

Study plan

Name of study plan: TUL bak.prez.10/11

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Technology of Aviation Maintenance

Garantor of the study branch: Ing. Martin Novák, Ph.D.

Program of study: Technology in Transportation and Telecommunications

Type of study: Bachelor full-time

Required credits: 180

Elective courses credits: 0

Sum of credits in the plan: 180

Note on the plan:

Name of the block: Compulsory courses

Minimal number of credits of the block: 87

The role of the block: Z

Code of the group: 1.S.BTUL 10/11

Name of the group: 1.sem.TUL bak.prez.10/11

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 12 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
13E	Economics	Z,ZK	3	2+1	Z	z
11GIE	Geometry <i>Oldřich Hykš, Šárka Voráková, Pavel Provinský, Šárka Voráková (Gar.)</i>	KZ	3	2P+2C+12B	Z	z
14KSP	Constructing with Computer Aid <i>Vladimír Douda, Martin Brumovský, Lukáš Kozel, Radek Kratochvíl, Filip Müller, Lukáš Svoboda, Drahomír Schmidt, Lukáš Svoboda (Gar.)</i>	KZ	2	0P+2C+8B	Z	z
11LA	Linear Algebra <i>Pavel Provinský, Lucie Kárná, Jan Píkrýl, Martina Beváková, Martina Beváková (Gar.)</i>	Z,ZK	3	2P+1C+10B	Z	z
11MTA	Mathematical Analysis	Z,ZK	4	2+2	Z	z
18MRI1	Materials 1	Z,ZK	3	2+1	Z	z
18TTED	Creation of Technical Documentation	KZ	2	2+1	Z	z
00TVC1	Physical Education 1	Z	1	0+2	Z	z
12ZADI	Introduction to Transportation Engineering	Z,ZK	3	2+1	Z	z
14ZINF	Fundamentals of Informatics	KZ	2	0+2	Z	z
21ZLD	Introduction to Air Transport	KZ	2	2+1	Z	z
22UN	Traffic Accidents Introduction	Z	2	2+0	Z	z

Characteristics of the courses of this group of Study Plan: Code=1.S.BTUL 10/11 Name=1.sem.TUL bak.prez.10/11

13E	Economics	Z,ZK	3	Microeconomic and macroeconomic interpretation of economic relations. Method and subject of the economics. Economic decision making of consumers and producers. Market structures. Labour and capital, efficiency, ownership, public choice.
11GIE	Geometry	KZ	3	Orthographic and oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - parameterization, arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a curved path.
14KSP	Constructing with Computer Aid	KZ	2	"CAD systems" term determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common work rules in graphic applications and CA systems. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possibilities, AutoCAD environment profiles, drawings with raster foundations).
11LA	Linear Algebra	Z,ZK	3	Vector spaces (linear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvability. Determinants and their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.

11MTA	Mathematical Analysis	Z,ZK	4
Sequences and series of real numbers and its convergence. Basic properties of functions. Differential and integral calculus of the real function of one real variable. Power series, Fourier series and foundations of Fourier transform.			
18MRI1	Materials 1	Z,ZK	3
Crystal structure. Basics of thermodynamics of metals and their alloys. Balanced binary diagrams. Alloys of iron with carbon. Deterioration of solid solutions. Heating processing of steel and cast irons. Physical features. Mechanical features. Dephctostopic testing. Corosion.			
18TTED	Creation of Technical Documentation	KZ	2
Technical standards, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy, arrangement of drawing sheets, types of schemes and their creation.			
00TVC1	Physical Education 1	Z	1
Practical instruction and training in a wide variety of sports and games: from basic recreational coaching to competitive top level training. Included are: basketball, volleyball, soccer, tennis, squash, floorball, bodybuilding, swimming, canoeing, aerobic.			
12ZADI	Introduction to Transportation Engineering	Z,ZK	3
Traffic survey. Terrestrial roads. Residential zone. Land - use planning. Railway transport. Public mass transport. Integrated traffic systems. Traffic prognosis. Traffic safety. Air transport. Traffic and environment.			
14ZINF	Fundamentals of Informatics	KZ	2
Introduction to faculty network, MS-Word and Open Office, use of styles and advanced features, computer functions and information transmission. Number systems incl. arithmetic calculations. Algorithms and their proprieties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and procedures. Work with MS-Excel - tables, graphs, calculations, functions.			
21ZLD	Introduction to Air Transport	KZ	2
Air transport as a component of complex transport system. International status of civil aviation. International organizations in Europe and worldwide. Characteristics of air transport. Commercial air transport. Technical operations of aeroplanes.			
22UN	Traffic Accidents Introduction	Z	2
Traffic accident as a physical process, systematic submission, vehicle x human x infrastructure interaction, accidents statistics, aircraft accidents, accidents on railways, accidents on waterways, road traffic accidents, other aspects, accidental prevention.			

Code of the group: 2.S.BTUL 10/11

Name of the group: 2.sem.TUL bak.prez. 10/11

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 12 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
13EDOT	Economy, Transport, Telecommunications	KZ	2	2+0	L	z
11FY1	Physics 1	Z,ZK	4	2P+2C	L	z
11MVP	Mathematical Analysis of Function of More Variables	Z,ZK	3	2+2	L	z
18MRI2	Materials 2	KZ	2	2+0	L	z
11PT	Probability	Z	2	1+1	L	z
12PKD	Rail Transport Designing	Z,ZK	3	2+2	L	z
18ST	Statics	Z,ZK	3	2+1	L	z
14SIAP	Networks and Protocols	KZ	2	1+1	L	z
17TDL	Transport Technology and Logistics	Z,ZK	3	2+2	L	z
00TVC2	Physical Education 2	Z	1	0+2	L	z
20UIS	Introduction to ITS	Z,ZK	3	2+1	L	z
14UPRO	Introduction to Programming	KZ	2	0+2	L	z

Characteristics of the courses of this group of Study Plan: Code=2.S.BTUL 10/11 Name=2.sem.TUL bak.prez. 10/11

13EDOT	Economy, Transport, Telecommunications	KZ	2
Transport, telecommunications, demand, supply, indicators, economic development, legislation, European union, regulation, liberalisation, transport modes, ITS, sustainability.			
11FY1	Physics 1	Z,ZK	4
Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed electric current.			
11MVP	Mathematical Analysis of Function of More Variables	Z,ZK	3
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 functions of several variables, Riemann integral, integral over curves and surfaces in R3, application of integral calculus in physics.			
18MRI2	Materials 2	KZ	2
Fundamental concepts, notions. The main materials groups. Semiconductors. Polymers. Special types of steel. Properties and application of the composite materials.			
11PT	Probability	Z	2
Descriptive statistics. Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distribution, probability mass and density, moments, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed distributions, mixture of distributions. Law of large numbers, central limit theorem.			

12PKD	Rail Transport Designing	Z,ZK	3
Railway lines network. Vehicle and track relation. Traction. Track geometrical parameters. Clearance profile. Railway lines routing. Superstructure and substructure of the railway lines. Switches. Railway stations. City rail transport.			
18ST	Statics	Z,ZK	3
General system of forces. Calculation of reactions of mass objects and compound systems. Assessment of internal forces on statically determinate beam and simple framework. Principle of virtual works. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction, method of joints and method of sections. Geometry of cross sections. Plane fiber polygons and catenary cables.			
14SIAP	Networks and Protocols	KZ	2
Basic communication model, history and development of the Internet, principle of data transfer through computer networks (TCP/IP), performance of basic network protocols (ARP, RARP, TCP, UDP, Telnet, FTP, DNS, DHCP POP3, IMAP), data acquirement from the Internet sources, communicating ability via the Internet and fundamentals of own web presentation design by the means of web sites.			
17TDL	Transport Technology and Logistics	Z,ZK	3
Basic terms in transport technology and logistics. Particular steps of transport planning. Quantification of carriage relations. Line planning. Timetabling. Planning in passenger and freight transport. Organisation of traffic in each transport means. Technological factors from the point of view of operator and client. Organisation of public city transport. Logistic technologies and their application using various transport means.			
00TVC2	Physical Education 2	Z	1
Practical instruction and training in a wide variety of sports and games: from basic recreational coaching to competitive top level training. Included are: basketball, volleyball, soccer, tennis, squash, floorball, bodybuilding, swimming, canoeing, aerobic.			
20UIS	Introduction to ITS	Z,ZK	3
Intelligent Transport Systems (ITS), their objectives and vision. ITS in the world, in Europe and in the Czech Republic. Architecture of ITS and the role of standardization. Information and navigation systems. ITS in road, rail and combine transport. Design of ITS, organization, preparation and implementation of the project. Current projects in the Czech Republic.			
14UPRO	Introduction to Programming	KZ	2
Algorithm development, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables, conditions, cycles, arrays, functions), programming techniques, complexity.			

Code of the group: 3.S.BTUL 11/12

Name of the group: 3.sem.TUL bak.prez.11/12

Requirement credits in the group: In this group you have to gain 27 credits

Requirement courses in the group: In this group you have to complete 10 courses

Credits in the group: 27

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
11DAD	Differential and Difference Equations	Z,ZK	3	2+1	Z	z
11FY2	Physics 2	Z,ZK	4	2+2	Z	z
12MDE	Transport Models and Transport Excesses <i>Milan Dont, Josef Kocourek</i>	Z,ZK	3	2P+1C+8B	Z	z
12PPOK	Designing Roads, Highways and Motorways <i>Petr Šatra, Jiří Šarský, Jan Gallia, Tomáš Padělek, Petr Kumpošt</i>	KZ	3	1P+2C+10B	Z	z
18PZP	Elasticity and Strength <i>Petr Zlámal, Jan Vyšší, Tomáš Doktor, Josef Jíra, Petr Koudelka, Jan Šleichrt, Tomáš Doktor, Daniel Kytý, Jan Šleichrt,</i>	Z,ZK	3	2P+1C+10B	Z	z
11SIS	Statistics	Z,ZK	2	1+1	Z	z
20SSA	Systems Analysis	Z,ZK	3	2+1	Z	z
14ZAET	Fundamentals of Electrotechnics	KZ	2	2+1	Z	z
14UATT	Introduction to Automatization and Telecommunication Systems	KZ	2	3+0	Z	z
16UDDM	Introduction to Transportation and Manipulation Technics	ZK	2	2+0	Z	z

Characteristics of the courses of this group of Study Plan: Code=3.S.BTUL 11/12 Name=3.sem.TUL bak.prez.11/12

11DAD	Differential and Difference Equations	Z,ZK	3
Difference equations and its systems. Some solvable types of differential equations of the first order. Linear differential equations of the n-th order. Methods for solution of the homogeneous equation, solution of inhomogeneous equation by means of variation of constants. Power series and their use for solution of differential equation. Boundary value problem. Eigennumbers and function for differential equation. Fourier series of function.			
11FY2	Physics 2	Z,ZK	4
Magnetic field, electromagnetic field. Optics, quantum character of electromagnetic radiation. Introduction into quantization, hydrogen atom. Multi-electron atoms, the nuclei. Basics of solid body physics.			
12MDE	Transport Models and Transport Excesses	Z,ZK	3
Parameters of the traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shock waves. Quality of transport and its assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. Improving of transport safety and fluency.			
12PPOK	Designing Roads, Highways and Motorways	KZ	3
Definition, types, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. Route in rural areas. Range of vision for stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device. Crossings, junctions, intersections.			

18PZP	Elasticity and Strength	Z,ZK	3
Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and welded joint of structure. Analysis of deflection curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic foundation. Strength analysis.			
11SIS	Statistics	Z,ZK	2
Point estimation, properties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlation, linear regression, correlation coefficient, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of matrices in regression.			
20SSA	Systems Analysis	Z,ZK	3
Systems identification. Typical tasks of systems analysis: on the interface, routes in system, decomposition and integration, on systems feedback. Capacity tasks, process analysis. Task about behaviour, aim behaviour, the genetic code, architecture and identity of systems. Fundamentals of technical cybernetics, stability and reliability of systems.			
14ZAET	Fundamentals of Electrotechnics	KZ	2
Basic electrotechnic terms, circuit quantities. Periodic courses characteristics. Electric circuits elements and basic circuit members. Assignating of bipoles and basic circuit elements. Solution to direct current circuits with a help of circuit analysis elementar methods: method of consecutive reduction, unloaded voltage divider, current divider. Transfiguration star-triangel and principle of superposition in direct current circuits.			
14UATT	Introduction to Automatization and Telecommunication Systems	KZ	2
Basic axioms of technical cybernetics, automatization in transportation, human as the weakest element, signalling in transpotation, modelling and projecting of transport systems, integrated technological and infromation system in post, principle of telecommunication signal transmission, solving of telecommunication networks, modulating methods, multimedial networks and services, NGN networks.			
16UDDM	Introduction to Transportation and Manipulation Technics	ZK	2
Means of transportation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Water transportation. Manipulating technics. Principles of lifting machines and conveyors. Legislature.			

Name of the block: Compulsory courses in the program

Minimal number of credits of the block: 81

The role of the block: P

Code of the group: 4.S.BTUL 11/12

Name of the group: 4.sem.TUL bak.prez.11/12

Requirement credits in the group: In this group you have to gain 27 credits

Requirement courses in the group: In this group you have to complete 10 courses

Credits in the group: 27

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
14ELT	Electrotechnics	Z,ZK	4	2+2	L	P
18KIAD	Kinematics and Dynamics	Z,ZK	2	2+1	L	P
21LL1	Aircraft 1 <i>Ladislav Keller</i>	KZ	3	2P+1C+1CB	L	P
21LR	Radio Technology in Aviation	ZK	2	2+0	L	P
21LRY	Aircraft Engines	Z,ZK	2	2+1	L	P
18MC	Materials Exercices	Z	2	0+2	L	P
21PY1	Aircraft Maintenance Technology 1	KZ	3	2+1	L	P
18SAS	Joints and Parts of Technical Joints	KZ	3	2+1	L	P
21ZLE1	Principles of Flight 1	KZ	3	2+1	L	P
18CSU	Parts of Machines	KZ	3	2+1	L	P

Characteristics of the courses of this group of Study Plan: Code=4.S.BTUL 11/12 Name=4.sem.TUL bak.prez.11/12

14ELT	Electrotechnics	Z,ZK	4
Theory of electron. Static electriciry, conductance, and electrotechnical terminology. Power and direct current generation. Direct current circuits. Electric resistance, resistor, and power. Capacity and capacitor. Magnetism. Inductance and induction coil. Direct current engines and generators. Theory of alternate current. Resistant, capacity, and inductive circuits. Transformers. Alternate current engines and generators. Frequency filters.			
18KIAD	Kinematics and Dynamics	Z,ZK	2
Motion along a line, motion along a curve. Kinematics of rigid plane, kinematics of rigid body. Point mass kinematics, system of point masses. Point mass dynamics and system of point masses, equation of motion. Method of Newton. Princl of D'Alembert. Free and forced vibration with one degree of freedom. Viscous damping. Impact theory. Introduction to the solution of vibration with multiple degrees of freedom.			
21LL1	Aircraft 1	KZ	3
Aircraft structural and conceptual design types - definitions and basic knowledge of the problem. Development of requirements, aircraft definitions and categorisation. Aircraft loadings. Systems of primary and secondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeroplane topics.			
21LR	Radio Technology in Aviation	ZK	2
Electric signals and the wave spectrum, Analog and digital modulations, Noises, Filters, Resonance circuits. Electromagnetic field. Electromagnetic wave propagation. Wave ranges in aviation, radiation and reception of electromagnetic field, antennas in aviation, receivers and transmitters.			
21LRY	Aircraft Engines	Z,ZK	2
Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational characteristics. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational characteristics. Engine control.			

18MC	Materials Exercises Different kinds of processing applied to metals and their alloys. Casting, forming, welding, machining and powder metallurgy.	Z	2
21PY1	Aircraft Maintenance Technology 1 Fundamentals of aircraft maintenance technology, legislation, aircraft release into operation, safety, equipment.	KZ	3
18SAS	Joints and Parts of Technical Joints Connection of machine parts, their construction and technology production, design of joints, kinds of fit, bearings, bearing location.	KZ	3
21ZLE1	Principles of Flight 1 Aerodynamic drag, relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, lift and drag, air flow and pressures around wing, angle of attack, reactions of wing in air flow, lift and drag of a wing and an aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, induced drag, interference, devices for lift and drag increase.	KZ	3
18CSU	Parts of Machines Transmissions, overview and classification, mechanical transmission, parts of transmission, gear relation, design and dimensioning of shafts and bearings, gears, materials of gears, gear boxes.	KZ	3

Code of the group: 5.S.BTUL 12/13

Name of the group: 5.sem.TUL bak.prez.12/13

Requirement credits in the group: In this group you have to gain 27 credits

Requirement courses in the group: In this group you have to complete 10 courses

Credits in the group: 27

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
14DB	Database Systems	KZ	2	0+2	Z	P
21DKV	Aviation Datalink Communication	KZ	2	2+0	Z	P
21KAS1	Aircraft Construction and Systems 1	Z,ZK	3	2+2	Z	P
21LTA2	Aircraft 2 Jakub Kraus, Jakub Hospodka, Tomasz Balcerzak, Anna Kariaková, Roman Matyáš, Vladimír Plos, Oldřich Štumberger, Ladislav Keller	Z,ZK	2	2P+1C	Z	P
21LLG1	Aviation Legislation 1 Jakub Kraus, Jiří Luk	Z,ZK	4	2P+1C	Z	P
21LICL	Human Factors in Aviation	KZ	2	2+0	Z	P
21PY2	Aircraft Maintenance Technology 2	KZ	2	2+1	Z	P
21TMY1	Turbine Engines 1	KZ	3	2+2	Z	P
20ZENT	Basic Electronics	Z,ZK	3	2+1	Z	P
21ZLE2	Principles of Flight 2	Z,ZK	4	2+1	Z	P

Characteristics of the courses of this group of Study Plan: Code=5.S.BTUL 12/13 Name=5.sem.TUL bak.prez.12/13

14DB	Database Systems Basic concepts of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrity of data, database queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW.	KZ	2
21DKV	Aviation Datalink Communication The subject acquaints students with aviation communication domain. Stress is put on the datalink systems. Students are acquainted both with technical aspect and with operation problem so that they are able to understand data flows necessary for provision safe, fluent and economic air traffic.	KZ	2
21KAS1	Aircraft Construction and Systems 1 Aircraft construction requirements and functions: fuselage, wings, flight controls, undercarriage, aircraft pylon, nacelle. Aircraft systems requirements and functions: drainage, water distribution systems and aircraft lighting.	Z,ZK	3
21LTA2	Aircraft 2 Manufacturers responsibility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national standards. Static solidity of aircraft structures. Aeroelasticity. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presumption.	Z,ZK	2
21LLG1	Aviation Legislation 1 Legislative framework (the role of the ICAO, EASA, member states, relations among Part 145, Part 66, Part 147 and Part M as well as relationships between other aviation authorities) with knowledge on level 1 for categories B1 and B2. Part 66 Maintenance Certifying Staff and Part 145 Maintenance Organisations with knowledge on level 2 for categories B1 and B2. Aircraft certification, type-certification, supplemental type-certification.	Z,ZK	4
21LICL	Human Factors in Aviation Human performance & limitations, capability & competence, accident statistics, flight safety, fundamentals of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, fundamentals of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods.	KZ	2
21PY2	Aircraft Maintenance Technology 2 Classification, maintenance, checks and repair of construction parts: joints, bearing, hoses, pipes, gearing, brakes, dampers, shaft, springs.	KZ	2
21TMY1	Turbine Engines 1 First part of the course Turbine Engines is focused on the explanation and description of the purpose, operation and construction characteristics of aircraft turbojet and turbofan engines. Thermal engine, thermal cycle and its basic parameters, power output and thermal efficiency, basic construction modules, operational and construction characteristics.	KZ	3
20ZENT	Basic Electronics The subject is focused on switching elements, operational amplifier, generation harmonic and nonharmonic signals, sources, conduction of high frequencies signals. Analog-Digital and Digital-Analog converter. Extensive part is also dedicated to digital logical circuits and microprocessors.	Z,ZK	3

21ZLE2	Principles of Flight 2	Z,ZK	4
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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.BTUL 12/13

Name of the group: 6.sem.TUL bak.prez. 12/13

Requirement credits in the group: In this group you have to gain 27 credits

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

Credits in the group: 27

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
14ISYS	Information Systems	KZ	2	2+0	L	P
21KAS2	Aircraft Construction and Systems 2	Z,ZK	6	4+3	L	P
21LLG2	Aviation Legislation 2	ZK	2	2P+0C	L	P
21LCU	Aviation Maintenance Human Factors	Z,ZK	3	2+1	L	P
21PY3	Aircraft Maintenance Technology 3	KZ	4	2+2	L	P
21TMY2	Turbine Engines 2	Z,ZK	4	3+2	L	P
21V	Aircraft Propellers	Z,ZK	6	3P+2C	L	P

Characteristics of the courses of this group of Study Plan: Code=6.S.BTUL 12/13 Name=6.sem.TUL bak.prez. 12/13

14ISYS	Information Systems	KZ	2
State-of-the-art tools of objects control (control and planning) including problems related to these tools use, theory of information and knowledge, knowledge and expert systems, IS planning methodologies, transaction systems, theory of computer networks, semantic webs and sensitivity analysis.			
21KAS2	Aircraft Construction and Systems 2	Z,ZK	6
Aircraft systems requirements and functions: air condition, pressurization, oxygen systems, tyres, hydraulics, fuel systems, electrical systems, deicing system, fire protection system.			
21LLG2	Aviation Legislation 2	ZK	2
EU OPS commercial transportation by aeroplane with knowledge on level 1 for categories B1 and B2. Commission Regulation (EC) No 2042/2003 Part M with knowledge on level 2 for categories B1 and B2. Maintenance program, maintenance checks and inspections, ETOPS, MEL, AD, SB. Documentation in maintenance - maintenance manuals. Structure Repair Manual. Illustrated Parts Catalog.			
21LCU	Aviation Maintenance Human Factors	Z,ZK	3
Assessment of aviation accident statistics. Analysis of failure chains. Human factors analytical and classificatory systems. Risk management.			
21PY3	Aircraft Maintenance Technology 3	KZ	4
Particular technologies: diagnostics, surface treatments, airframe production, airframe jointing/bonding, sandwich construction, composite construction.			
21TMY2	Turbine Engines 2	Z,ZK	4
Second part of the course Turbine Engines is focused on explanation and description of the purpose, operation and construction characteristics of following aircraft turbine engines utility systems: Lubrication system, cooling and internal air systems, fuel systems, starting and ignition, controls and instrumentation. Purpose, operation principles and construction schemes of turboprop engines, turboshaft and auxiliary power units.			
21V	Aircraft Propellers	Z,ZK	6
Theory of propeller blade, propeller load, propeller construction, control of blade angle, de-icing system, maintenance and repair of propellers.			

Name of the block: Jazyky

Minimal number of credits of the block: 12

The role of the block: J

Code of the group: JZ-B-1,2 11/12

Name of the group: Jazyk bak.3.4.sem.od 11/12

Requirement credits in the group: In this group you have to gain 6 credits

Requirement courses in the group: In this group you have to complete 2 courses

Credits in the group: 6

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
15JZ1A	Foreign Language - English 1 Eva Režlerová, Dana Boušová, Jitka He manová, Barbora Horáková, Marie Michlová, Lenka Monková, Markéta Olehlová, Markéta Vojanová, Peter Morpuss,	Z	3	0P+4C+10B	Z	J
15JZ2A	Foreign Language - English 2	Z,ZK	3	0P+4C+10B	L	J

15JZ1F	Foreign Language - French 1	Z	3	0+4	Z	J
15JZ2F	Foreign Language - French 2	Z,ZK	3	0+4	L	J
15JZ1N	Foreign Language - German 1	Z	3	0+4	Z	J
15JZ2N	Foreign Language - German 2	Z,ZK	3	0+4	L	J
15JZ1R	Foreign Language - Russian 1	Z	3	0+4	Z	J
15JZ2R	Foreign Language - Russian 2	Z,ZK	3	0+4	L	J
15JZ1S	Foreign Language - Spanish 1	Z	3	0+4	Z	J
15JZ2S	Foreign Language - Spanish 2	Z,ZK	3	0+4	L	J

Characteristics of the courses of this group of Study Plan: Code=JZ-B-1,2 11/12 Name=Jzyk bak.3.4.sem.od 11/12

15JZ1A	Foreign Language - English 1	Z	3	Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.		
15JZ2A	Foreign Language - English 2	Z,ZK	3	Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.		
15JZ1F	Foreign Language - French 1	Z	3	Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.		
15JZ2F	Foreign Language - French 2	Z,ZK	3	Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.		
15JZ1N	Foreign Language - German 1	Z	3	Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.		
15JZ2N	Foreign Language - German 2	Z,ZK	3	Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.		
15JZ1R	Foreign Language - Russian 1	Z	3	Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.		
15JZ2R	Foreign Language - Russian 2	Z,ZK	3	Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.		
15JZ1S	Foreign Language - Spanish 1	Z	3	Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.		
15JZ2S	Foreign Language - Spanish 2	Z,ZK	3	Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.		

Code of the group: JZ-PIL,TUL 3,4 12/13

Name of the group: Jzyk PIL, TUL 5.6. sem 12/13

Requirement credits in the group: In this group you have to gain 6 credits

Requirement courses in the group: In this group you have to complete 2 courses

Credits in the group: 6

Note on the group:

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
15JZ3A	Foreign Language - English 3	Z	3	0+4	Z	J
15JZ4A	Foreign Language - English 4	Z,ZK	3	0+4	L	J

Characteristics of the courses of this group of Study Plan: Code=JZ-PIL,TUL 3,4 12/13 Name=Jzyk PIL, TUL 5.6. sem 12/13

15JZ3A	Foreign Language - English 3	Z	3	Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.		
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15JZ4A	Foreign Language - English 4	Z,ZK	3
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Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.

List of courses of this pass:

Code	Name of the course	Completion	Credits
00TVC1	Physical Education 1 Practical instruction and training in a wide variety of sports and games: from basic recreational coaching to competitive top level training. Included are: basketball, volleyball, soccer, tennis, squash, floorball, bodybuilding, swimming, canoeing, aerobic.	Z	1
00TVC2	Physical Education 2 Practical instruction and training in a wide variety of sports and games: from basic recreational coaching to competitive top level training. Included are: basketball, volleyball, soccer, tennis, squash, floorball, bodybuilding, swimming, canoeing, aerobic.	Z	1
11DAD	Differential and Difference Equations Difference equations and its systems. Some solvable types of differential equations of the first order. Linear differential equations of the n-th order. Methods for solution of the homogeneous equation, solution of inhomogeneous equation by means of variation of constants. Power series and their use for solution of differential equation. Boundary value problem. Eigennumbers and function for differential equation. Fourier series of function.	Z,ZK	3
11FY1	Physics 1 Kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed electric current.	Z,ZK	4
11FY2	Physics 2 Magnetic field, electromagnetic field. Optics, quantum character of electromagnetic radiation. Introduction into quantization, hydrogen atom. Multi-electron atoms, the nuclei. Basics of solid body physics.	Z,ZK	4
11GIE	Geometry Orthographic and oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - parameterization, arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a curved path.	KZ	3
11LA	Linear Algebra Vector spaces (linear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvability. Determinants and their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.	Z,ZK	3
11MTA	Mathematical Analysis Sequences and series of real numbers and its convergence. Basic properties of functions. Differential and integral calculus of the real function of one real variable. Power series, Fourier series and foundations of Fourier transform.	Z,ZK	4
11MVP	Mathematical Analysis of Function of More Variables 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 functions of several variables, Riemann integral, integral over curves and surfaces in R ³ , application of integral calculus in physics.	Z,ZK	3
11PT	Probability Descriptive statistics. Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distribution, probability mass and density, moments, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed distributions, mixture of distributions. Law of large numbers, central limit theorem.	Z	2
11SIS	Statistics Point estimation, properties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlation, linear regression, correlation coefficient, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of matrices in regression.	Z,ZK	2
12MDE	Transport Models and Transport Excesses Parameters of the traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shock waves. Quality of transport and its assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. Improving of transport safety and fluency.	Z,ZK	3
12PKD	Rail Transport Designing Railway lines network. Vehicle and track relation. Traction. Track geometrical parameters. Clearance profile. Railway lines routing. Superstructure and substructure of the railway lines. Switches. Railway stations. City rail transport.	Z,ZK	3
12PPOK	Designing Roads, Highways and Motorways Definition, types, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. Route in rural areas. Range of vision for stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device. Crossings, junctions, intersections.	KZ	3
12ZADI	Introduction to Transportation Engineering Traffic survey. Terrestrial roads. Residential zone. Land - use planning. Railway transport. Public mass transport. Integrated traffic systems. Traffic prognosis. Traffic safety. Air transport. Traffic and environment.	Z,ZK	3
13E	Economics Microeconomic and macroeconomic interpretation of economic relations. Method and subject of the economics. Economic decision making of consumers and producers. Market structures. Labour and capital, efficiency, ownership, public choice.	Z,ZK	3
13EDOT	Economy, Transport, Telecommunications Transport, telecommunications, demand, supply, indicators, economic development, legislation, European union, regulation, liberalisation, transport modes, ITS, sustainability.	KZ	2
14DB	Database Systems Basic concepts of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security and integrity of data, database queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW.	KZ	2

14ELT	Electrotechnics	Z,ZK	4
Theory of electron. Static electricity, conductance, and electrotechnical terminology. Power and direct current generation. Direct current circuits. Electric resistance, resistor, and power. Capacity and capacitor. Magnetism. Inductance and induction coil. Direct current engines and generators. Theory of alternate current. Resistant, capacity, and inductive circuits. Transformers. Alternate current engines and generators. Frequency filters.			
14ISYS	Information Systems	KZ	2
State-of-the-art tools of objects control (control and planning) including problems related to these tools use, theory of information and knowledge, knowledge and expert systems, IS planning methodologies, transaction systems, theory of computer networks, semantic webs and sensitivity analysis.			
14KSP	Constructing with Computer Aid	KZ	2
"CAD systems" term determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common work rules in graphic applications and CA systems. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possibilities, AutoCAD environment profiles, drawings with raster foundations).			
14SIAP	Networks and Protocols	KZ	2
Basic communication model, history and development of the Internet, principle of data transfer through computer networks (TCP/IP), performance of basic network protocols (ARP, RARP, TCP, UDP, Telnet, FTP, DNS, DHCP POP3, IMAP), data acquisition from the Internet sources, communicating ability via the Internet and fundamentals of own web presentation design by the means of web sites.			
14UATT	Introduction to Automatization and Telecommunication Systems	KZ	2
Basic axioms of technical cybernetics, automatization in transportation, human as the weakest element, signalling in transportation, modelling and projecting of transport systems, integrated technological and information system in port, principle of telecommunication signal transmission, solving of telecommunication networks, modulating methods, multimedial networks and services, NGN networks.			
14UPRO	Introduction to Programming	KZ	2
Algorithm development, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables, conditions, cycles, arrays, functions), programming techniques, complexity.			
14ZAET	Fundamentals of Electrotechnics	KZ	2
Basic electrotechnic terms, circuit quantities. Periodic courses characteristics. Electric circuits elements and basic circuit members. Assigning of bipoles and basic circuit elements. Solution to direct current circuits with a help of circuit analysis elementary methods: method of consecutive reduction, unloaded voltage divider, current divider. Transfiguration star-triangular and principle of superposition in direct current circuits.			
14ZINF	Fundamentals of Informatics	KZ	2
Introduction to faculty network, MS-Word and Open Office, use of styles and advanced features, computer functions and information transmission. Number systems incl. arithmetic calculations. Algorithms and their properties. Flow charts for algorithms drawing. Mathematic and logic ordering algorithms incl. functions and procedures. Work with MS-Excel - tables, graphs, calculations, functions.			
15JZ1A	Foreign Language - English 1	Z	3
Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.			
15JZ1F	Foreign Language - French 1	Z	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.			
15JZ1N	Foreign Language - German 1	Z	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.			
15JZ1R	Foreign Language - Russian 1	Z	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.			
15JZ1S	Foreign Language - Spanish 1	Z	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.			
15JZ2A	Foreign Language - English 2	Z,ZK	3
Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and communicative skills. Elementary stylistics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhetoric.			
15JZ2F	Foreign Language - French 2	Z,ZK	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.			
15JZ2N	Foreign Language - German 2	Z,ZK	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.			
15JZ2R	Foreign Language - Russian 2	Z,ZK	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.			
15JZ2S	Foreign Language - Spanish 2	Z,ZK	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.			
15JZ3A	Foreign Language - English 3	Z	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.			

15JZ4A	Foreign Language - English 4	Z,ZK	3
Grammar structure and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's fields of study. Focus on improvement in perceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral and written forms. Technical texts and their features; practice of oral and written presentation.			
16UDDM	Introduction to Transportation and Manipulation Technics	ZK	2
Means of transportation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Water transportation. Manipulating technics. Principles of lifting machines and conveyors. Legislation.			
17TDL	Transport Technology and Logistics	Z,ZK	3
Basic terms in transport technology and logistics. Particular steps of transport planning. Quantification of carriage relations. Line planning. Timetabling. Planning in passenger and freight transport. Organisation of traffic in each transport means. Technological factors from the point of view of operator and client. Organisation of public city transport. Logistic technologies and their application using various transport means.			
18CSU	Parts of Machines	KZ	3
Transmissions, overview and classification, mechanical transmission, parts of transmission, gear relation, design and dimensioning of shafts and bearings, gears, materials of gears, gear boxes.			
18KIAD	Kinematics and Dynamics	Z,ZK	2
Motion along a line, motion along a curve. Kinematics of rigid plane, kinematics of rigid body. Point mass kinematics, system of point masses. Point mass dynamics and system of point masses, equation of motion. Method of Newton. Principle of D'Alembert. Free and forced vibration with one degree of freedom. Viscous damping. Impact theory. Introduction to the solution of vibration with multiple degrees of freedom.			
18MC	Materials Exercises	Z	2
Different kinds of processing applied to metals and their alloys. Casting, forming, welding, machining and powder metallurgy.			
18MRI1	Materials 1	Z,ZK	3
Crystal structure. Basics of thermodynamics of metals and their alloys. Balanced binary diagrams. Alloys of iron with carbon. Deterioration of solid solutions. Heating processing of steel and cast irons. Physical features. Mechanical features. Dephctostopic testing. Corosion.			
18MRI2	Materials 2	KZ	2
Fundamental concepts, notions. The main materials groups. Semiconductors. Polymers. Special types of steel. Properties and application of the composite materials.			
18PZP	Elasticity and Strength	Z,ZK	3
Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and welded joint of structure. Analysis of deflection curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic foundation. Strength analysis.			
18SAS	Joints and Parts of Technical Joints	KZ	3
Connection of machine parts, their construction and technology production, design of joints, kinds of fit, bearings, bearing location.			
18ST	Statics	Z,ZK	3
General system of forces. Calculation of reactions of mass objects and compound systems. Assessment of internal forces on statically determinate beam and simple framework. Principle of virtual works. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction, method of joints and method of sections. Geometry of cross sections. Plane fiber polygons and catenary cables.			
18TTED	Creation of Technical Documentation	KZ	2
Technical standards, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy, arrangement of drawing sheets, types of schemes and their creation.			
20SSA	Systems Analysis	Z,ZK	3
Systems identification. Typical tasks of systems analysis: on the interface, routes in system, decomposition and integration, on systems feedback. Capacity tasks, process analysis. Task about behaviour, aim behaviour, the genetic code, architecture and identity of systems. Fundamentals of technical cybernetics, stability and reliability of systems.			
20UIS	Introduction to ITS	Z,ZK	3
Intelligent Transport Systems (ITS), their objectives and vision. ITS in the world, in Europe and in the Czech Republic. Architecture of ITS and the role of standardization. Information and navigation systems. ITS in road, rail and combine transport. Design of ITS, organization, preparation and implementation of the project. Current projects in the Czech Republic.			
20ZENT	Basic Electronics	Z,ZK	3
The subject is focused on switching elements, operational amplifier, generation harmonic and nonharmonic signals, sources, conduction of high frequencies signals. Analog-Digital and Digital-Analog convertor. Extensive part is also dedicated to digital logical circuits and microprocessors.			
21DKV	Aviation Datalink Communication	KZ	2
The subject acquaints students with aviation communication domain. Stress is put on the datalink systems. Students are acquainted both with technical aspect and with operation problem so that they are able to understand data flows necessary for provision safe, fluent and economic air traffic.			
21KAS1	Aircraft Construction and Systems 1	Z,ZK	3
Aircraft construction requirements and functions: fuselage, wings, flight controls, undercarriage, aircraft pylon, nacelle. Aircraft systems requirements and functions: drainage, water distribution systems and aircraft lighting.			
21KAS2	Aircraft Construction and Systems 2	Z,ZK	6
Aircraft systems requirements and functions: air condition, pressurization, oxygen systems, tyres, hydraulics, fuel systems, electrical systems, deicing system, fire protection system.			
21LCU	Aviation Maintenance Human Factors	Z,ZK	3
Assessment of aviation accident statistics. Analysis of failure chains. Human factors analytical and clasificatory systems. Risk management.			
21LICL	Human Factors in Aviation	KZ	2
Human performance & limitations, capability & competence, accident statistics, flight safety, fundamentals of flight physiology, man & environment, breathing & circulation, sensory system, health & hygiene, health preservation, intoxication, incapacitation, fundamentals of flight psychology, human information processing, memory & learning, theory & model of human error, body rhythms & sleep, stress, fatigue, working methods.			
21LL1	Aircraft 1	KZ	3
Aircraft structural and conceptual design types - definitions and basic knowledge of the problem. Development of requirements, aircraft definitions and categorisation. Aircraft loadings. Systems of primary and secondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeroplane topics.			
21LLG1	Aviation Legislation 1	Z,ZK	4
Legislative framework (the role of the ICAO, EASA, member states, relations among Part 145, Part 66, Part 147 and Part M as well as relationships between other aviation authorities) with knowledge on level 1 for categories B1 and B2. Part 66 Maintenance Certifying Staff and Part 145 Maintenance Organisations with knowledge on level 2 for categories B1 and B2. Aircraft certification, type-certification, supplemental type-certification.			
21LLG2	Aviation Legislation 2	ZK	2
EU OPS commercial transportation by aeroplane with knowledge on level 1 for categories B1 and B2. Commission Regulation (EC) No 2042/2003 Part M with knowledge on level 2 for categories B1 and B2. Maintenance program, maintenance checks and inspections, ETOPS, MEL, AD, SB. Documentation in maintenance - maintenance manuals. Structure Repair Manual. Illustrated Parts Catalog.			

21LR	Radio Technology in Aviation	ZK	2
Electric signals and the wave spectrum, Analog and digital modulations, Noises, Filters, Resonance circuits. Electromagnetic field. Electromagnetic wave propagation. Wave ranges in aviation, radiation and reception of electromagnetic field, antennas in aviation, receivers and transmitters.			
21LRY	Aircraft Engines	Z,ZK	2
Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational characteristics. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational characteristics. Engine control.			
21LTA2	Aircraft 2	Z,ZK	2
Manufacturers responsibility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national standards. Static solidity of aircraft structures. Aeroelasticity. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presumption.			
21PY1	Aircraft Maintenance Technology 1	KZ	3
Fundamentals of aircraft maintenance technology, legislation, aircraft release into operation, safety, equipment.			
21PY2	Aircraft Maintenance Technology 2	KZ	2
Classification, maintenance, checks and repair of construction parts: joints, bearing, hoses, pipes, gearing, brakes, dampers, shaft, springs.			
21PY3	Aircraft Maintenance Technology 3	KZ	4
Particular technologies: diagnostics, surface treatments, airframe production, airframe jointing/bonding, sandwich construction, composite construction.			
21TMY1	Turbine Engines 1	KZ	3
First part of the course Turbine Engines is focused on the explanation and description of the purpose, operation and construction characteristics of aircraft turbojet and turbofan engines. Thermal engine, thermal cycle and its basic parameters, power output and thermal efficiency, basic construction modules, operational and construction characteristics.			
21TMY2	Turbine Engines 2	Z,ZK	4
Second part of the course Turbine Engines is focused on explanation and description of the purpose, operation and construction characteristics of following aircraft turbine engines utility systems: Lubrication system, cooling and internal air systems, fuel systems, starting and ignition, controls and instrumentation. Purpose, operation principles and construction schemes of turboprop engines, turboshaft and auxiliary power units.			
21V	Aircraft Propellers	Z,ZK	6
Theory of propeller blade, propeller load, propeller construction, control of blade angle, de-icing system, maintenance and repair of propellers.			
21ZLD	Introduction to Air Transport	KZ	2
Air transport as a component of complex transport system. International status of civil aviation. International organizations in Europe and worldwide. Characteristics of air transport. Commercial air transport. Technical operations of aeroplanes.			
21ZLE1	Principles of Flight 1	KZ	3
Aerodynamic drag, relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, lift and drag, air flow and pressures around wing, angle of attack, reactions of wing in air flow, lift and drag of a wing and an aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, induced drag, interference, devices for lift and drag increase.			
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.			
22UN	Traffic Accidents Introduction	Z	2
Traffic accident as a physical process, systematic submission, vehicle x human x infrastructure interaction, accidents statistics, aircraft accidents, accidents on railways, accidents on waterways, road traffic accidents, other aspects, accidental prevention.			

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

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