced Flying 2 <i>Viktor Valenta Viktor Valenta</i>	ZK	2	2P+0C	Z	z
21PPY1	Operational Procedures 1 <i>Ladislav Capoušek Ladislav Capoušek</i>	Z,ZK	3	2P+1C	Z	z
21PRKP	Practical Flight Planning <i>Jakub Hospodka, Anna Polánecká Jakub Hospodka</i>	Z,ZK	4	2P+2C	Z	z
21ZKL2	Principles of Flight 2 <i>P emysl Vávra, Jakub Trýb Jakub Trýb</i>	ZK	3	2P+1C	Z	z
21LPX4	Flight Training 4 <i>Iveta Kameníková, Jakub Hospodka, Jakub Charezinski, Roman Matyáš Iveta Kameníková</i>	KZ	2	0P+1C	Z	z
21SBP	Bachelor's Thesis Seminar <i>Vladimír Socha, Lenka Hanáková, Marta Urbanová Marta Urbanová</i>	Z	1	0P+1C	Z	z
15JZ3A	Foreign Language - English 3 <i>Markéta Vojanová, Dana Boušová, Marie Michlová, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, Jitka He manová, Eva Rezlerová</i>	Z	3	0P+4C	Z	z

Characteristics of the courses of this group of Study Plan: Code=5S-BP-PIL-CS-23/24 Name=5th Sem. Bachelor Full-Time PIL (CS) from 2023/24

21LTP2	Air Law 2	Z,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.			
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.			
21PKL2	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			
21PPY1	Operational Procedures 1	Z,ZK	3
Annex 6, PART-OPS, Air operator, Aircraft operation, Operating procedures, Airplane equipment, Flight management, Airspace			
21PRKP	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- OFF 12. ETOPS a NAT HLA 13. PET, PSR, PNR 14. practical VFR a IFR flight planning			
21ZKL2	Principles of Flight 2	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			
21SBP	Bachelor's Thesis Seminar	Z	1
Work with information sources. Citation, citation formats. The methodology of writing the thesis. Presentation of results. Formal requirements for thesis. Presentation of thesis. Requirements for journal articles. Publication ethics.			
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: 6S-BP-PIL-CS-23/24

Name of the group: 6th Sem. Bachelor Full-Time PIL (CS) from 2023/24

Requirement credits in the group: In this group you have to gain 26 credits

Requirement courses in the group: In this group you have to complete 9 courses

Credits in the group: 26

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
21KPSL	Communication and Surveillance Systems in Aviation <i>Stanislav Pleninger Stanislav Pleninger</i>	ZK	3	2P+0C	L	z
21KSAV	KSA Assessment <i>Radoslav Zozu ák Radoslav Zozu ák</i>	Z,ZK	2	0P+2C	L	z
21LCM	Aircraft Engines <i>Vladimír Machula, Tomáš Parýzek, Daniel Hanus Daniel Hanus</i>	Z,ZK	3	2P+1C	Z,L	z
21LEIS	Aerodromes <i>Ladislav Capoušek, Petr Líka , Slobodan Stoji Ladislav Capoušek Slobodan Stoji (Gar.)</i>	Z,ZK	3	2P+1C	L	z

21PPY2	Operational Procedures 2 <i>Ladislav Capoušek</i> Ladislav Capoušek	ZK	4	3P+0C	L	z
14AP	Algorithm and Programming <i>Vít Fáběra, Michal Jeábek</i> Michal Jeábek <i>Vít Fáběra (Gar.)</i>	KZ	4	2P+2C	L	z
21LPX5	Flight Training 5 <i>Iveta Kameníková, Jakub Hospodka</i>	KZ	2	0P+1C	L	z
21LVPK	MCC - Multicrew Cooperation <i>Vladislav Pružina</i>	Z	2	2P+1C	L	z
15JZ4A	Foreign Language - English 4 <i>Markéta Vojanová, Marie Michlová, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, Jitka Heřmanová, Eva Rezlerová, Barbora Horáková</i>	Z,ZK	3	0P+4C	L	z

Characteristics of the courses of this group of Study Plan: Code=6S-BP-PIL-CS-23/24 Name=6th Sem. Bachelor Full-Time PIL (CS) from 2023/24

21KPSL	Communication and Surveillance Systems in Aviation 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.	ZK	3
21KSAV	KSA Assessment Communication. Management of flight path. Automation of flight. Leadership and teamwork. Problem solving. Decision making. Situation awareness. Workload management. Upset prevention and recovery training. Mental math.	Z,ZK	2
21LCM	Aircraft Engines Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational characteristics. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational characteristics. Engine control.	Z,ZK	3
21LEIS	Aerodromes 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.	Z,ZK	3
21PPY2	Operational Procedures 2 Flight documentation and manuals, Icing and protection of the aircraft against icing, noise abatement procedures, Abnormal and emergency situations and procedures, Runway contamination	ZK	4
14AP	Algorithm and Programming Computers, data representation, algorithms (conditions, loops), high level programming languages, introduction to Python language, lists, searching and sorting algorithms, abstract data types (set, tuple, dictionary), regular expressions, libraries to process date and time, set arrays, functions and procedures, working with files, introduction into object oriented programming	KZ	4
21LPX5	Flight Training 5 Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowledge	KZ	2
21LVPK	MCC - Multicrew Cooperation 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.	Z	2
15JZ4A	Foreign Language - English 4 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.	Z,ZK	3

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
11X31	Project 1 <i>Michal Matowicki</i> Michal Matowicki	Z	2	0P+1C	L	ZP
12X31	Project 1 <i>Dagmar Koárková, Martin Höfler</i>	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 <i>Roman Štěrba, Milan Kříž, Václav Baroch, Daniel Pilát, Michal Drábek, Alexandra Dvořáková, Veronika Fařtřová, Petr Fridrišek, Rudolf Franz Heidt, Václav Baroch (Gar.)</i>	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 <i>Iveta Kameníková, Jakub Hospodka, Ladislav Capoušek, Lenka Hanáková, Stanislav Pleninger, Slobodan Stoji, Jakub Kraus, Andrej Lališ, Terézia Pilmannová,</i>	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 <i>Jana Kalíková, Jan Král</i>	Z	2	0P+2C	Z	ZP
15X32	Project 2	Z	2	0P+2C	Z	ZP
16X32	Project 2 <i>Petr Bouchner, Tereza Kunclová</i>	Z	2	0P+2C	Z	ZP
17X32	Project 2 <i>Roman Štrba, Milan Kříž, Václav Baroch, Daniel Pilát, Michal Drábek, Alexandra Dvořáková, Veronika Faifrová, Rudolf Franz Heidt, Tomáš Horák,</i>	Z	2	0P+2C	Z	ZP
18X32	Project 2	Z	2	0P+2C	Z	ZP
20X32	Project 2 <i>Vladimír Faltus</i>	Z	2	0P+2C	Z	ZP
21X32	Project 2 <i>Radoslav Zozulák, Iveta Kameníková, Jakub Hospodka, Viktor Valenta, Vladimír Socha, Lenka Hanáková, Stanislav Pleninger, Slobodan Stoji, Jakub Kraus,</i>	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 <i>Dagmar Kořírková, Martin Höfler, Josef Kocourek, Tomáš Padělek, Jakub Zajíček, Ivo Novotný</i>	Z	2	0P+1C	L	ZP
14X33	Project 3 <i>Jana Kalíková, Jan Král</i>	Z	2	0P+1C	L	ZP
15X33	Project 3	Z	2	0P+1C	L	ZP
16X33	Project 3 <i>Petr Bouchner, Dmitrij Rožděstvenský</i>	Z	2	0P+1C	L	ZP
17X33	Project 3 <i>Roman Štrba, Milan Kříž, Václav Baroch, Daniel Pilát, Michal Drábek, Alexandra Dvořáková, Veronika Faifrová, Petr Fridrišek, Rudolf Franz Heidt,</i> Václav Baroch (Gar.)	Z	2	0P+1C	L	ZP
18X33	Project 3 <i>Tomáš Fíla</i>	Z	2	0P+1C	L	ZP
20X33	Project 3	Z	2	0P+1C	L	ZP
21X33	Project 3 <i>Radoslav Zozulák, Iveta Kameníková, Jakub Hospodka, Viktor Valenta, Lenka Hanáková, Stanislav Pleninger, Slobodan Stoji, Andrej Lališ, Terézia Pilmannová,</i>	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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
15Y1EH	European Integration within Historical Context <i>Jan Feit</i>	KZ	2	2P+0C	Z	PV
15Y1HE	Work Hygiene and Ergonomics in Traffic <i>Petr Musil</i>	KZ	2	2P+0C	Z	PV
15Y1ZV	East-West dichotomy: Prelude to the Cold War <i>Marie Michlová</i>	KZ	2	2P+0C	Z	PV
18Y1AM	Anatomy, Mobility and Safety of Man	KZ	2	2P+0C	Z	PV
18Y1EM	Experimental Methods in Mechanics <i>Daniel Kytý Daniel Kytý Daniel Kytý (Gar.)</i>	KZ	2	2P+0C	Z	PV
21Y1MP	Matlab for project-oriented study <i>Vladimír Socha, Lenka Hanáková Lenka Hanáková</i>	KZ	2	2P+0C	Z	PV
21Y1OH	Airline Business and Operations <i>Eva Endrizalová, Peter Olexa Peter Olexa</i>	KZ	2	2P+0C	Z	PV
15Y1BO	Work Safety and Health Protection in Transportation <i>Petr Musil</i>	KZ	2	2P+0C	L	PV
15Y1HL	History of Civil Aviation <i>Vladimír Plos</i>	KZ	2	2P+0C	L	PV
17Y1LL	Logistics of Passenger and Freight Air Transport <i>Petra Skolilová Petra Skolilová (Gar.)</i>	KZ	2	2P+0C	L	PV
18Y1MT	Engineering Materials <i>Jaroslav Valach Jaroslav Valach Jaroslav Valach (Gar.)</i>	KZ	2	2P+0C	L	PV
18Y1PD	Computer Simulations in Transportation	KZ	2	2P+0C	L	PV
18Y1PS	Computer Simulations in Mechanics <i>Petr Zlámal Petr Zlámal Petr Zlámál (Gar.)</i>	KZ	2	2P+0C	L	PV
21Y1BC	Aviation safety and security <i>Andrej Lališ, Natalia Guskova, Kateřina Grötschelová Andrej Lališ</i>	KZ	2	2P+0C	L	PV
21Y1BS	Unmanned aircraft systems 1 <i>Jakub Kraus, Michal Černý, Tomáš Tluhoš</i>	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 <i>Patrik Horažovský Patrik Horažovský Patrik Horažovský (Gar.)</i>	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, racism, 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 and 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 field. 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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
11SEMO	Seminar of Electromagnetic Field and Optics <i>Old ich Hykš, Zuzana Malá, Tomáš Vít Zuzana Malá Zuzana Malá (Gar.)</i>	Z	0	0P+2C	L	v
11SCFZ	Seminar of Physics <i>Old ich Hykš, Jana Kuklová, Zuzana Malá, Tomáš Vít Zuzana Malá Zuzana Malá (Gar.)</i>	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 Solving problems on electric and magnetic field, electromagnetic field, optics and basics of solid-state physics.	Z	0
11SCFZ	Seminar of Physics Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.	Z	0

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 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.	Z,ZK	7
11CAL2	Calculus 2 Linear differential equations and their systems, differential calculus of functions of several real variables. Riemann integral in R_n . Line and surface integrals.	Z,ZK	5
11EMO	Electromagnetic Field and Optics Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.	Z,ZK	4
11FYZ	Physics Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current.	Z,ZK	5
11GIE	Geometry 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.	KZ	3
11LA	Linear Algebra 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.	Z,ZK	3
11MSP	Modeling of Systems and Processes 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.	Z,ZK	4
11SCFZ	Seminar of Physics Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.	Z	0
11SEMO	Seminar of Electromagnetic Field and Optics Solving problems on electric and magnetic field, electromagnetic field, optics and basics of solid-state physics.	Z	0
11STAT	Statistics 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	Z,ZK	4
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 Computers, data representation, algorithms (conditions, loops), high level programming languages, introduction to Python language, lists, searching and sorting algorithms, abstract data types (set, tuple, dictionary), regular expressions, libraries to process date and time, set arrays, functions and procedures, working with files, introduction into object oriented programming	KZ	4
14X31	Project 1	Z	2
14X32	Project 2	Z	2
14X33	Project 3	Z	2
15JZ1A	Foreign Language - English 1 Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.	Z	3
15JZ2A	Foreign Language - English 2 Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.	Z,ZK	3

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, nazism, 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
21APL1	Aviation English 1 for Professional Pilot	Z	3
Exercises focused on continuous reading specialized texts, vocabulary extension of technical English, terminology in the sphere of aircraft construction, principles of flight, aircraft engines, instruments and systems, analyzes relating to topics of air traffic, operational procedures, relevant legislation and operators procedures.			

21APL2	Aviation English 2 for Professional Pilot	Z,ZK	3
Exercises focused on repetition and smoother communication within VFR and IFR communication, communication with technical staff at the airport, a fluent conversation within the airlines.			
21CON	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.			
21EKL	Air Transport Economy	Z,ZK	3
The aim of the course is to introduce students to the basic issues of economics and then to follow up on more complex problems of air transport. Students will thus understand the principles of demand and supply in air transport and the specific problems related to these topics. At the same time, they will gain a comprehensive understanding of costs and their different types as well as airline revenues and yields.			
21HAV	Weight and Balance of Aircraft	Z,ZK	3
Basic terms of mass and balance, basic aircraft masses, weighing and maximum aircraft masses, overloading, standard weights of passenger, baggage and crew, determination of aircraft load, flight documentation - loadsheets, trimsheet, load securing, determination of centre of gravity, influence of centre of gravity on the aircraft performance			
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.			
21KSAV	KSA Assessment	Z,ZK	2
Communication. Management of flight path. Automation of flight. Leadership and teamwork. Problem solving. Decision making. Situation awareness. Workload management. Upset prevention and recovery training. Mental math.			
21LCLT	Human Factors in Aviation	ZK	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.			
21LCM	Aircraft Engines	Z,ZK	3
Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational characteristics. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turboprop 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.			
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.			
21LPTY	Aircraft Operations	ZK	2
Aircraft operation for cruise, approach, final approach, missed approach, holding, 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			
21LTA2	Aircraft 2	Z,ZK	2
Manufacturers responsibility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national standards. Static solidity of aircraft structures. Aeroelasticity. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presumption.			
21LTP1	Air Law 1	KZ	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.			
21LTP2	Air Law 2	Z,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.			
21LVPK	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.			
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.			
21MRG1	Meteorology 1	KZ	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.			
21OBN	General Navigation	ZK	5
The Earth: latitude and longitude. Reference systems. Circles on the Earth and distance. Calculations. Time. Magnetism and directions. 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.			

21PKL1	Advanced Flying 1 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, decompression	KZ	4
21PKL2	Advanced Flying 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	ZK	2
21PML	Flight Planning and Monitoring Mass and balance. Load of aircraft. Determination of centre of gravity - loadsheet, trimsheet. Aircraft weighing. Overloading of aircraft. Basic characteristic speeds. Runway characteristics. Take off and landing performance. Drift down. ETOPS. MEL. Flight planning and monitoring. Routing. FL and speeds selection. Charts. ICAO ATC FPL. Aerodrom operation minimums. Fuel plan. Operational flight plan.	Z,ZK	3
21PPY1	Operational Procedures 1 Annex 6, PART-OPS, Air operator, Aircraft operation, Operating procedures, Airplane equipment, Flight management, Airspace	Z,ZK	3
21PPY2	Operational Procedures 2 Flight documentation and manuals, Icing and protection of the aircraft against icing, noise abatement procedures, Abnormal and emergency situations and procedures, Runway contamination	ZK	4
21PRJ1	Instrumentation 1 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).	ZK	2
21PRJ2	Instrumentation 2 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.	ZK	3
21PRKP	Practical Flight Planning 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	Z,ZK	4
21RDN	Radionavigation 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.	Z,ZK	3
21SBP	Bachelor's Thesis Seminar Work with information sources. Citation, citation formats. The methodology of writing the thesis. Presentation of results. Formal requirements for thesis. Presentation of thesis. Requirements for journal articles. Publication ethics.	Z	1
21SIFR	IFR Communication 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.	Z	2
21SVFR	VFR Communication 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.	Z	4
21TVFR	Theory for VFR Training 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.	Z,ZK	8
21VL	Aircraft Performance 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.	Z,ZK	4
21X31	Project 1	Z	2
21X32	Project 2	Z	2
21X33	Project 3	Z	2
21Y1BC	Aviation safety and security History of safety and security development in aviation. Modern tools for safety and security management. Research and development of safe and secure systems.	KZ	2
21Y1BS	Unmanned aircraft systems 1 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.	KZ	2
21Y1MP	Matlab for project-oriented study 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.	KZ	2
21Y1OH	Airline Business and Operations 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.	KZ	2
21Y1RZ	Human Resources Management 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.	KZ	2
21ZKL1	Principles of Flight 1 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.	ZK	3

21ZKL2	Principles of Flight 2	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

For updated information see <http://bilakniha.cvut.cz/en/FF.html>

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