Study plan

Name of study plan: PP bakal.prez.07/08začátek

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Welcome page
Type of study: unknown full-time
Required credits: 210
Elective courses credits: 0
Sum of credits in the plan: 210
Note on the plan:

Name of the block: Compulsory courses
Minimal number of credits of the block: 210
The role of the block: Z

Code of the group: 1.S-PP07/08
Name of the group: 1.s.PP prez.bak.od07/08
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 at least 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
11ATGR	**Algebra and Graph Theory**	Z,ZK	5	2+2	Z	z
11GMR	**Geometry**	Z,ZK	5	2+2		z
15J1A1	**Foreign Language - English 1**	Z	2	0+2		z
11ML1	**Mathematics for Aviation 1**	Z,ZK	6	2+3		z
18TEDL	**Technical documentation in Avionics**	KZ	3	2+1		z
15TVC1	**Physical Education 1**	Z	1	0+2		z
21TPV	**Essential Theory for Starting Pilot Training**	Z,ZK	5	3+1		z
14ZI	**Basic of Informatics**	KZ	3	0+2	Z	z

Characteristics of the courses of this group of Study Plan: Code=1.S-PP07/08 Name=1.s.PP prez.bak.od07/08

11ATGR	Algebra and Graph Theory	Z,ZK	5

Vector spaces, vectors, linear independence, bases. Matrices, rank, trace, linear mapping, special matrices. System of linear equation. Eigenvectors and eigenvalues of matrices, similar matrices, the characteristic matrix and characteristic polynomial of a matrix. Quadratic forms - diagonal form, associated symmetric matrix, signature, Sylvester´s Inertia Law. Basic definitions of Graph Theory (oriented graphs, walk, trail, path, cycle, trees).

11GMR	Geometry	Z,ZK	5

Topographic surfaces, Orthogonal projection, axonometric projection (orthogonal axonometry, skew projection), perspective projection, curves - conic sections, examples of plane curves, basics of differential geometry of curves: parameterization, arc of the the curve, torsion and curvature, Frenet`s trihedron, surfaces of revolution, quadrics, ruled quadrics, etc.

15J1A1	Foreign Language - English 1	Z	2

The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
 Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
 Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.

11ML1	Mathematics for Aviation 1	Z,ZK	6

Real and complex numbers. Sequences, real function of real variable, composite and inverse functions, limits, continuity, derivatives, differentials, investigation of functions for their properties. Integral calculus of functions of one variable with applications. Solution of ordinary differential equations, separation of variables.

18TEDL	Technical documentation in Avionics	KZ	3

Technical Standards applies on technical drawings in aerospace manufacture, International Standards and European Standards. Technical documents, handling of computer-based technical information, management data for technical documents. Technical drawings of airframes and its parts, technical drawings of parts of aircraft engines. Representation of parts made of composite materials in technical drawings. Diagrams. Accuracy of machine parts.

15TVC1	Physical Education 1	Z	1
The Department of Physical Education provides instruction in a wide variety of sports and games both in regular courses during the term and in winter and summer sport courses. Included are volleyball, basketball, football, tennis, table tennis, athletics, canoeing, orienteering, skiing, gymnastics, bodybuilding, squash, golf etc. The department closely cooperates with the Academic Sport Association of the Faculty of Civil Engineering in the field of recreational and competitive sport.			
21TPV	Essential Theory for Starting Pilot Training	Z,ZK	5
The lectures will be based on experiences from FTO and will be approved by CAA. The lectures are recommended for beginners and content necessary basis for beginning of practical pilot's training. The areas of lectures are air traffic and requirements, aircraft, flight planning, human endurance and limitations, meteorology, navigation, procedures, aerodynamics and radio communication. \r\nOnly total beginners will be taking optional Theory for pilot's training beginning class. Pilot license holders (PPL and higher) don't need to sign for this class.			
14ZI	Basic of Informatics	KZ	3
Introduce to the faculty network and faculty information systems. Theory of information - basic terms. Number systems, conversions, analog / digital representation of the information. Architecture and activity of the numerical computing systems. Algorithms and their graphical flowchart representation. Algorithm development and solution finding by simple program languages. Engineer computation by specialized software - practical tasks. Classified credit examination.			

Code of the group: 2.S.-PP05/06
Name of the group: 2.sem.PP prez.bak.od05/06
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 at least 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
11FZL1	**Physics for Aviation 1**	Z,ZK	5	2+2		z
15J1A2	**Foreign Language - English 2**	Z	2	0+2		z
14KPP1	**Computer Aided Design 1 (AutoCAD Basic Steps)**	KZ	3	0+2		z
11ML2	**Mathematics for Air Branches 2**	Z,ZK	4	2+2		z
21OPC	**Air Transport Business**	KZ	3	1+1		z
18TM	**Technical Mechanics**	Z,ZK	4	2+1		z
15TVC2	**Physical Education 2**	Z	1	0+2		z
21ZENP	**Basics of Aircraft Electronics**	ZK	3	2+0		z
21ZETP	**Basics of Aircraft Electronics**	Z,ZK	3	2+1		z
17ZKP	**Introduction to Law**	KZ	2	2+0		z

Characteristics of the courses of this group of Study Plan: Code=2.S.-PP05/06 Name=2.sem.PP prez.bak.od05/06

11FZL1	Physics for Aviation 1	Z,ZK	5
Kinematics. Dynamics.Thermodynamics. Electric field.			
15J1A2	Foreign Language - English 2	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
14KPP1	Computer Aided Design 1 (AutoCAD Basic Steps)	KZ	3
Determination of "CAD Systems" term. CAD task in system projecting model. Concurrent CAD system in Czech market. Basic AutoCAD course in 2D environment, user settings, output options, designs with grid background.			
11ML2	Mathematics for Air Branches 2	Z,ZK	4
Metric spaces, sequences in metric spaces, limit of sequence in metric space. Differential calculus of functions of several variables, differential of function, partial derivations, implicitly defined functions, extremes of functions of several variables. Integral calculus of function of several variables, Riemann integral in Rn, integral over curves and surfaces in R3, application of integral calculus in physics.			
21OPC	Air Transport Business	KZ	3
Czech aviation law and its regulations, civil aviation organizations, IATA, ICAO, ERA, BSP, research of market in air transport, advertising, schedules, tickets booking and selling, reservation systems, rebooking, cancellations, international tickets, MCO, foreign agencies and booking offices, international air transporters agreements, Ministry of Transport and its role, CAA and its role, international and national aviation associations.			
18TM	Technical Mechanics	Z,ZK	4
15TVC2	Physical Education 2	Z	1
The Department of Physical Education provides instruction in a wide variety of sports and games both in regular courses during the term and in winter and summer sport courses. Included are volleyball, basketball, football, tennis, table tennis, athletics, canoeing, orienteering, skiing, gymnastics, bodybuilding, squash, golf etc. The department closely cooperates with the Academic Sport Association of the Faculty of Civil Engineering in the field of recreational and competitive sport.			
21ZENP	Basics of Aircraft Electronics	ZK	3
21ZETP	Basics of Aircraft Electronics	Z,ZK	3
17ZKP	Introduction to Law	KZ	2
Theoretical foundations of law. The rule of law. Constitutional law. Public law. Substantive and procedural civil law. Commercial law. Trading business. Building permit procedure. Criminal and violation law. Law of nations, European Union and community law.			

Code of the group: 3.S.PP-05/06
Name of the group: 3.s.PP prez.bak.od05/06
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 at least 7 courses
Credits in the group: 30
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
11FZL2	**Physics for Aviation 2**	Z,ZK	5	2+2		z
21LPNV	**FR Flights, Night-time Flying and Multiengine Aircraft Flying**	KZ	5	3+1		z
21LRT	**Radio Technology in Aviation**	Z,ZK	4	3+1		z
21LMO	**Aircraft Engines**	Z,ZK	4	3+1		z
21LPY1	**Requirements in Aviation 1**	Z,ZK	4	2+1		z
21ON	**General Navigation**	KZ	4	3+1		z
21RTS	**Radio Communication**	Z,ZK	4	2+1		z

Characteristics of the courses of this group of Study Plan: Code=3.S.PP-05/06 Name=3.s.PP prez.bak.od05/06

11FZL2	Physics for Aviation 2	Z,ZK	5
Electric Current. Magnetic field. Electromagnetic Induction. Electromagnetic Waves, Light. Geometric Optics, Physical Optics. Interaction of Radiation with Matter. Quantization. Atoms. Solid State Physics. Semiconductors.			
21LPNV	FR Flights, Night-time Flying and Multiengine Aircraft Flying	KZ	5
21LRT	Radio Technology in Aviation	Z,ZK	4
Electric signals and the wave spectrum, modulations - amplitude, frequency and phase, impulse modulation, resonance circuits, electromagnetic field, wave range in aviation, radiation and reception of electromagnetic field, antennas in aviation, receivers and transmitters, basic navigation parameters and their measurements, principles of measurements of angle navigation parameters, distance, altitude, speed, drift angle, hyperbolic navigation system, Earth's satellites, GPS, ground radio navigation systems, NDB, VOR, DVOR, TVOR, DME, ILS, MLS, radiolocation in aviation, monitors in aviation \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21LMO	Aircraft Engines	Z,ZK	4
Introduction, physical principles, energetic demands of plane powering, energy transformations, ecology aspects, engines and their classification, piston engines - engine construction, heat circulation and characteristics, jet engines - their classification, engine construction, heat circulation and characteristics, engine operation and maintenance, technology and used materials, engine projecting.			
21LPY1	Requirements in Aviation 1	Z,ZK	4
Introduction to aviation requirements, scope of Civil Aviation Authority of Czech Republic, ICAO Annexes 1 - 18, Czech aviation requirements L1 - L 18, scope of JAA (Joint Aviation Authority), JAR requirements FCL 1 (requirements for flight crews) and FCL 3 (medical fitness), JAR operation requirements for civil aviation, JAR requirements for aircraft certifications, analysis and explanation of requirements L2, L6, L10, L11, L14, L16, L4444, L8168.			
21ON	General Navigation	KZ	4
Earth - shape, circumference and diameter, latitude and longitude, large and small circle, loxodrome and orthodrome, mathematical calculations of loxodrome and orthodrome, maps and projections, sphere trigonometry, ICAO and Jeppeson maps, time calculations (UTC, GMT, LNT, ZT) and time zones, calculative navigation and navigation by pilotage. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21RTS	Radio Communication	Z,ZK	4
Radiotelephony spelling alphabet, Czech radio telecommunication law, telecommunication secret, radio communication operation, radio communication requirements, distress radio correspondence. \r\nThe lectures are following the requirements for obtaining general radiotelephonist's certificate at Czech Telecommunication Office. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			

Code of the group: 4.S.PP05/06
Name of the group: 4.s.PP prez.bak.od05/06
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 at least 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
15JPA4	**Foreign Language - English 4**	Z,ZK	3	0+2		z
21LLA1	**Aircraft 1**	KZ	4	2+1		z
21LPY2	**Aviation Regulations 2**	Z,ZK	4	2+1		z
21MEO	**Meteorology**	KZ	4	2+2		z
21PRE1	**Flight Instruments 1**	Z,ZK	4	3+1		z
21R	**Radionavigation**	Z,ZK	5	3+2		z

21RSL	**Radio Communication in Practice**	Z	2	0+2		z
21ZLU1	**Principles of Flight 1**	KZ	4	2+1		z

Characteristics of the courses of this group of Study Plan: Code=4.S.PP05/06 Name=4.s.PP prez.bak.od05/06

15JPA4	Foreign Language - English 4	Z,ZK	3

The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
     Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
     Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.

21LLA1	Aircraft 1	KZ	4

Evolution of aircraft constructions, aircraft classification, basic parts of aircraft and their function, wings of low speed aircraft - construction scheme, shapes and components, wings of high speed aircraft, wings with changeable geometry, direct lift control, wing mechanization, increase of lift and drag, longitudinal stability and control, flaps, spoilers, interceptors, ailerons.

\r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.

21LPY2	Aviation Regulations 2	Z,ZK	4

Introduction to aviation requirements, scope of Civil Aviation Authority of Czech Republic, ICAO Annexes 1 - 18, Czech aviation requirements L1 - L 18, scope of JAA (Joint Aviation Authority), JAR requirements FCL 1 (requirements for flight crews) and FCL 3 (medical fitness), JAR operation requirements for civil aviation, JAR requirements for aircraft certifications, analysis and explanation of requirements L2, L6, L10, L11, L14, L16, L4444, L8168.

21MEO	Meteorology	KZ	4

Composition of Earth atmosphere, International Standard Atmosphere, vertical changes, relations among pressure, density, temperature and altitude, pressure settings QNH, QFE, QFF, QME, air instability, atmospheric fronts, atmospheric precipitation and classification, turbulence, conditions, forces creating wind, cyclone and anticyclone, gradient wind, visibility in aviation, weather hazards, meteorological maps, climatology, circulation, intertropic front, meteo reports, meteorological organizations.

21PRE1	Flight Instruments 1	Z,ZK	4

Classification of instruments and their requirements, instrument panel layout depending on the type of aircraft, sensors and active parts, sources of electric power and power circuit on board, measuring of fuel pressure and oil temperature, measuring of cylinder head temperature and temperature of entering and exhaust gas, fuel system, total and immediate consumption, measuring of RPM and vibrations, construction control instruments, icing signalization, barometric instruments - altimeter, variometers, aerometric instruments - speedometer and mach meter, measuring of angle of impact and air temperature, methods of instrument use, instruments and pilot's attention.

21R	Radionavigation	Z,ZK	5

Navigational use of instruments (RC/NDB, VOR, DME, ILS, MLS), space navigation, astronavigation and satellite navigation.

\r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.

21RSL	Radio Communication in Practice	Z	2

Shortcuts used in air traffic, Q - codes, message categories, transmitting letters, numbers and times in aviation, standard words and phrases, important phrases used in meteorological reports, emergency procedures, procedures for VFR flights, procedures for IFR flights, procedures following requirements L10 and L4444.

21ZLU1	Principles of Flight 1	KZ	4

Aerodynamic drag, relation between drag and speed, air flow, formula of continuity, formula of Bernoulli, lift and drag, air flow and pressures around wing, angle of attack, reactions of a wing in air flow, lift and drag of a wing and a aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, induced drag, interference, devices for lift and drag increase

\r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.

Code of the group: 5.S.PP-08/09
Name of the group: 5.s.PP prez.bak.od08/09
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 at least 9 courses
Credits in the group: 30
Note on the group:

Code	**Name of the course / Name of the group of courses** ***(in case of groups of courses the list of codes of their members)*** *Tutors,* ***authors*** *and guarantors (gar.)*	**Completion**	**Credits**	**Scope**	**Semester**	**Role**
21CLP	**Training in the Laboratory of Flight Planning and Monitoring**	Z	2	0+2		z
21CN	**Flight Navigation Training**	KZ	2	0+2		z
15JA5	**Foreign Language - English 5**	Z	2	0+2		z
21LVPM	**Multiengine Aircraft and Multicrew Cooperation**	KZ	4	3+1	L	z
21LMEO	**Meteorology in Aviation**	Z,ZK	3	1+1		z
21LTTE	**Aerodromes**	Z,ZK	4	2P+1C+12B	L	z
21PPJ2	**Flight Instruments 2**	Z,ZK	4	3+1		z
21PAP1	**Flight Planning and Monitoring 1**	KZ	5	3+1		z
21ZLE2	**Principles of Flight 2**	Z,ZK	4	2+1	Z	z

Characteristics of the courses of this group of Study Plan: Code=5.S.PP-08/09 Name=5.s.PP prez.bak.od08/09

21CLP	Training in the Laboratory of Flight Planning and Monitoring	Z	2
21CN	Flight Navigation Training	KZ	2

15JA5	Foreign Language - English 5	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
21LVPM	Multiengine Aircraft and Multicrew Cooperation	KZ	4
Coordination directive with regard to FTOs for practical training, and concurrently meeting requirements for multicrew cooperation according to Ammedment 1 JAR- FCL1.261(d)- MCC. The scope is determined in compliance with AMC FCL 1.261(d).			
21LMEO	Meteorology in Aviation	Z,ZK	3
Composition of Earth atmosphere, International Standard Atmosphere, vertical changes, relations among pressure, density, temperature and altitude, pressure settings QNH, QFE, QFF, QME, air instability, atmospheric fronts, atmospheric precipitation and classification, turbulence, conditions, forces creating wind, cyclone and anticyclone, gradient wind, visibility in aviation, weather hazards, meteorological maps, climatology, circulation, intertropic front, meteo reports, meteorological organizations. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21LTTE	Aerodromes	Z,ZK	4
Aerodrome reference point and temperature, TORA, TODA, ASDA, LDA. Taxiway and apron. Clearway. Stopway. Obstacle limitation surfaces. Runway marking. Runway zone lights. Environmental conditions. Public traffic.			
21PPJ2	Flight Instruments 2	Z,ZK	4
Practical habits of pilots, making decision in emergency situations, complex aerometric systems, mechanical gyroscopes, types and characteristics, artificial horizon, corrections, turn and slip indicators, acceleration meters, magnetic compasses, sensors of Earth's magnetic field, gyroscopic direction indicator, inertial navigation system, acceleration meters of inertial systems, laser gyroscopes, inertial course vertical indicator, signal processing, block setting of inertial systems, complex processing of flight and navigation parameters, cockpit monitors and displays, head-up displays.			
21PAP1	Flight Planning and Monitoring 1	KZ	5
Weight, balance, load, center of gravity, efficiency - single engine planes, efficiency - multiengine planes. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21ZLE2	Principles of Flight 2	Z,ZK	4
Ways of producing thrust, propeller, jet propulsion, thrust and momentum, propulsion efficiency, aerodynamics of fixed and variable pitch propeller, propeller operation modes, propeller airstream effect, gyroscopic effect, balance of forces in horizontal flight, glide and landing, performances, take off and climb, acceleration, positive load, manoeuvres, stability and controllability, transsonic speeds.			

Code of the group: 6.S.PP08/09
Name of the group: 6.s.PP prez.bak.od08/09
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 at least 7 courses
Credits in the group: 30
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
15JPA6	**Foreign Language - English 6**	Z,ZK	2	0+2		z
21L2	**Aircraft 2**	Z,ZK	4	3+1		z
21LO	**Human Performance and Limitations**	Z,ZK	5	3+2		z
21PAP2	**Flight Planning and Monitoring 2**	Z,ZK	5	3+1		z
21PLPP	**IFR Flights Procedures**	Z,ZK	4	2+1		z
21PPU	**Operational Procedures**	Z,ZK	5	2+1		z
21SBP1	**Bachelor Thesis Seminar 1**	KZ	5	0+5		z

Characteristics of the courses of this group of Study Plan: Code=6.S.PP08/09 Name=6.s.PP prez.bak.od08/09

15JPA6	Foreign Language - English 6	Z,ZK	2

The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
     Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
     Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			

21L2	Aircraft 2	Z,ZK	4
Aircraft body, landing gear, tail, directional stability and control, problems with projects, performance envelope, load factor, technologies used in aircraft construction, materials used in construction, fuel system, oil system, electric circuit, ice control system, anti-fire system, control systems.			
21LO	Human Performance and Limitations	Z,ZK	5
Human factors in aviation, qualifications, limitations, accident statistics, flight safety, basic of physiology in aviation and health preserving. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21PAP2	Flight Planning and Monitoring 2	Z,ZK	5
Flight plan ATC ICAO, practical flight planning, planning IFR flight (corridors), planning jet airplane flight, practical flight plan processing, \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21PLPP	IFR Flights Procedures	Z,ZK	4

21PPU	Operational Procedures	Z,ZK	5
System of quality, fuel quantity needed for given flight and given aircraft, MTOW, MNPS NAT.			
21SBP1	Bachelor Thesis Seminar 1	KZ	5

Code of the group: 7S-PP-05/06
Name of the group: 7.s.PPod05/06-prezenční
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 at least 2 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
21BPPP	**Bachelor Thesis**	Z	20	0+18		z
21SB2	**Bachelor Thesis Seminar 2**	Z	10	0+8		z

Characteristics of the courses of this group of Study Plan: Code=7S-PP-05/06 Name=7.s.PPod05/06-prezenční

21BPPP	Bachelor Thesis	Z	20
21SB2	Bachelor Thesis Seminar 2	Z	10

List of courses of this pass:

Code	Name of the course	Completion	Credits
11ATGR	Algebra and Graph Theory	Z,ZK	5
Vector spaces, vectors, linear independence, bases. Matrices, rank, trace, linear mapping, special matrices. System of linear equation. Eigenvectors and eigenvalues of matrices, similar matrices, the characteristic matrix and characteristic polynomial of a matrix. Quadratic forms - diagonal form, associated symmetric matrix, signature, Sylvester´s Inertia Law. Basic definitions of Graph Theory (oriented graphs, walk, trail, path, cycle, trees).			
11FZL1	Physics for Aviation 1	Z,ZK	5
Kinematics. Dynamics.Thermodynamics. Electric field.			
11FZL2	Physics for Aviation 2	Z,ZK	5
Electric Current. Magnetic field. Electromagnetic Induction. Electromagnetic Waves, Light. Geometric Optics, Physical Optics. Interaction of Radiation with Matter. Quantization. Atoms. Solid State Physics. Semiconductors.			
11GMR	Geometry	Z,ZK	5
Topographic surfaces, Orthogonal projection, axonometric projection (orthogonal axonometry, skew projection), perspective projection, curves - conic sections, examples of plane curves, basics of differential geometry of curves: parameterization, arc of the the curve, torsion and curvature, Frenet`s trihedron, surfaces of revolution, quadrics, ruled quadrics, etc.			
11ML1	Mathematics for Aviation 1	Z,ZK	6
Real and complex numbers. Sequences, real function of real variable, composite and inverse functions, limits, continuity, derivatives, differentials, investigation of functions for their properties. Integral calculus of functions of one variable with applications. Solution of ordinary differential equations, separation of variables.			
11ML2	Mathematics for Air Branches 2	Z,ZK	4
Metric spaces, sequences in metric spaces, limit of sequence in metric space. Differential calculus of functions of several variables, differential of function, partial derivations, implicitly defined functions, extremes of functions of several variables. Integral calculus of function of several variables, Riemann integral in Rn, integral over curves and surfaces in R3, application of integral calculus in physics.			
14KPP1	Computer Aided Design 1 (AutoCAD Basic Steps)	KZ	3
Determination of "CAD Systems" term. CAD task in system projecting model. Concurrent CAD system in Czech market. Basic AutoCAD course in 2D environment, user settings, output options, designs with grid background.			
14ZI	Basic of Informatics	KZ	3
Introduce to the faculty network and faculty information systems. Theory of information - basic terms. Number systems, conversions, analog / digital representation of the information. Architecture and activity of the numerical computing systems. Algorithms and their graphical flowchart representation. Algorithm development and solution finding by simple program languages. Engineer computation by specialized software - practical tasks. Classified credit examination.			
15J1A1	Foreign Language - English 1	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1A2	Foreign Language - English 2	Z	2
The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues. Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are			

	recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study. Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.		
15JA5	Foreign Language - English 5	Z	2

	The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
	  Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
	  Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.		

15JPA4	Foreign Language - English 4	Z,ZK	3

	The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
	     Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
	     Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.		

15JPA6	Foreign Language - English 6	Z,ZK	2

	The students of the Faculty of Transportation Sciences study two foreign languages one after another at the Department of Humanities. These courses aim at providing sufficient knowledge to communicate about every-day matters but also to read and write and discuss professional and specialised issues.
	     Both gradually chosen language courses are ended with an exam (at the end of 4th and 8th semester; the TL (Air Traffic Control) specialisation students take an English exam only - at the end of 4th semester; the PP (Professional Pilot) specialisation students take two exams in English - at the end of 4th and 6th semester). Those students who want to apply for the Air Traffic specializations are recommended to enrol "English language" as their first choice. This is, however, not a guarantee for being excepted in the project study.
	     Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.		

15TVC1	Physical Education 1	Z	1
	The Department of Physical Education provides instruction in a wide variety of sports and games both in regular courses during the term and in winter and summer sport courses. Included are volleyball, basketball, football, tennis, table tennis, athletics, canoeing, orienteering, skiing, gymnastics, bodybuilding, squash, golf etc. The department closely cooperates with the Academic Sport Association of the Faculty of Civil Engineering in the field of recreational and competitive sport.		
15TVC2	Physical Education 2	Z	1
	The Department of Physical Education provides instruction in a wide variety of sports and games both in regular courses during the term and in winter and summer sport courses. Included are volleyball, basketball, football, tennis, table tennis, athletics, canoeing, orienteering, skiing, gymnastics, bodybuilding, squash, golf etc. The department closely cooperates with the Academic Sport Association of the Faculty of Civil Engineering in the field of recreational and competitive sport.		
17ZKP	Introduction to Law	KZ	2
	Theoretical foundations of law. The rule of law. Constitutional law. Public law. Substantive and procedural civil law. Commercial law. Trading business. Building permit procedure. Criminal and violation law. Law of nations, European Union and community law.		
18TEDL	Technical documentation in Avionics	KZ	3
	Technical Standards applies on technical drawings in aerospace manufacture, International Standards and European Standards. Technical documents, handling of computer-based technical information, management data for technical documents. Technical drawings of airframes and its parts, technical drawings of parts of aircraft engines. Representation of parts made of composite materials in technical drawings. Diagrams. Accuracy of machine parts.		
18TM	Technical Mechanics	Z,ZK	4
21BPPP	Bachelor Thesis	Z	20
21CLP	Training in the Laboratory of Flight Planning and Monitoring	Z	2
21CN	Flight Navigation Training	KZ	2
21L2	Aircraft 2	Z,ZK	4
	Aircraft body, landing gear, tail, directional stability and control, problems with projects, performance envelope, load factor, technologies used in aircraft construction, materials used in construction, fuel system, oil system, electric circuit, ice control system, anti-fire system, control systems.		
21LLA1	Aircraft 1	KZ	4
	Evolution of aircraft constructions, aircraft classification, basic parts of aircraft and their function, wings of low speed aircraft - construction scheme, shapes and components, wings of high speed aircraft, wings with changeable geometry, direct lift control, wing mechanization, increase of lift and drag, longitudinal stability and control, flaps, spoilers, interceptors, ailerons. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.		
21LMEO	Meteorology in Aviation	Z,ZK	3
	Composition of Earth atmosphere, International Standard Atmosphere, vertical changes, relations among pressure, density, temperature and altitude, pressure settings QNH, QFE, QFF, QME, air instability, atmospheric fronts, atmospheric precipitation and classification, turbulence, conditions, forces creating wind, cyclone and anticyclone, gradient wind, visibility in aviation, weather hazards, meteorological maps, climatology, circulation, intertropic front, meteo reports, meteorological organizations. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.		
21LMO	Aircraft Engines	Z,ZK	4
	Introduction, physical principles, energetic demands of plane powering, energy transformations, ecology aspects, engines and their classification, piston engines - engine construction, heat circulation and characteristics, jet engines - their classification, engine construction, heat circulation and characteristics, engine operation and maintenance, technology and used materials, engine projecting.		
21LO	Human Performance and Limitations	Z,ZK	5
	Human factors in aviation, qualifications, limitations, accident statistics, flight safety, basic of physiology in aviation and health preserving. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.		
21LPNV	FR Flights, Night-time Flying and Multiengine Aircraft Flying	KZ	5
21LPY1	Requirements in Aviation 1	Z,ZK	4
	Introduction to aviation requirements, scope of Civil Aviation Authority of Czech Republic, ICAO Annexes 1 - 18, Czech aviation requirements L1 - L 18, scope of JAA (Joint Aviation Authority), JAR requirements FCL 1 (requirements for flight crews) and FCL 3 (medical fitness), JAR operation requirements for civil aviation, JAR requirements for aircraft certifications, analysis and explanation of requirements L2, L6, L10, L11, L14, L16, L4444, L8168.		
21LPY2	Aviation Regulations 2	Z,ZK	4
	Introduction to aviation requirements, scope of Civil Aviation Authority of Czech Republic, ICAO Annexes 1 - 18, Czech aviation requirements L1 - L 18, scope of JAA (Joint Aviation Authority), JAR requirements FCL 1 (requirements for flight crews) and FCL 3 (medical fitness), JAR operation requirements for civil aviation, JAR requirements for aircraft certifications, analysis and explanation of requirements L2, L6, L10, L11, L14, L16, L4444, L8168.		

21LRT	Radio Technology in Aviation	Z,ZK	4
Electric signals and the wave spectrum, modulations - amplitude, frequency and phase, impulse modulation, resonance circuits, electromagnetic field, wave range in aviation, radiation and reception of electromagnetic field, antennas in aviation, receivers and transmitters, basic navigation parameters and their measurements, principles of measurements of angle navigation parameters, distance, altitude, speed, drift angle, hyperbolic navigation system, Earth's satellites, GPS, ground radio navigation systems, NDB, VOR, DVOR, TVOR, DME, ILS, MLS, radiolocation in aviation, monitors in aviation \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21LTTE	Aerodromes	Z,ZK	4
Aerodrome reference point and temperature, TORA, TODA, ASDA, LDA. Taxiway and apron. Clearway. Stopway. Obstacle limitation surfaces. Runway marking. Runway zone lights. Environmental conditions. Public traffic.			
21LVPM	Multiengine Aircraft and Multicrew Cooperation	KZ	4
Coordination directive with regard to FTOs for practical training, and concurrently meeting requirements for multicrew cooperation according to Ammedment 1 JAR- FCL1.261(d)- MCC. The scope is determined in compliance with AMC FCL 1.261(d).			
21MEO	Meteorology	KZ	4
Composition of Earth atmosphere, International Standard Atmosphere, vertical changes, relations among pressure, density, temperature and altitude, pressure settings QNH, QFE, QFF, QME, air instability, atmospheric fronts, atmospheric precipitation and classification, turbulence, conditions, forces creating wind, cyclone and anticyclone, gradient wind, visibility in aviation, weather hazards, meteorological maps, climatology, circulation, intertropic front, meteo reports, meteorological organizations.			
21ON	General Navigation	KZ	4
Earth - shape, circumference and diameter, latitude and longitude, large and small circle, loxodrome and orthodrome, mathematical calculations of loxodrome and orthodrome, maps and projections, sphere trigonometry, ICAO and Jeppeson maps, time calculations (UTC, GMT, LNT, ZT) and time zones, calculative navigation and navigation by pilotage. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21OPC	Air Transport Business	KZ	3
Czech aviation law and its regulations, civil aviation organizations, IATA, ICAO, ERA, BSP, research of market in air transport, advertising, schedules, tickets booking and selling, reservation systems, rebooking, cancellations, international tickets, MCO, foreign agencies and booking offices, international air transporters agreements, Ministry of Transport and its role, CAA and its role, international and national aviation associations.			
21PAP1	Flight Planning and Monitoring 1	KZ	5
Weight, balance, load, center of gravity, efficiency - single engine planes, efficiency - multiengine planes. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21PAP2	Flight Planning and Monitoring 2	Z,ZK	5
Flight plan ATC ICAO, practical flight planning, planning IFR flight (corridors), planning jet airplane flight, practical flight plan processing, \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21PLPP	IFR Flights Procedures	Z,ZK	4
21PPJ2	Flight Instruments 2	Z,ZK	4
Practical habits of pilots, making decision in emergency situations, complex aerometric systems, mechanical gyroscopes, types and characteristics, artificial horizon, corrections, turn and slip indicators, acceleration meters, magnetic compasses, sensors of Earth's magnetic field, gyroscopic direction indicator, inertial navigation system, acceleration meters of inertial systems, laser gyroscopes, inertial course vertical indicator, signal processing, block setting of inertial systems, complex processing of flight and navigation parameters, cockpit monitors and displays, head-up displays.			
21PPU	Operational Procedures	Z,ZK	5
System of quality, fuel quantity needed for given flight and given aircraft, MTOW, MNPS NAT.			
21PRE1	Flight Instruments 1	Z,ZK	4
Classification of instruments and their requirements, instrument panel layout depending on the type of aircraft, sensors and active parts, sources of electric power and power circuit on board, measuring of fuel pressure and oil temperature, measuring of cylinder head temperature and temperature of entering and exhaust gas, fuel system, total and immediate consumption, measuring of RPM and vibrations, construction control instruments, icing signalization, barometric instruments - altimeter, variometers, aerometric instruments - speedometer and mach meter, measuring of angle of impact and air temperature, methods of instrument use, instruments and pilot's attention.			
21R	Radionavigation	Z,ZK	5
Navigational use of instruments (RC/NDB, VOR, DME, ILS, MLS), space navigation, astronavigation and satellite navigation. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21RSL	Radio Communication in Practice	Z	2
Shortcuts used in air traffic, Q - codes, message categories, transmitting letters, numbers and times in aviation, standard words and phrases, important phrases used in meteorological reports, emergency procedures, procedures for VFR flights, procedures for IFR flights, procedures following requirements L10 and L4444.			
21RTS	Radio Communication	Z,ZK	4
Radiotelephony spelling alphabet, Czech radio telecommunication law, telecommunication secret, radio communication operation, radio communication requirements, distress radio correspondence. \r\nThe lectures are following the requirements for obtaining general radiotelephonist's certificate at Czech Telecommunication Office. \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21SB2	Bachelor Thesis Seminar 2	Z	10
21SBP1	Bachelor Thesis Seminar 1	KZ	5
21TPV	Essential Theory for Starting Pilot Training	Z,ZK	5
The lectures will be based on experiences from FTO and will be approved by CAA. The lectures are recommended for beginners and content necessary basis for beginning of practical pilot's training. The areas of lectures are air traffic and requirements, aircraft, flight planning, human endurance and limitations, meteorology, navigation, procedures, aerodynamics and radio communication. \r\nOnly total beginners will be taking optional Theory for pilot's training beginning class. Pilot license holders (PPL and higher) don't need to sign for this class.			
21ZENP	Basics of Aircraft Electronics	ZK	3
21ZETP	Basics of Aircraft Electronics	Z,ZK	3
21ZLE2	Principles of Flight 2	Z,ZK	4
Ways of producing thrust, propeller, jet propulsion, thrust and momentum, propulsion efficiency, aerodynamics of fixed and variable pitch propeller, propeller operation modes, propeller airstream effect, gyroscopic effect, balance of forces in horizontal flight, glide and landing, performances, take off and climb, acceleration, positive load, manoeuvres, stability and controllability, transsonic speeds.			
21ZLU1	Principles of Flight 1	KZ	4
Aerodynamic drag, relation between drag and speed, air flow, formula of continuity, formula of Bernoulli, lift and drag, air flow and pressures around wing, angle of attack, reactions of a wing in air flow, lift and drag of a wing and a aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, induced drag, interference, devices for lift and drag increase \r\nThe lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			

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

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