

Study plan

Name of study plan: PIL bak.prez.19/20

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Technology in Transportation and Telecommunications

Type of study: Bachelor full-time

Required credits: 180

Elective courses credits: 0

Sum of credits in the plan: 180

Note on the plan:

Name of the block: Compulsory courses

Minimal number of credits of the block: 180

The role of the block: Z

Code of the group: 1.S.BPIL 19/20

Name of the group: 1.sem.PIL bak.prez.(studium od) 19/20

Requirement credits in the group: In this group you have to gain 30 credits

Requirement courses in the group: In this group you have to complete 8 courses

Credits in the group: 30

Note on the group:

| 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 Vraštílová, 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 |
| 12ZYDI | Introduction to Transportation Engineering Vojtěch Novotný, Zuzana Šárková, Dagmar Kořáková | Z,ZK | 2 | 1P+1C | Z | z |
| 21TPLV | Theory of the Pilot's Training | Z,ZK | 8 | 4P+4C | Z | z |
| 21UDVY | Introduction to the Training of Aviation Personnel | Z,ZK | 4 | 2P+2C | Z | z |
| 11GIE | Geometry Pavel Provinský, Oldřich Hykš, Šárka Voráová Oldřich Hykš Oldřich Hykš (Gar.) | KZ | 3 | 2P+2C+12B | Z | z |
| 21LPX1 | Flight Training 1 Roman Matyáš | KZ | 2 | 0P+1C | Z,L | z |
| TV-1 | Physical Education | Z | 1 | | Z | z |

Characteristics of the courses of this group of Study Plan: Code=1.S.BPIL 19/20 Name=1.sem.PIL bak.prez.(studium od) 19/20

| | | | |
|---|--|------|---|
| 11CAL1 | Calculus 1 | Z,ZK | 7 |
| Sequence of real numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dimensional Euklidean space and Cartesian coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several real variables. | | | |
| 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. | | | |
| 12ZYDI | Introduction to Transportation Engineering | Z,ZK | 2 |
| Role of transportation in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, public mass transport. Negative impacts of transportation to environment and safety. | | | |
| 21TPLV | Theory of the Pilot's Training | Z,ZK | 8 |
| Theoretical knowledge instruction required for entry into the first phase of integrated training. Tuition refers to the syllabus provided in the CZ / ATO-010 manuals. Subjects and their minimum range is in accordance with the requirements of EU regulation no. 1178/2011 and objects are numbered in accordance with Part FCL 010 to 090. The course is finished with unclassified assessment and examination. This course is intended only for long-term student, who are in integrated pilots training and study all courses related to Study field PIL (Professional Pilot) in all three years. | | | |
| 21UDVY | Introduction to the Training of Aviation Personnel | Z,ZK | 4 |
| Pilot training. History. Drive. Meteorology. Airports. Navigation. Aircraft Design. Space technology. Practical training. Flying Rules. Airspace. Presentation ATO. This course is intended only for long-term student, who are in integrated pilots training and study all courses related to Study field PIL (Professional Pilot) in all three years. | | | |

| | | | |
|---|--------------------|----|---|
| 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. | | | |
| 21LPX1 | Flight Training 1 | KZ | 2 |
| Practical exercises for improvement of theoretical knowledge in a range of at least PPL(A) of the objects 010 - 090 in accordance with Part FCL. The basics of flight control, dual exercises, solo flights and navigation flights. This course is intended only for long-term student, who are in integrated pilots training and study all courses related to Study field PIL (Professional Pilot) in all three years. | | | |
| TV-1 | Physical Education | Z | 1 |

Code of the group: 2.S.BPIL 18/19

Name of the group: 2.sem.PIL bak.prez (od) 18/19

Requirement credits in the group: In this group you have to gain 30 credits

Requirement courses in the group: In this group you have to complete 8 courses

Credits in the group: 30

Note on the group:

| Code | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i> | Completion | Credits | Scope | Semester | Role |
|--------|--|------------|---------|-----------|----------|------|
| 11CAL2 | Calculus 2 <i>Olga Vraštilová, Tomáš Tasák, Magdalena Hykšová, Ondřej Navrátil, Oldřich Hykš Ondřej Navrátil Ondřej Navrátil (Gar.)</i> | Z,ZK | 5 | 2P+3C+2B | L | z |
| 11STAT | Statistics <i>Pavel Provinský, Evžen Uglickich, Pavla Pecherková, Michal Matowicki, Natálie Blahitka, Ivan Nagy Pavla Pecherková Evžen Uglickich (Gar.)</i> | Z,ZK | 4 | 2P+2C+12B | L | z |
| 21LIVO | Human Performance and Limitations | Z,ZK | 5 | 2P+2C+14B | L | z |
| 21N | Navigation | ZK | 4 | 4P+0C | L | z |
| 21PUPE | Instrumentation | ZK | 4 | 4P+0C | L | z |
| 21ZYL1 | Principles of Flight 1 <i>Vladimír Machula</i> | Z,ZK | 5 | 2P+2C+16B | L | z |
| 21RTFS | Radiotelephony and Communication | KZ | 2 | 1P+1C | L | z |
| TV-2 | Physical Education | Z | 1 | | L | z |

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

| | | | |
|---|-----------------------------------|------|---|
| 11CAL2 | Calculus 2 | Z,ZK | 5 |
| Indefinite integral, Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in R^n . Parametric description of regular k -dimensional surfaces in R^n , Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations of the first order, linear differential equations with constant coefficients and its systems | | | |
| 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 | | | |
| 21LIVO | Human Performance and Limitations | Z,ZK | 5 |
| Human performance & limitations, aptitude & competence, accident statistics, flight safety, basics of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods. | | | |
| 21N | Navigation | ZK | 4 |
| Earth - shape, dimensions of the reference ellipsoid and geoid, position reference system (grid), large and small circles. Great-circle distance and the rhumb line. Convergence. Spherical trigonometry. Mathematical determination of elements rhumb line course and Great-circle distance. Agona, isogona. Projection of maps. ICAO and Jeppesen maps. Times - UTC, Zulu, LT. Time zones. Comparative navigation. Dead reckoning. INS / IRS, FMS. | | | |
| 21PUPE | Instrumentation | ZK | 4 |
| Basic classification and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measurement of air data parameters. Earth's magnetic field, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, monitoring and recording systems, integrated instrument systems. | | | |
| 21ZYL1 | Principles of Flight 1 | Z,ZK | 5 |
| Aerodynamic drag, relation between drag and speed, streamline, boundary layer, formula of continuity, formula of Bernoulli, lift and drag, air flow and pressures around wing, angle of attack, reactions of wing in air flow, lift and drag of a wing and an aircraft, coefficient of lift and drag, critical angle of attack, wing with finite span, induced drag, interference, devices for lift and drag increase. | | | |
| 21RTFS | Radiotelephony and Communication | KZ | 2 |
| VFR and IFR communication, basic operational procedures, standard aeronautical phraseology, broadcasting of the numbers, letters, etc., call signs, radio-communication in normal and emergency procedures, loss of communication, weather information, HF communication. | | | |
| TV-2 | Physical Education | Z | 1 |

Code of the group: 3.S.BPIL 19/20

Name of the group: 3.sem.PIL bak.prez.(od) 19/20

Requirement credits in the group: In this group you have to gain 30 credits

Requirement courses in the group: In this group you have to complete 8 courses

Credits in the group: 30

Note on the group:

| 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, Zuzana Malá, Tomáš Vít, Jana Kuklová Zuzana Malá Zuzana Malá (Gar.)</i> | Z,ZK | 5 | 2P+2C+1B | Z | z |
| 21LCVL | Human Factors in Aviation <i>Lenka Hanáková Lenka Hanáková</i> | ZK | 2 | 2P+0C | Z | z |
| 21ZEL1 | Electronics Basics 1 <i>Vít Fábera Vít Fábera</i> | Z,ZK | 5 | 3P+2C | Z | z |
| 21ZYL2 | Principles of Flight 2 <i>P emysl Vávra, Marek Veselý P emysl Vávra</i> | Z,ZK | 5 | 2P+2C | Z | z |
| 21MEO1 | Meteorology 1 | KZ | 4 | 2P+2C | Z | z |
| 21ZLKS | Basics of Aircraft Structures and Systems <i>Kateřina Stuchlíková, Pavol Hajla Pavol Hajla</i> | KZ | 4 | 2P+2C | Z | z |
| 21LRF | Laboratories of Radiotelephony | Z | 2 | 0P+2C | Z | z |
| 15JZ1A | Foreign Language - English 1 <i>Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora Horáková, Marek Tomek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková,</i> | Z | 3 | 0P+4C+1B | Z | z |

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

| | | | |
|--------|---|------|---|
| 11FYZ | Physics Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics. | Z,ZK | 5 |
| 21LCVL | Human Factors in Aviation Human performance & limitations, aptitude & competence, accident statistics, flight safety, basics of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods. | ZK | 2 |
| 21ZEL1 | Electronics Basics 1 Electron theory. Static electricity, electrical conductivity and terminology. Production of electricity and the DC power source. DC Circuits. Electrical resistance, resistor and performance. Capacity and capacitor. Magnetism. Inductance and inductor. DC motors and generators. Theory AC, resistive, capacitive, inductive circuits. Transformers. Brushless motors and generators. Frequency filters. | Z,ZK | 5 |
| 21ZYL2 | Principles of Flight 2 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. | Z,ZK | 5 |
| 21MEO1 | Meteorology 1 Composition, size and vertical structure of the atmosphere. QNH, QFE, QFF, QNE, density and height measurements. Wind, turbulence, jet streams and standing waves. Moisture adiabatic processes. Creating and types of cloud, fog, haze. Precipitation. Types of air masses, frontal interface. Distribution of pressure, cyclones, anticyclones, non-frontal cyclone. | KZ | 4 |
| 21ZLKS | Basics of Aircraft Structures and Systems Basics of screening, technical drawing, technological and operational signs. Hydraulic, pneumatic, fuel, electricity and block diagrams in aviation. | KZ | 4 |
| 21LRF | Laboratories of Radiotelephony VFR and IFR communication, basic operational procedures, standard aeronautical phraseology, broadcasting of the numbers, letters, etc., call signs, radio-communication in normal and emergency procedures, loss of communication, weather information, HF communication. | 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 stylistic forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric. | Z | 3 |

Code of the group: 4.S.BPIL 16/17

Name of the group: 4.sem.PIL bak.prez. (od) 16/17

Requirement credits in the group: In this group you have to gain 30 credits

Requirement courses in the group: In this group you have to complete 8 courses

Credits in the group: 30

Note on the group:

| Code | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i> | Completion | Credits | Scope | Semester | Role |
|--------|--|------------|---------|----------|----------|------|
| 11MSP | Modeling of Systems and Processes <i>Bohumil Ková, Lucie Kárná, Jana Kuklová Jana Kuklová Bohumil Ková (Gar.)</i> | Z,ZK | 4 | 2P+2C+1B | L | z |
| 21HVL | Weight and Balance of Aircraft <i>Denisa Svobodová</i> | Z,ZK | 4 | 2P+1C | L | z |
| 21MET2 | Meteorology 2 <i>Iveta Kameníková Iveta Kameníková</i> | Z,ZK | 5 | 2P+2C | L,Z | z |
| 21RNG | Radionavigation | Z,ZK | 7 | 3P+4C | L | z |
| 21LL1 | Aircraft 1 | KZ | 3 | 2P+1C+1B | L | z |

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|--------|--|------|---|-----------|-----|---|
| 21LPX2 | Flight Training 2 <i>Roman Matyáš, Jakub Charezenski Roman Matyáš</i> | KZ | 2 | 0P+1C | L,Z | z |
| 21ULCT | Aircraft Maintenance <i>Tomáš Parýzek</i> | Z | 2 | 2P+0C+8B | L | z |
| 15JZ2A | Foreign Language - English 2 <i>Markéta Vojanová, Dana Boušová, Marie Michlová, Barbora Horáková, Marek Tomek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková,</i> | Z,ZK | 3 | 0P+4C+10B | | z |

Characteristics of the courses of this group of Study Plan: Code=4.S.BPIL 16/17 Name=4.sem.PIL bak.prez. (od) 16/17

| | | | |
|---|-----------------------------------|------|---|
| 11MSP | 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. | | | |
| 21HVL | Weight and Balance of Aircraft | Z,ZK | 4 |
| Basic terms of mass and balance, basic aircraft masses, weighing and maximum aircraft masses, overloading of aircraft, standard weights of passenger, baggage and crew, determination of load of aircraft, flight documentation - loadsheets, trim sheets, securing of load, determination of centre of gravity, influence of centre of gravity position on aircraft performance. | | | |
| 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. | | | |
| 21RNG | Radionavigation | Z,ZK | 7 |
| Ground direction finder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SSR and transponder. Radar utilization for navigation during the flight. Area navigation (RNAV) - general philosophy, gauges and equipment, indication and sensors for RNAV, VOR/DME (RNAV). Autopilot and flight director. Satellite navigation, systems and backups. | | | |
| 21LL1 | Aircraft 1 | KZ | 3 |
| Aircraft structural and conceptual design types - definitions and basic knowledge of the problem. Development of requirements, aircraft definitions and categorisation. Aircraft loadings. Systems of primary and secondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeroplane topics. | | | |
| 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. | | | |
| 21ULCT | Aircraft Maintenance | Z | 2 |
| Aircraft operations and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and qualification of aviation personnel. Basic documentation for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft maintenance. Regulation of director EASA for aircraft maintenance. Seminars will be focused on practical application. | | | |
| 15JZ2A | Foreign Language - English 2 | Z,ZK | 3 |
| Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistic forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric. | | | |

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

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

Requirement credits in the group: In this group you have to gain 30 credits

Requirement courses in the group: In this group you have to complete 7 courses

Credits in the group: 30

Note on the group:

| Code | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i> | Completion | Credits | Scope | Semester | Role |
|--------|--|------------|---------|-------|----------|------|
| 21LCM | Aircraft Engines <i>Daniel Hanus, Tomáš Parýzek Daniel Hanus</i> | Z,ZK | 3 | 2P+1C | Z,L | z |
| 21LGPS | Legislation and Operational Regulations | Z,ZK | 8 | 4P+2C | Z | z |
| 21LTA2 | Aircraft 2 <i>Karel Mündel Karel Mündel</i> | Z,ZK | 2 | 2P+1C | Z | z |
| 21VL | Aircraft Performance <i>Denisa Svobodová Denisa Svobodová</i> | Z,ZK | 4 | 2P+2C | Z | z |
| 21ZLS | ATM Systems <i>Vladimír Machula Vladimír Machula</i> | Z,ZK | 5 | 2P+2C | Z | z |
| 21PDLT | Airport Design and Operation <i>Ladislav Capoušek</i> | KZ | 5 | 2P+2C | Z | z |
| 21APL1 | Aviation English 1 for Professional Pilot <i>Lukáš Zibner, Marek Šudoma Lukáš Zibner</i> | Z | 3 | 0P+4C | Z | z |

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

| | | | |
|--|---|------|---|
| 21LCM | Aircraft Engines | Z,ZK | 3 |
| Aircraft piston engine, 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. | | | |
| 21LGPS | Legislation and Operational Regulations | Z,ZK | 8 |
| Introduction into aviation regulations. The scope of international and national organizations in civil aviation. Analysis and interpretation of the ICAO Annexes 1-19, ICAO Docs. 4444, 7030, 8168, analyses and interpretation of the European Parliament and Council Regulations (EC), European Commission Regulations (EU) and the Decisions of the Executive Director of EASA. | | | |

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|---|---|------|---|
| 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. | | | |
| 21VL | Aircraft Performance | Z,ZK | 4 |
| Basic terms of aircraft performance, basic characteristic speeds, runway characteristics, single and multiengine aircraft performance class B, aircraft performance class A, take off and landing performance, after take off and missed approach climb, noise abatement procedures, range of aircraft, drift down, MEL, ETOPS. | | | |
| 21ZLS | ATM Systems | Z,ZK | 5 |
| The course introduces classical and modern facilities, systems and technologies designated for ATS. Student obtains knowledge of technical principles and solutions as far as communication, navigation and surveillance aviation systems are concerned. | | | |
| 21PDLT | Airport Design and Operation | KZ | 5 |
| Methods for the new airports design. Existing airports development. A closer look at the development of the airports operational areas. Certification of the operating areas and procedures by ICAO Airports Manual. Development planning and project preparation, regulatory basis. | | | |
| 21APL1 | Aviation English 1 for Professional Pilot | Z | 3 |
| Exercises focused on continuous reading specialized texts, vocabulary extension of technical English, terminology in the sphere of aircraft construction, principles of flight, aircraft engines, instruments and systems, analyzes relating to topics of air traffic, operational procedures, relevant legislation and operators procedures. | | | |

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

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

Requirement credits in the group: In this group you have to gain 30 credits

Requirement courses in the group: In this group you have to complete 8 courses

Credits in the group: 30

Note on the group:

| Code | Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i> | Completion | Credits | Scope | Semester | Role |
|--------|--|------------|---------|----------|----------|------|
| 21APL2 | Aviation English 2 for Professional Pilot <i>Lukáš Zibner, Marek Šudoma</i> | Z,ZK | 3 | 0P+4C | L | z |
| 21EBLP | European Air Transport Safety Attitude | Z,ZK | 4 | 2P+2C | L | z |
| 21PAP | Flight Planning and Performance <i>Ladislav Capoušek Anna Polánecká (Gar.)</i> | Z,ZK | 4 | 2P+2C+1B | L | z |
| 21PPLP | Operational Procedures and IFR Flights | Z,ZK | 7 | 4P+2C | L | z |
| 21ZDP | Knowledge, Skills and Attitudes | Z,ZK | 5 | 2P+2C | L | z |
| 21DKL | Aviation Data Link Communication <i>Vladimír Machula, Jakub Steiner, Stanislav Pleninger</i> | KZ | 3 | 2P+1C | L | z |
| 21LPX3 | Flight Training 3 <i>Roman Matyáš</i> | KZ | 2 | 0P+1C | L | z |
| 21LVP | MCC - Multicrew Cooperation | Z | 2 | 2P+0C | L | z |

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

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|--|---|------|---|
| 21APL2 | Aviation English 2 for Professional Pilot | Z,ZK | 3 |
| Exercises focused on repetition and smoother communication within VFR and IFR communication, communication with technical staff at the airport, a fluent conversation within the airlines. | | | |
| 21EBLP | European Air Transport Safety Attitude | Z,ZK | 4 |
| Reliability and life cycle systems, reliability theory, mathematics tools for reliability, reliability analysis, maintenance systems, theory of operational safety and quality, the basic concept of security, safety management, security management strategy, hazard, risk, risk management. | | | |
| 21PAP | Flight Planning and Performance | Z,ZK | 4 |
| Mass and balance. Load of aircraft. Determination of centre of gravity - loadsheet, trimsheet. Aircraft weighing. Overloading of aircraft. Basic characteristic speeds. Runway characteristics. Take off and landing performance. Drift down. ETOPS. MEL. Flight planning and monitoring. Routing. FL and speeds selection. Charts. ICAO ATC FPL. Aerodrom operation minimums. Fuel plan. Operational flight plan. | | | |
| 21PPLP | Operational Procedures and IFR Flights | Z,ZK | 7 |
| Documentation Jeppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS without GP, VOR/DME, NDB and SRA. Airport's operational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedures. RNAV approach procedures and other operation. CDFA procedures and principles of increasing airspace capacity. | | | |
| 21ZDP | Knowledge, Skills and Attitudes | Z,ZK | 5 |
| 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. | | | |
| 21DKL | Aviation Data Link Communication | KZ | 3 |
| 21LPX3 | Flight Training 3 | KZ | 2 |
| Deepening of theoretical knowledge and practical examination of progress in professional competence in pilot skills and knowledge | | | |
| 21LVP | MCC - Multicrew Cooperation | Z | 2 |
| Flight safety analysis in relation to human factor. MCC - basic principles, phases and methods within the area of air transport. CRM - leadership, situational awareness, decision making process, communication, effect of stress to the multi-crew performance, standard operational procedures, automation. | | | |

List of courses of this pass:

| Code | Name of the course | Completion | Credits |
|--|--|------------|---------|
| 11CAL1 | Calculus 1 | Z,ZK | 7 |
| Sequence of real numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Geometric properties of n-dimensional Eukclidean space and Cartesian coordinate system. Geometric meaning of the differential of functions several real variables, differential calculus of functions of several real variables. | | | |
| 11CAL2 | Calculus 2 | Z,ZK | 5 |
| Indefinite integral, Newtonian integral, Riemannian integral of the function of one variable, improper Riemannian integral, Riemannian integral in R_n . Parametric description of regular k-dimensional surfaces in R_n , Riemannian integral over regular surfaces. Line and surface integrals of the second type, Stokes theorems, ordinary differential equations of the first order, linear differential equations with constant coefficients and its systems | | | |
| 11FYZ | Physics | Z,ZK | 5 |
| Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics. | | | |
| 11GIE | Geometry | KZ | 3 |
| 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. | | | |
| 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 | | | |
| 12ZYDI | Introduction to Transportation Engineering | Z,ZK | 2 |
| Role of transportation in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, public mass transport. Negative impacts of transportation to environment and safety. | | | |
| 15JZ1A | Foreign Language - English 1 | Z | 3 |
| Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric. | | | |
| 15JZ2A | Foreign Language - English 2 | Z,ZK | 3 |
| Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric. | | | |
| 21APL1 | Aviation English 1 for Professional Pilot | Z | 3 |
| Exercises focused on continuous reading specialized texts, vocabulary extension of technical English, terminology in the sphere of aircraft construction, principles of flight, aircraft engines, instruments and systems, analyzes relating to topics of air traffic, operational procedures, relevant legislation and operators procedures. | | | |
| 21APL2 | Aviation English 2 for Professional Pilot | Z,ZK | 3 |
| Exercises focused on repetition and smoother communication within VFR and IFR communication, communication with technical staff at the airport, a fluent conversation within the airlines. | | | |
| 21DKL | Aviation Data Link Communication | KZ | 3 |
| 21EBLP | European Air Transport Safety Attitude | Z,ZK | 4 |
| Reliability and life cycle systems, reliability theory, mathematics tools for reliability, reliability analysis, maintenance systems, theory of operational safety and quality, the basic concept of security, safety management, security management strategy, hazard, risk, risk management. | | | |
| 21HVL | Weight and Balance of Aircraft | Z,ZK | 4 |
| Basic terms of mass and balance, basic aircraft masses, weighing and maximum aircrafts masses, overloading of aircraft, standard weights of passenger, baggage and crew, determination of load of aircraft, flight documentation - loadsheets, trimsheet, securing of load, determination of centre of gravity, influence of centre of gravity position on aircraft performance. | | | |
| 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 turbofan engines, basic construction modules, and their operational characteristics. Engine control. | | | |
| 21LCVL | Human Factors in Aviation | ZK | 2 |
| Human performance & limitations, aptitude & competence, accident statistics, flight safety, basics of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods. | | | |
| 21LGPS | Legislation and Operational Regulations | Z,ZK | 8 |
| Introduction into aviation regulations. The scope of international and national organizations in civil aviation. Analysis and interpretation of the ICAO Annexes 1-19, ICAO Docs. 4444, 7030, 8168, analyses and interpretation of the European Parliament and Council Regulations (EC), European Commission Regulations (EU) and the Decisions of the Executive Director of EASA. | | | |
| 21LIVO | Human Performance and Limitations | Z,ZK | 5 |
| Human performance & limitations, aptitude & competence, accident statistics, flight safety, basics of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, basics of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods. | | | |
| 21LL1 | Aircraft 1 | KZ | 3 |
| Aircraft structural and conceptual design types - definitions and basic knowledge of the problem. Development of requirements, aircraft definitions and categorisation. Aircraft loadings. Systems of primary and secondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeroplane topics. | | | |

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| 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 | | | |
| 21LRF | Laboratories of Radiotelephony | Z | 2 |
| VFR and IFR communication, basic operational procedures, standard aeronautical phraseology, broadcasting of the numbers, letters, etc., call signs, radio-communication in normal and emergency procedures, loss of communication, weather information, HF communication. | | | |
| 21LTA2 | Aircraft 2 | Z,ZK | 2 |
| Manufacturers responsibility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national standards. Static solidity of aircraft structures. Aeroelasticity. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presumption. | | | |
| 21LVP | MCC - Multicrew Cooperation | Z | 2 |
| Flight safety analysis in relation to human factor. MCC - basic principles, phases and methods within the area of air transport. CRM - leadership, situational awareness, decision making process, communication, effect of stress to the multi-crew performance, standard operational procedures, automation. | | | |
| 21MEO1 | Meteorology 1 | KZ | 4 |
| Composition, size and vertical structure of the atmosphere. QNH, QFE, QFF, QNE, density and height measurements. Wind, turbulence, jet streams and standing waves. Moisture adiabatic processes. Creating and types of cloud, fog, haze. Precipitation. Types of air masses, frontal interface. Distribution of pressure, cyclones, anticyclones, non-frontal cyclone. | | | |
| 21MET2 | Meteorology 2 | Z,ZK | 5 |
| Climatic zones, tropical climatology, meteorological situation of mid-latitudes. Icing, turbulence, wind shear, thunderstorms, tornadoes, flying in the stratosphere, mountain areas, reducing visibility phenomena. Observation, weather maps, important information for flight planning. | | | |
| 21N | Navigation | ZK | 4 |
| Earth - shape, dimensions of the reference ellipsoid and geoid, position reference system (grid), large and small circles. Great-circle distance and the rhumb line. Convergence. Spherical trigonometry. Mathematical determination of elements rhumb line course and Great-circle distance. Agona, isogona. Projection of maps. ICAO and Jeppesen maps. Times - UTC, Zulu, LT. Time zones. Comparative navigation. Dead reckoning. INS / IRS, FMS. | | | |
| 21PAP | Flight Planning and Performance | Z,ZK | 4 |
| Mass and balance. Load of aircraft. Determination of centre of gravity - loadsheet, trimsheet. Aircraft weighing. Overloading of aircraft. Basic characteristic speeds. Runway characteristics. Take off and landing performance. Drift down. ETOPS. MEL. Flight planning and monitoring. Routing. FL and speeds selection. Charts. ICAO ATC FPL. Aerodrom operation minimums. Fuel plan. Operational flight plan. | | | |
| 21PDLT | Airport Design and Operation | KZ | 5 |
| Methods for the new airports design. Existing airports development. A closer look at the development of the airports operational areas. Certification of the operating areas and procedures by ICAO Airports Manual. Development planning and project preparation, regulatory basis. | | | |
| 21PPLP | Operational Procedures and IFR Flights | Z,ZK | 7 |
| Documentation Jeppesen. IFR approach segments. Precision approach ILS/PAR, MLS. Low Visibility Operation (LVO). Non precision approach - ILS without GP, VOR/DME, NDB and SRA. Airport's operational minima. Circuit approach. Holding patterns, SID and STAR. GNSS approach. Altimeter setting procedures. IFR flight procedures. RNAV approach procedures and other operation. CDF procedures and principles of increasing airspace capacity. | | | |
| 21PUPE | Instrumentation | ZK | 4 |
| Basic classification and construction of flight instruments, electric systems, power plant sensors and instruments, airframe sensors and instruments, measurement of air data parameters. Earth's magnetic field, magnetic compass, gyroscopic instruments, inertial navigation and reference systems, radio-navigational systems, radars, monitoring and recording systems, integrated instrument systems. | | | |
| 21RNG | Radionavigation | Z,ZK | 7 |
| Ground direction finder (VDF), ADF, VOR and Doppler VOR, DME, ILS, MLS, ground ATC radar, weather Radar, SSR and transponder. Radar utilization for navigation during the flight. Area navigation (RNAV) - general philosophy, gauges and equipment, indication and sensors for RNAV, VOR/DME (RNAV). Autopilot and flight director. Satellite navigation, systems and backups. | | | |
| 21RTFS | Radiotelephony and Communication | KZ | 2 |
| VFR and IFR communication, basic operational procedures, standard aeronautical phraseology, broadcasting of the numbers, letters, etc., call signs, radio-communication in normal and emergency procedures, loss of communication, weather information, HF communication. | | | |
| 21TPLV | Theory of the Pilot's Training | Z,ZK | 8 |
| Theoretical knowledge instruction required for entry into the first phase of integrated training. Tuition refers to the syllabus provided in the CZ / ATO-010 manuals. Subjects and their minimum range is in accordance with the requirements of EU regulation no. 1178/2011 and objects are numbered in accordance with Part FCL 010 to 090. The course is finished with unclassified assessment and examination. This course is intended only for long-term student, who are in integrated pilots training and study all courses related to Study field PIL (Professional Pilot) in all three years. | | | |
| 21UDVY | Introduction to the Training of Aviation Personnel | Z,ZK | 4 |
| Pilot training. History. Drive. Meteorology. Airports. Navigation. Aircraft Design. Space technology. Practical training. Flying Rules. Airspace. Presentation ATO. This course is intended only for long-term student, who are in integrated pilots training and study all courses related to Study field PIL (Professional Pilot) in all three years. | | | |
| 21ULCT | Aircraft Maintenance | Z | 2 |
| Aircraft operations and technical operations. Maintenance and work processes. Defects search methods, status check diagnostic tools. Selection and qualification of aviation personnel. Basic documentation for maintenance. Optimization of time maintenance intervals. Regulation no. 1321/2014 Part 145. Human factors of aircraft maintenance. Regulation of director EASA for aircraft maintenance. Seminars will be focused on practical application. | | | |
| 21VL | Aircraft Performance | Z,ZK | 4 |
| Basic terms of aircraft performance, basic characteristic speeds, runway characteristics, single and multiengine aircraft performance class B, aircraft performance class A, take off and landing performance, after take off and missed approach climb, noise abatement procedures, range of aircraft, drift down, MEL, ETOPS. | | | |
| 21ZDP | Knowledge, Skills and Attitudes | Z,ZK | 5 |
| 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. | | | |

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| 21ZEL1 | Electronics Basics 1 | Z,ZK | 5 |
| Electron theory. Static electricity, electrical conductivity and terminology. Production of electricity and the DC power source. DC Circuits. Electrical resistance, resistor and performance. Capacity and capacitor. Magnetism. Inductance and inductor. DC motors and generators. Theory AC, resistive, capacitive, inductive circuits. Transformers. Brushless motors and generators. Frequency filters. | | | |
| 21ZLKS | Basics of Aircraft Structures and Systems | KZ | 4 |
| Basics of screening, technical drawing, technological and operational signs. Hydraulic, pneumatic, fuel, electricity and block diagrams in aviation. | | | |
| 21ZLS | ATM Systems | Z,ZK | 5 |
| The course introduces classical and modern facilities, systems and technologies designated for ATS. Student obtains knowledge of technical principles and solutions as far as communication, navigation and surveillance aviation systems are concerned. | | | |
| 21ZYL1 | Principles of Flight 1 | Z,ZK | 5 |
| Aerodynamic drag, relation between drag and speed, streamline, boundary layer, formula of continuity, formula of Bernoulli, lift and drag, air flow and pressures around wing, angle of attack, reactions of wing in air flow, lift and drag of a wing and an aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, induced drag, interference, devices for lift and drag increase. | | | |
| 21ZYL2 | Principles of Flight 2 | Z,ZK | 5 |
| 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. | | | |
| TV-1 | Physical Education | Z | 1 |
| TV-2 | Physical Education | Z | 1 |

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