

# Study plan

**Name of study plan: PP bakal.prez.03/04za átek**

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-PP03/04.PREZ.BAK

Name of the group: 1.sem.PP prez.bak.03/04

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
11ATGR	<b>Algebra and Graph Theory</b>	Z,ZK	5	2+2	Z	Z
11GMR	<b>Geometry</b>	Z,ZK	5	2+2		Z
15J1A1	<b>Foreign Language - English 1</b>	Z	2	0+2		Z
11MTA1	<b>Mathematical Analysis 1</b>	Z,ZK	6	2+3		Z
18TECD	<b>Technical Documentation</b>	KZ	3	2+1		Z
15TVC1	<b>Physical Education 1</b>	Z	1	0+2		Z
14TETK	<b>Text Editors and Spreadsheets</b>	KZ	3	0+2		Z
12ZDIR	<b>Introduction to Transportation Engineering</b>	Z,ZK	5	2+2		Z

**Characteristics of the courses of this group of Study Plan: Code=1.S-PP03/04.PREZ.BAK Name=1.sem.PP prez.bak.03/04**

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.&lt;br&gt; 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.&lt;br&gt; Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.
11MTA1	Mathematical Analysis 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.
18TECD	Technical Documentation	KZ	3	
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.

14TETK	Text Editors and Spreadsheets	KZ	3
Basic principles of work on the Faculty of transportation's network, operating systems bases, text editor MS WORD, writing and text editing, processing of large documents, MS EXCEL spreadsheet, work with data, calculating operations, graphs, multidimensional tables, connection with text editor.			
12ZDIR	Introduction to Transportation Engineering	Z,ZK	5
Sort of traffic, basic parameter, development traffic system, safety traffic. Relation traffic and territory. Traffic planning. Traffic research and measurement. Prognostication traffic. Regulation and organization traffic. Segregation and integration city traffic. Territorial scheduling.			

Code of the group: 2.S-PP03/04

Name of the group: 2.sem.PP prez.bak.03/04

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
11FZ1	Physics 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
18KKM	Metals and Metal Materials	Z,ZK	3	2+1		Z
13MT	Macroeconomic Theory	ZK	3	2+0		Z
11MTA2	Mathematical Analysis 2	Z,ZK	4	2+2		Z
18S	Statics	Z,ZK	4	2+1		Z
15TVC2	Physical Education 2	Z	1	0+2		Z
16UDM	Introduction to Transportation and Manipulation Technology	ZK	3	2+0		Z
19ZKP	Introduction to Law	KZ	2	2+0		Z

Characteristics of the courses of this group of Study Plan: Code=2.S-PP03/04 Name=2.sem.PP prez.bak.03/04

11FZ1	Physics 1	Z,ZK	5
Kinematics. Dynamics of Particle, Systems of Particles and Rigid Body. Solids and Fluids. 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.			
18KKM	Metals and Metal Materials	Z,ZK	3
13MT	Macroeconomic Theory	ZK	3
The aim of this course is to obtain an understanding of basic macroeconomic relations and to give the orientation in the topics of macroeconomic policy. The analysis of monetary and fiscal instruments of macroeconomic policy in the context of contemporary economic thought is included in the structure of the course. The students also have the occasion to understand the problems of money markets, the banking sector, inflation, unemployment and labour markets, government budget, exchange rates and international trade.			
11MTA2	Mathematical Analysis 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 R <sub>n</sub> , integral over curves and surfaces in R <sup>3</sup> , application of integral calculus in physics.			
18S	Statics	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.			
16UDM	Introduction to Transportation and Manipulation Technology	ZK	3
Transportation and handling technology in time continuity. Transportation systems and means of transport, infrastructure and division. Principles, functions and arrangement of overland railway and road means of transportation. Heat engines and their concept. Electric engines. Power transmission and its characteristics. Non-overland means of transportation. River- and sea- vessels, transporter airplanes and their drive units; principles and methods of solution. Handling and lifting systems, sorting. Systems for depositing and storing. Basic concepts and terminology. This subject contains excursions as well.			
19ZKP	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-04/05

Name of the group: 3.sem.PP prez.bak.04/05

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
11FZ2	Physics 2	Z,ZK	5	2+2	Z	z
15J1A3	Foreign Language - English 3	Z	2	0+2		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
14SIAW	Internet Services and WWW Pages Design	KZ	3	1+1		z

**Characteristics of the courses of this group of Study Plan: Code=3.S.PP-04/05 Name=3.sem.PP prez.bak.04/05**

11FZ2	Physics 2	Z,ZK	5	Electric Current. Magnetic Field. Faraday's Law. Electromagnetic Field. Maxwell's Equations. Light. Geometric and Physical Optics. Quantization of Electromagnetic Radiation. Interaction of Radiation with Matter. Quantization. Hydrogen atom. Many-Electrons Atoms. Properties of Nuclei.		
15J1A3	Foreign Language - English 3	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.		
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  The 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 Jeppesen maps, time calculations (UTC, GMT, LNT, ZT) and time zones, calculative navigation and navigation by pilotage.  The 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.   The lectures are following the requirements for obtaining general radiotelephonist's certificate at Czech Telecommunication Office.  The lector of this subject has to have passed an exam at CAA following JAR - FCL 1.		
14SIAW	Internet Services and WWW Pages Design	KZ	3	Orientation and information searching in Internet environment, ability of communication through Internet and basic knowledge of own WWW presentation by help of WWW sides.		

Code of the group: 4.S.PP04/05

Name of the group: 4.sem.PP prez.bak.04/05

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	<b>Aircraft 1</b>	KZ	4	2+1		Z
21LAN1	<b>English in Aviation 1</b>	Z	2	0+2		Z
21LPY2	<b>Aviation Regulations 2</b>	Z,ZK	4	2+1		Z
21MEO	<b>Meteorology</b>	KZ	4	2+2		Z
21PRE1	<b>Flight Instruments 1</b>	Z,ZK	4	3+1		Z
21R	<b>Radionavigation</b>	Z,ZK	5	3+2		Z
21ZLU1	<b>Principles of Flight 1</b>	KZ	4	2+1		Z

**Characteristics of the courses of this group of Study Plan: Code=4.S.PP04/05 Name=4.sem.PP prez.bak.04/05**

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. The lector of this subject has to have passed an exam at CAA following JAR - FCL 1.		
21LAN1	English in Aviation 1	Z	2	Students are expected to have perfectly passed the first block of English language. They will continue with the second block along with English in aviation. English in aviation A will introduce to the students basic terminology in the area of civil aviation. The lectures will be structured so one week the students go through the theory, special emphasis will be put on ability of students to receive information only in English. The next week will students use the theoretical knowledge in conversation and practical exercises? Audiovisual technology will also be used.		
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. The lector of this subject has to have passed an exam at CAA following JAR - FCL 1.		
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. The lector of this subject has to have passed an exam at CAA following JAR - FCL 1.		

Code of the group: 5.S.PP-05/06

Name of the group: 5.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 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
21L2	Aircraft 2	Z,ZK	4	3+1		Z
21LMEO	Meteorology in Aviation	Z,ZK	3	1+1		Z
21LTTE	Aerodromes	Z,ZK	4	2P+1C+1B	L	Z
21PPJ2	Flight Instruments 2	Z,ZK	4	3+1		Z

21PAP1	<b>Flight Planning and Monitoring 1</b>	KZ	5	3+1		Z
21ZLE2	<b>Principles of Flight 2</b>	Z,ZK	4	2+1	Z	Z

**Characteristics of the courses of this group of Study Plan: Code=5.S.PP-05/06 Name=5.s.PP prez.bak.od05/06**

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.&#x0D;&#x0D; 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.&#x0D;&#x0D; 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.				
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. &#x0D;&#x0D;&#x0D;The 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. &#x0D;&#x0D;&#x0D;The 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.PP05/06

Name of the group: 6.sem.PP prez.bak.05/06

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
15JPA6	Foreign Language - English 6	Z,ZK	2	0+2		Z
21LVCP	Multiengine Aircraft and Multicrew Cooperation	KZ	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.PP05/06 Name=6.sem.PP prez.bak.05/06**

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.&#x0D;&#x0D;&#x0D;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.&#x0D;&#x0D;&#x0D;Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.				
21LVCP	Multiengine Aircraft and Multicrew Cooperation		KZ	4

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. &lt;br&gt;&lt;br&gt;\n\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, &lt;br&gt;&lt;br&gt;\n\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-prezen ní

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) <i>Tutors, authors and guarantors (gar.)</i>	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-prezen ní

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 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).	Z,ZK	5
11FZ1	Physics 1 Kinematics. Dynamics of Particle, Systems of Particles and Rigid Body. Solids and Fluids. Thermodynamics. Electric Field.	Z,ZK	5
11FZ2	Physics 2 Electric Current. Magnetic Field. Faraday's Law. Electromagnetic Field. Maxwell's Equations. Light. Geometric and Physical Optics. Quantization of Electromagnetic Radiation. Interaction of Radiation with Matter. Quantization. Hydrogen atom. Many-Electrons Atoms. Properties of Nuclei.	Z,ZK	5
11GMR	Geometry 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.	Z,ZK	5
11MTA1	Mathematical Analysis 1 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.	Z,ZK	6
11MTA2	Mathematical Analysis 2 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 R <sub>n</sub> , integral over curves and surfaces in R <sup>3</sup> , application of integral calculus in physics.	Z,ZK	4
12ZDIR	Introduction to Transportation Engineering Sort of traffic, basic parameter, development traffic system, safety traffic. Relation traffic and territory. Traffic planning. Traffic research and measurement. Prognostication traffic. Regulation and organization traffic. Segregation and integration city traffic. Territorial scheduling.	Z,ZK	5
13MT	Macroeconomic Theory The aim of this course is to obtain an understanding of basic macroeconomic relations and to give the orientation in the topics of macroeconomic policy. The analysis of monetary and fiscal instruments of macroeconomic policy in the context of contemporary economic thought is included in the structure of the course. The students also have the occasion to understand the problems of money markets, the banking sector, inflation, unemployment and labour markets, government budget, exchange rates and international trade.	ZK	3
14KPP1	Computer Aided Design 1 (AutoCAD Basic Steps) 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.	KZ	3
14SIAW	Internet Services and WWW Pages Design Orientation and information searching in Internet environment, ability of communication through Internet and basic knowledge of own WWW presentation by help of WWW sides.	KZ	3

14TETK	Text Editors and Spreadsheets	KZ	3
Basic principles of work on the Faculty of transportation's network, operating systems bases, text editor MS WORD, writing and text editing, processing of large documents, MS EXCEL spreadsheet, work with data, calculating operations, graphs, multidimensional tables, connection with text editor.			
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.&#x2013; 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.&#x2013; 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.&#x2013; 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.&#x2013; Our department provides courses in English, German, French and Russian at different levels. The courses are also taught in our multimedia laboratory.			
15J1A3	Foreign Language - English 3	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.&#x2013; 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.&#x2013; 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.&#x2013; 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.&#x2013; 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.&#x2013; 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 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.&#x2013; 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.&#x2013; 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.&#x2013; 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.			
16UDM	Introduction to Transportation and Manipulation Technology	ZK	3
Transportation and handling technology in time continuity. Transportation systems and means of transport, infrastructure and division. Principles, functions and arrangement of overland railway and road means of transportation. Heat engines and their concept. Electric engines. Power transmission and its characteristics. Non-overland means of transportation. River- and sea- vessels, transporter airplanes and their drive units; principles and methods of solution. Handling and lifting systems, sorting. Systems for depositing and storing. Basic concepts and terminology. This subject contains excursions as well.			
18KKM	Metals and Metal Materials	Z,ZK	3
18S	Statics	Z,ZK	4
18TECD	Technical Documentation	KZ	3
19ZKP	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.			
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.			

21LAN1	English in Aviation 1	Z	2
Students are expected to have perfectly passed the first block of English language. They will continue with the second block along with English in aviation. English in aviation A will introduce to the students basic terminology in the area of civil aviation. The lectures will be structured so one week the students go through the theory, special emphasis will be put on ability of students to receive information only in English. The next week will students use the theoretical knowledge in conversation and practical exercises? Audiovisual technology will also be used.			
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. The 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. The 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. The lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
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. The 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.			
21LVCP	Multiengine Aircraft and Multicrew Cooperation	KZ	4
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 Jeppesen maps, time calculations (UTC, GMT, LNT, ZT) and time zones, calculative navigation and navigation by pilotage. The lector of this subject has to have passed an exam at CAA following JAR - FCL 1.			
21PAP1	Flight Planning and Monitoring 1	KZ	5
Weight, balance, load, center of gravity, efficiency - single engine planes, efficiency - multiengine planes. The 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. The 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. The 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.   \n\nThe lectures are following the requirements for obtaining general radiotelephonist's certificate at Czech Telecommunication Office.    \n\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
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    \n\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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