# Study plan

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

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Technology in Transportation and Telecommunications

Type of study: Bachelor full-time

Required credits: 180 Elective courses credits: 0 Sum of credits in the plan: 180

Note on the plan:

Name of the block: Compulsory courses Minimal number of credits of the block: 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 Šárka Vorá ová, Pavel Provinský, Old ich Hykš, Vít Malinovský <b>Old ich Hykš</b> Šárka Vorá ová (Gar.)	KZ	3	2P+2C+12B	Z	Z
14KSP	Constructing with Computer Aid Lukáš Svoboda, Drahomír Schmidt, Martin Brumovský, Radek Kratochvíl, Vladimír Douda, Michal Mlada, Jan Vogl, Jan Zelenka Lukáš Svoboda	KZ	2	0P+2C+8B	Z	Z
11LA	Linear Algebra Pavel Provinský, Martina Be vá ová, Lucie Kárná Martina Be vá ová Martina Be vá ová (Gar.)	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
00TVC1	Physical Education 1	Z	1	0+2	Z	Z
18TTED	Creation of Technical Documentation	KZ	2	2+1	Z	Z
22UN	Traffic Accidents Introduction	Z	2	2+0	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

### 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 ma	acroeconomic interpretation of economic relations. Method and subject of the economics. Economic decision making of consu	mers and produc	ers. Market
structures. Labour and	capital, efficiency, ownership, public choice.		
11GIE	Geometry	KZ	3
Differential geometry of	f curves - parameterization, the arc of the curve, torsion and curvature, Frenet`s trihedron. Kinematics - a curve as a trajector	y of the motion, th	ne velocity, and
acceleration of a partic	le moving on a curved path.		
14KSP	Constructing with Computer Aid	KZ	2
"CAD systems" term d	etermination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common	work rules in grap	hic applications
and CA systems. Co-o	rdinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting poss	sibilites, AutoCAD	environment
profiles drawings with	raster foundaments)		

11LA	Linear Algebra	Z,ZK	3
Vector spaces (line	ear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations	and their solvability. D	eterminants an
their applications.	Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.		
11MTA	Mathematical Analysis	Z,ZK	4
Sequences and se	eries of real numbers and its convergence. Basic properties of functions. Differential and integral calculus of the real function of c	one real variable. Powe	er series, Fourie
series and foundat	tions of Fourier transform.		
18MRI1	Materials 1	Z,ZK	3
•	Basics of thermodynamics of metals and their alloys. Balanced binary diagrams. Alloys of iron with carbon. Deterioration of solins. Physical features. Mechanical features. Dephectostopic testing. Corosion.	id solutions. Heating p	rocessing of
00TVC1	Physical Education 1	Z	1
Practical instructio	on and training in a wide variety of sports and games: from basic recreational coaching to competitive top level training. Include	ed are: basketball, volle	eyball, soccer,
tennis, squash, flo	orball, bodybuilding, swimming, canoeing, aerobic.		
		1/7	2
18TTED	Creation of Technical Documentation	KZ	2
-	Creation of Technical Documentation ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or		_
Technical standard			_
Technical standard	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or		_
Technical standard arrangement of dra 22UN	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, cawing sheets, types of schemes and their creation.	dimensional and geom	etrical accurac
Technical standard arrangement of dra 22UN Traffic accident as	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, cawing sheets, types of schemes and their creation.  Traffic Accidents Introduction	dimensional and geom	etrical accuracy
Technical standard arrangement of dra 22UN Traffic accident as	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, cawing sheets, types of schemes and their creation.    Traffic Accidents Introduction a physical process, systematic submission, vehicle x human x infrastructure interaction, accidents statistics, aircraft accidents	dimensional and geom	etrical accuracy
Technical standard arrangement of dra 22UN Traffic accident as waterways, road tr	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, cawing sheets, types of schemes and their creation.    Traffic Accidents Introduction   Traffic Accidents Introduction	dimensional and geom	etrical accuracy 2 s, accidents on
Technical standard arrangement of dra 22UN Traffic accident as waterways, road tr	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or awing sheets, types of schemes and their creation.    Traffic Accidents Introduction   Traffic Accidents Introduction	dimensional and geom	etrical accuracy 2 s, accidents on
Technical standard arrangement of dra 22UN Traffic accident as waterways, road tr 12ZADI Traffic survey. Terre	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or awing sheets, types of schemes and their creation.    Traffic Accidents Introduction   Traffic Accidents Introduction	dimensional and geom	etrical accuracy 2 s, accidents on
Technical standard arrangement of dra 22UN Traffic accident as waterways, road tr 12ZADI Traffic survey. Terror Traffic and environ 14ZINF	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or the same standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or the same standardization, the same standardization of technical objects, technical diagrams and charts, or the same standardization of technical objects, technical diagrams and charts, or the same standardization of the same standardization of the same standardization, accidents statistics, aircraft accidents raffic accidents, other aspects, accidental prevention.  Introduction to Transportation Engineering restrial roads. Residential zone. Land - use planning. Railway transport. Public mass transport. Integrated traffic systems. Traffic ment.	dimensional and geom  Z s, accidents on railway  Z,ZK rorognosis. Traffic safe	etrical accuracy 2 s, accidents on 3 ety. Air transpor
Technical standard arrangement of dra 22UN Traffic accident as waterways, road tr 12ZADI Traffic survey. Terror Traffic and environ 14ZINF Introduction to face	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or the same standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or the same standardization, the same standardization of technical objects, technical diagrams and charts, or the same standardization of technical objects, technical diagrams and charts, or the same standardization of technical objects, technical diagrams and charts, or the same standardization, the same standardization of the same standardization, the same standardization of the same standardization of the same standardization, the same standardization, the same standardization of the same standardization, the same standardization of the same standardization, the same standardization of the same standardization of the same standardization, the same standardization of the same standardization o	dimensional and geom  Z s, accidents on railway  Z,ZK prognosis. Traffic safe	etrical accuracy 2 s, accidents on 3 ety. Air transpor 2 acl. arithmetic
Technical standard arrangement of dra 22UN Traffic accident as waterways, road tr 12ZADI Traffic survey. Terror Traffic and environ 14ZINF Introduction to face	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or awing sheets, types of schemes and their creation.    Traffic Accidents Introduction	dimensional and geom  Z s, accidents on railway  Z,ZK prognosis. Traffic safe	etrical accuracy 2 s, accidents on 3 ety. Air transpor 2 acl. arithmetic
Technical standard arrangement of dra 22UN Traffic accident as waterways, road tr 12ZADI Traffic survey. Terror Traffic and environ 14ZINF Introduction to facical calculations. Algor	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or awing sheets, types of schemes and their creation.    Traffic Accidents Introduction	dimensional and geom  Z s, accidents on railway  Z,ZK prognosis. Traffic safe	etrical accuracy 2 s, accidents on 3 ety. Air transpor 2 ncl. arithmetic
Technical standard arrangement of dra 22UN Traffic accident as waterways, road tr 12ZADI Traffic survey. Terror Traffic and environ 14ZINF Introduction to fact calculations. Algor graphs, calculation 21ZLD	ds, international standardization, types of technical drawings, representation of technical objects, technical diagrams and charts, or awing sheets, types of schemes and their creation.    Traffic Accidents Introduction	Z,ZK c prognosis. Traffic safe  KZ cn. Number systems in production. Work with Microscopic and the systems in production. WZ	etrical accuracy 2 s, accidents on 3 ety. Air transpor 2 ncl. arithmetic S-Excel - tables

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
14SIAP	Networks and Protocols	KZ	2	1+1	L	Z
18ST	Statics	Z,ZK	3	2+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, telecommi	inications, demand, supply, indicators, economic development, legislation, European union, regulation, liberalisation, transport	modes, ITS, susta	ainability.
11FY1	Physics 1	Z,ZK	4
Kinematics, particle of	ynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed electric	current.	<u> </u>
11MVP	Mathematical Analysis of Function of More Variables	Z,ZK	3
Metric spaces, seque	nces in metric spaces, limit of sequence in metric space. Differential calculus of functions of several variables, differential of fur	nction, partial deri	vations, implicitl
defined functions, ext	remes of functions of several variables. Integral calculus of functions of several variables, Riemann integral, integral over curve	s and surfaces in	R3, application
of integral calculus in	physics.		
18MRI2	Materials 2	KZ	2
Fundamental concep	ts. notions. The main materials groups, Semiconductors, Polymers, Special types of steel, Properties and application of the cor	nposite materials.	1

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 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. 14SIAP ΚZ Networks and Protocols 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 18ST Statics Z,ZK 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. Transport Technology and Logistics Basic terms in transport technology and logistics. Particular steps of transport planning. Quantification of carriage relations. Line planning. Timetabling. Planning in pasanger 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 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. 20UIS Z,ZK 3 Introduction to ITS 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

Introduction to Programming

Algorithm development, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables, conditions, cycles, arrays, functions), programming techniques, complexity.

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.

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:

safety and fluency.

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  Josef Kocourek, Milan Dont	Z,ZK	3	2P+1C+8B	Z	Z
12PPOK	Designing Roads, Highways and Motorways Petr Šatra, Ji í arský, Tomáš Pad lek, Petr Kumpošt	KZ	3	1P+2C+10B	Z	Z
18PZP	Elasticity and Strength Ond ej Jiroušek, Josef Jíra, Petr Koudelka, Jitka ezní ková, Daniel Kytý, Jan Vy ichl, Tomáš Doktor, Jan Šleichrt, Radim Dvo ák	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
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
14ZAET	Fundamentals of Electrotechnics	KZ	2	2+1	Z	Z

Characteristics o	r the courses of this group of Study Plan: Code=3.S.BTUL 11/12 Name=3.sem.TUL bak.prez	2.11/12	
11DAD	Differential and Difference Equations	Z,ZK	3
Difference equations as	d its systems. Some solvable types of differential equations of the first order. Linear differential equations of the n-th order. Method	ds for solution of th	ne homogeneous
equation, solution of in	nomogeneous equation by means of variation of constants. Power series and their use for solution of differential equation. Bound	dary value problem	n. Eigennumbers
and function for differe	ntial equation. Fourier series of function.		
11FY2	Physics 2	Z,ZK	4
Magnetic field, electron	nagnetic field. Optics, quantum character of electromagnetic radiation. Introduction into quantization, hydrogen atom. Multi-ele	ectron atoms, the	nuclei. Basics of
solid body physics.			
12MDE	Transport Models and Transport Excesses	Z,ZK	3
Parameters of the traff	c flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory o	f queues, shock v	vaves. Quality of
transport and its asses	sment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consec	quences. Improvir	ng of transport

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. 18PZP Elasticity and Strength Tension and compression. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and welded joints of structures. Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability. **11SIS** 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. Systems Analysis 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 14UATT Introduction to Automatization and Telecommunication Systems 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 infromation system in post, principle of telecommunication signal transmission, solving of telecommunication networks, modulating methods, multimedial networks and services, NGN networks. Introduction to Transportation and Manipulation Technics 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. 14ZAET Fundamentals of Electrotechnics K7 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-triplangel

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

and principle of superposition in direct current circuits.

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
18CSU	Parts of Machines	KZ	3	2+1	L	Р
14ELT	Electrotechnics	Z,ZK	4	2+2	L	Р
18KIAD	Kinematics and Dynamics	Z,ZK	2	2+1	L	Р
21LL1	Aircraft 1 Karel Mündel, Karel Hylmar, Daniel Urban	KZ	3	2P+1C+10B	L	Р
21LR	Radio Technology in Aviation	ZK	2	2+0	L	Р
21LRY	Aircraft Engines	Z,ZK	2	2+1	L	Р
18MC	Materials Exercices	Z	2	0+2	L	Р
21PY1	Aircraft Maintenance Technology 1	KZ	3	2+1	L	Р
18SAS	Joints and Parts of Technical Joints	KZ	3	2+1	L	Р
21ZLE1	Principles of Flight 1	KZ	3	2+1	L	Р

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

Systems of primary and secondary airframe structure. Airframe and propulsion unit. Lectures are devoted to aeroplane topics.

18CSU	Parts of Machines	KZ	3
Transmissions, ove	erview and classification, mechanical transmission, parts of transmission, gear relation, design and dimensioning of shafts and b	earings, gears, ma	terials of gears,
gear boxes.			
14ELT	Electrotechnics	Z,ZK	4
Theory of electron	ı. Static electricity, conductance, and electrotechnical terminology. Power and direct current generation. Direct current circuits. Ele	ctric resistance, res	istor, and power
Capacity and capa	acitor. Magnetism. Inductance and induction coil. Direct current engines and generators. Theory of alternate current. Resistant, ca	pacity, and inducti	ve circuits.
Transformers. Alte	rnate current engines and generators. Frequency filters.		
18KIAD	Kinematics and Dynamics	Z,ZK	2
Motion along a line	e, motion along a curve. Kinematics of rigid plane, kinematics of rigid body. Point mass kinematics, system of point masses. Point	nass dynamics an	d system of poin
masses, equation	of motion. Method of Newton. Princle of D'Alembert. Free and forced vibration with one degree of freedom. Viscous damping. Im	pact theory. Introdu	action to the
solution of vibratio	on with multiple degrees of freedom.		
21LL1	Aircraft 1	KZ	3

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21LR	Radio Technology in Aviation	ZK	2
Electric signals an	nd the wave spectrum, Analog and digital modulations, Noises, Filters, Resonance circuits. Electromagnetic field. Electromag	netic wave propagation.	Wave ranges
in aviation, radiation	on and reception of electromagnetic field, antennas in aviation, receivers and transmitters.		
21LRY	Aircraft Engines	Z,ZK	2
Aircraft piston eng	jine, theoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Tu	ırbine engine, theoretica	l background,
thermal cycles, co	onstruction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operat	ional characteristics. En	gine control.
18MC	Materials Exercices	Z	2
Different kinds of p	processing applied to metals and their alloys. Casting, forming, welding, machining and powder metallurgy.		
21PY1	Aircraft Maintenance Technology 1	KZ	3
Fundamentals of a	aircraft maintenance technology, legislation, aircraft release into operation, safety, equipment.		
18SAS	Joints and Parts of Technical Joints	KZ	3
Connection of mad	chine parts, their construction and technology production, design of joints, kinds of fit, bearings, bearing location.		
21ZLE1	Principles of Flight 1	KZ	3
Aerodynamic drag	g, relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, lift and drag, air flow	w and pressures around	wing, angle of
attack, reactions of	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, interfere	nce, devices fo
lift and drag increa	ase.		

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	Р
21DKV	Aviation Datalink Communication	KZ	2	2+0	Z	Р
21KAS1	Aircraft Construction and Systems 1	Z,ZK	3	2+2	Z	Р
21LTA2	Aircraft 2 Karel Mündel, Karel Hylmar, Daniel Urban, Max Chopart, Kate ina Stuchlíková Max Chopart	Z,ZK	2	2P+1C	Z	Р
21LLG1	Aviation Legislation 1  Ji í uk Ji í uk	Z,ZK	4	2P+1C	Z	Р
21LICL	Human Factors in Aviation	KZ	2	2+0	Z	Р
21PY2	Aircraft Maintenance Technology 2	KZ	2	2+1	Z	Р
21TMY1	Turbine Engines 1	KZ	3	2+2	Z	Р
20ZENT	Basic Electronics	Z,ZK	3	2+1	Z	Р
21ZLE2	Principles of Flight 2	Z,ZK	4	2+1	Z	Р

14DB	Database Systems	KZ	2
Basic concepts of dat	abase systems, conceptual model, relational data model, the principles of normal forms, relational database design, security a	nd integrity of data	a, database
queries, relational alg	ebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via the WWW.		
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 technic	ical aspect and wi	th 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 r	equirements and functions: fuselage, wings, flight controls, undercarriage, aircraft pylon, nacelle. Aircraft systems requirements	and functions: dra	ainage, water
distribution systems a	nd aircraft ligthing.		
21LTA2	Aircraft 2	Z,ZK	2
Manufacturers respor	sibility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national s	standards. Static s	olidity of aircra
structures. Aeroelasti	city. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presumption.		
21LLG1	Aviation Legislation 1	Z,ZK	4
Introduction to aviation	n legislation. Sphere of action of the CAA, ICAO, EASA. Part M and ML (countinuing airworthiness), maintenance programmes	, ADs, airworthine	ss reviews. Pa
24 (initial airwarthing)	ss), design and production of aircraft.		
21 (IIIIIIai aii woi iiiiile:			
	Human Factors in Aviation	KZ	2
21LICL	Human Factors in Aviation amp; limitations, capability & Description amp; limitations, capability & Description amp; each accident statistics, flight safety, fundamentals of flight physiology, man & Description amp; each accident statistics, flight safety, fundamentals of flight physiology, man & Description amp; each accident statistics, flight safety, fundamentals of flight physiology, man & Description amp; each accident statistics, flight safety, fundamentals of flight physiology, man & Description amp; each accident statistics, flight safety, fundamentals of flight physiology, man & Description amp; each accident statistics, flight safety, fundamentals of flight physiology, man & Description amp; each accident statistics, flight safety, fundamentals of flight physiology, man & Description amp; each accident statistics, flight safety, fundamentals of flight physiology, man & Description amp; each accident statistics, flight safety, fundamentals of flight physiology, man & Description amp; each accident statistics, flight safety, fundamentals of flight physiology, man & Description amp; each accident statistics and fundamentals of flight physiology, man & Description amp; each accident statistics and fundamentals accident statistics.		_
21LICL Human performace & circulation, sensory s	amp; limitations, capability & competence, accident statistics, flight safety, fundamentals of flight physiology, man & e ystem, health & hygiene, health preservation, intoxication, incapacitation, fundamentals of flight psychology, human inform	nvironment, breath	ning &
21LICL Human performace & circulation, sensory s	amp; limitations, capability & competence, accident statistics, flight safety, fundamentals of flight physiology, man & e	nvironment, breath	ning &
21LICL Human performace & circulation, sensory s	amp; limitations, capability & competence, accident statistics, flight safety, fundamentals of flight physiology, man & e ystem, health & hygiene, health preservation, intoxication, incapacitation, fundamentals of flight psychology, human inform	nvironment, breath	ning &
21LICL Human performace & circulation, sensory s learning, theory & am 21PY2	amp; limitations, capability & Department of the properties of the	nvironment, breath	ning & memory &
21LICL Human performace & circulation, sensory s learning, theory & am 21PY2	amp; limitations, capability & Department of the properties of the	nvironment, breath	ning & memory &

20ZENT **Basic Electronics** Z.ZK 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.

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.

Z,ZK

Code of the group: 6.S.BTUL 12/13

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

Principles of Flight 2

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:

21ZLE2

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	Р
21KAS2	Aircraft Construction and Systems 2	Z,ZK	6	4+3	L	Р
21LLG2	Aviation Legislation 2  Ji í uk Ji í uk	ZK	2	2P+0C	L	Р
21LCU	Aviation Maintenance Human Factors	Z,ZK	3	2+1	L	Р
21PY3	Aircraft Maintenance Technology 3	KZ	4	2+2	L	Р
21TMY2	Turbine Engines 2	Z,ZK	4	3+2	L	Р
21V	Aircraft Propellers Martin Novák	Z,ZK	6	3P+2C	L	Р

Characteristic	s 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 to	ols of objects control (control and planning) including problems related to these toole use, theory of information and knowled	ge, knowledge and expe	rt systems, IS
planning methodo	logies, transaction systems, theory of computer networks, semantic webs and sensitivity analysis.		
21KAS2	Aircraft Construction and Systems 2	Z,ZK	6
Aircraft systems re	equirements and functions: air condition, pressurization, oxygen systems, tyres, hydraulics, fuel systems, electrical systems,	deicing system, fire prote	ection system.
21LLG2	Aviation Legislation 2	ZK	2
Commission regul	ation (EU) 1321/2014, Part 66, Part 145, Part 147, Part CAMO, Part CAO, Commission regulation (EU) 965/2012		
21LCU	Aviation Maintenance Human Factors	Z,ZK	3
Assessment of avi	iation accident statistics. Analysis of failure chains. Human factors analytical and clasificatory systems. Risk management.		
21PY3	Aircraft Maintenance Technology 3	KZ	4
Particular technolo	ogies: diagnostics, surface treatments, airframe production, airframe jointing/bonding, sandwich construction, composite cons	struction.	
21TMY2	Turbine Engines 2	Z,ZK	4
Second part of the	e course Turbine Engines is focused on explanation and description of the purpose, operation and construction characteristic	s of following aircraft turk	oine engines
utility systems: Lul	brication system, cooling and internal air systems, fuel systems, starting and ignition, controls and instrumentation. Purpose,	, operation principles and	l construction
schemes of turbop	orop engines, turboshaft and auxiliary power units.		
21V	Aircraft Propellers	Z,ZK	6
Theory of propelle	er 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 Markéta Vojanová, Jitka He manová, Marek Tome ek, Marie Michlová, Lenka Monková, Markéta Olehlová, Peter Morpuss, Jan Feit, Eva Rezlerová	Z	3	0P+4C+10B		J

45 170 4	Foreign Language - English 2	7.71/		OD: 40:40D		
15JZ2A	Markéta Vojanová, Jitka He manová, Marek Tome ek, Marie Michlová, Lenka Monková, Markéta Olehlová, Peter Morpuss, Jan Feit, Eva Rezlerová	Z,ZK	3	0P+4C+10B		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=Jazyk bak.3.4.sem.oc	d 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	d communicative s	kills. Elementary
stylistics forms. Oral an	d 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	l communicative s	kills. Elementary
stylistics forms. Oral an	d 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 Facult	y's fields of study	. Focus on
improvement in percep	tive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both ora	l and written form	ıs. 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 Facult	y's fields of study	. Focus on
improvement in percep	tive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both ora	l and written form	ıs. Technical
texts and their features	practice of oral and written presentation.		
15JZ1N	Foreign Language - German 1	Ζ	3
Grammar structure and	stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Facult	y's fields of study	. Focus on
improvement in percep	tive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both ora	l and written form	s. 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 Facult	y's fields of study	. Focus on
improvement in percep	tive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both ora	l and written form	ıs. 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 Faculi	y's fields of study	. Focus on
improvement in percep	tive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both ora	l and written form	ıs. 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 Faculi	y's fields of study	/. Focus on
improvement in percep	tive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both ora	l and written form	s. Technical
texts and their features	practice of oral and written presentation.		
15JZ1S	Foreign Language - Spanish 1	Z	3
Grammar structure and	stylictics. Conversational and executived topics selected according to the language group level and with regard to the Facult	v'e fielde of etudy	/ Focus on

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

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.

Z,ZK

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

Name of the group: Jazyk 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) Tutors, authors and guarantors (gar.)	Completion	Credits	Scope	Semester	Role
15JZ3A	Foreign Language - English 3	Z	3	0P+4C	Z	J
15JZ4A	Foreign Language - English 4	Z,ZK	3	0P+4C	L	J

Characteristics of the courses of this group of Study Plan: Code=JZ-PIL,TUL 3,4 12/13 Name=Jazyk 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 Facul	ty's fields of study	pilot. Focus on
improvement in percept	tive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both ora	al and written forn	n. Technical texts
and their features; term	inology.		
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 Facult	ty's fields of study	- pilot. Focus on
improvement in percept	tive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both or	al and written forn	n. Technical texts
and their features; term	inology.		

# List of courses of this pass:

	Name of the course Com	pletion	Credits
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: basketba	all, volleyba	all, soccer,
	tennis, squash, floorball, bodybuilding, swimming, canoeing, aerobic.		
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: basketba	all, volleyba	all, soccer,
	tennis, squash, floorball, bodybuilding, swimming, canoeing, aerobic.		
11DAD	Differential and Difference Equations Z	,ZK	3
Difference equations a	and its systems. Some solvable types of differential equations of the first order. Linear differential equations of the n-th order. Methods for solutio	n of the ho	mogeneou
equation, solution of i	nhomogeneous equation by means of variation of constants. Power series and their use for solution of differential equation. Boundary value pr	roblem. Eig	ennumber
	and function for differential equation. Fourier series of function.		
11FY1		,ZK	4
	tics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics, electric field, directed electric	current.	
11FY2	Physics 2 Z	,ZK	4
Magnetic field, electro	omagnetic field. Optics, quantum character of electromagnetic radiation. Introduction into quantization, hydrogen atom. Multi-electron atoms	s, the nucle	ei. Basics o
	solid body physics.		
11GIE	,	KZ	3
Differential geometry	y of curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory of the mo	tion, the ve	elocity, and
	acceleration of a particle moving on a curved path.		
11LA	Linear Algebra Z	,ZK	3
Vector spaces (linear	combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvable	ility. Detern	ninants an
	their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.		
11MTA		,ZK	4
Sequences and serie	es of real numbers and its convergence. Basic properties of functions. Differential and integral calculus of the real function of one real variable.	. Power ser	ies, Fourie
	series and foundations of Fourier transform.		
11MVP		,ZK	3
· · · · · · · · · · · · · · · · · · ·	ences in metric spaces, limit of sequence in metric space. Differential calculus of functions of several variables, differential of function, partia		
defined functions, ex	tremes of functions of several variables. Integral calculus of functions of several variables, Riemann integral, integral over curves and surface	ces in R3 :	
		000 111 110,	application
1107	of integral calculus in physics.		
11PT	Probability	Z	2
Descriptive statistics.	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributions.	Z ution, proba	2 ability mass
Descriptive statistics.	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distribunts, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed distributions.	Z ution, proba	2 ability mass
Descriptive statistics.	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.	Z ution, proba stributions,	2 ability mass mixture of
Descriptive statistics. and density, momen	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed distributions. Law of large numbers, central limit theorem.  Statistics	Z ution, proba stributions,	2 ability mass mixture of
Descriptive statistics. and density, momen  11SIS  Point estimation, pro	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed distributions. Law of large numbers, central limit theorem.  Statistics  Deperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlations.	Z ution, proba stributions,	2 ability mass mixture of 2 egression,
Descriptive statistics. and density, momen  11SIS  Point estimation, pro correlation coefficient	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Zeperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlative, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of respectively.	Z ution, proba stributions, Z,ZK on, linear r matrices in	2 ability mass mixture of 2 egression, regressior
Descriptive statistics. and density, momen  11SIS  Point estimation, procorrelation coefficient 12MDE	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Zeperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlative, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of regression and correlative transport Models and Transport Excesses  Zeperties of point estimation, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of regression and correlative transport Models and Transport Excesses	zution, probastributions,	2 ability mass mixture of  2 egression, regression  3
Descriptive statistics. and density, momen  11SIS  Point estimation, procorrelation coefficient 12MDE  Parameters of the tra	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Zeperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlative, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of real marginary models and Transport Excesses  Zeperties of point estimation, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of regression and correlative, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of regression and correlative, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of regression and correlative, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of regression and correlative, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of regression and correlative, coefficient of determinations, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of regression and correlative, coefficient of determinations.	Z ution, probastributions,	2 ability mass mixture of  2 egression, regression 3 s. Quality o
Descriptive statistics. and density, momen  11SIS  Point estimation, procorrelation coefficient 12MDE  Parameters of the tra	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Statistics  Deperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlation, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of real matrix. Models and Transport Excesses  Zuffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, stressesment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. In	Z ution, probastributions,	2 ability mass mixture of  2 egression, regression 3 s. Quality o
Descriptive statistics. and density, momen  11SIS Point estimation, pro correlation coefficient 12MDE Parameters of the tra transport and its ass	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Deperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlative, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of real transport Models and Transport Excesses  Affic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, stresses affect analysis, the causes, identify and minimize the consequences. In safety and fluency.	Z tition, probastributions,,ZK on, linear r matrices in,ZK nock waves mproving of	2 ability mass mixture of  2 egression, regression 3 s. Quality of transport
Descriptive statistics. and density, moment  11SIS Point estimation, procorrelation coefficient 12MDE Parameters of the tratatransport and its ass	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Deperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlation, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of ransport Models and Transport Excesses  Zuffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shesesment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. In safety and fluency.  Rail Transport Designing	Z tition, probabilitions, probabilitions, probabilitions, z,ZK on, linear romatrices in z,ZK nock waves in proving of z,ZK	2 ability mass mixture of  2 egression, regression 3 s. Quality of transport
Descriptive statistics. and density, moment  11SIS Point estimation, procorrelation coefficient 12MDE Parameters of the tratatransport and its ass	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Deperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlation, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of ransport Models and Transport Excesses  Zuffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shesesment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. In safety and fluency.  Rail Transport Designing  Zukehicle and track relation. Tracking geometrical parameters. Clearance profile. Railway lines routing. Superstructure and substructure.	Z tition, probabilitions, probabilitions, probabilitions, z,ZK on, linear romatrices in z,ZK nock waves in proving of z,ZK	2 ability mass mixture of  2 egression, regression 3 s. Quality of transport
Descriptive statistics. and density, momen  11SIS Point estimation, pro correlation coefficient 12MDE Parameters of the tra transport and its ass  12PKD Railway lines network	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Deperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlation, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of ransport Models and Transport Excesses  Zuffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shesesment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. In safety and fluency.  Rail Transport Designing  k. Vehicle and track relation. Traction. Track geometrical parameters. Clearance profile. Railway lines routing. Superstructure and substructure Switches. Railway stations. City rail transport.	Z tition, probastributions, robustributions, z,ZK on, linear robustrices in z,ZK nock waves approving of z,ZK re of the ra	2 ability mass mixture of 2 egression, regression 3 s. Quality of transport 3 alilway lines
Descriptive statistics. and density, momen  11SIS Point estimation, pro correlation coefficient 12MDE Parameters of the tra transport and its ass  12PKD Railway lines network	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Deperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlation, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of ransport Models and Transport Excesses  If affic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, sheessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. In safety and fluency.  Rail Transport Designing  K. Vehicle and track relation. Traction. Track geometrical parameters. Clearance profile. Railway lines routing. Superstructure and substructues Switches. Railway stations. City rail transport.  Designing Roads, Highways and Motorways	Z tition, probastributions, robustributions, z,ZK on, linear robustrices in z,ZK nock waves approving of z,ZK re of the ra	2 ability mass mixture of  2 egression, regression 3 s. Quality of transport  3 alilway lines
Descriptive statistics. and density, moment  11SIS Point estimation, procorrelation coefficient 12MDE Parameters of the tratransport and its ass  12PKD Railway lines network  12PPOK Definition, types, ow	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Deperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlation, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of real transport Models and Transport Excesses  If a transport Models and Transport Excesses  Affic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. In safety and fluency.  Rail Transport Designing  Rail Transport Designing  Excesses  Designing Roads, Highways and Motorways  Weership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed.	Z tition, probastributions, robustributions, z,ZK on, linear robustributions in z,ZK nock waves approving of z,ZK re of the rack z,ZK Route in robustributions.	2 ability mass mixture of  2 egression, regression 3 s. Quality of transport  3 ailway lines  3 ural areas.
Descriptive statistics. and density, moments  11SIS Point estimation, procorrelation coefficients 12MDE Parameters of the trattransport and its ass  12PKD Railway lines network  12PPOK Definition, types, ow	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributes, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed distributions, the distributions. Law of large numbers, central limit theorem.  Statistics  Departies of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlation, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of restriction of their measurement. Models and Transport Excesses  If affic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, she sessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. In safety and fluency.  Rail Transport Designing  k. Vehicle and track relation. Traction. Track geometrical parameters. Clearance profile. Railway lines routing. Superstructure and substructure Switches. Railway stations. City rail transport.  Designing Roads, Highways and Motorways  Venership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. topping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device	Z tition, probastributions, robustributions, z,ZK on, linear robustributions in z,ZK nock waves approving of z,ZK re of the rack z,ZK Route in robustributions.	2 ability mass mixture of  2 egression, regression 3 s. Quality of transport  3 ailway lines  3 ural areas.
Descriptive statistics. and density, momen  11SIS Point estimation, procorrelation coefficient 12MDE Parameters of the tratransport and its ass  12PKD Railway lines network  12PPOK Definition, types, ow Range of vision for steep	Probability  Basic probability concepts: elementary events and events, definitions and interpretation of probability. Random variable, probability distributions, some discrete and continuous distributions. Random vectors: joint and marginal distributions, mean vector, covariance matrix. Mixed disdistributions. Law of large numbers, central limit theorem.  Statistics  Deperties of point estimators, methods of point estimation. Testing statistical hypothesis. Fit test, independence test. Regression and correlation, coefficient of determination, general linear model, statistical inference in linear regression, analysis of variance, multiple regression, use of represent the properties of the traffic flow, communications load, line and urban systems. Theory of queues, should be sessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. In safety and fluency.  Rail Transport Designing  k. Vehicle and track relation. Traction. Track geometrical parameters. Clearance profile. Railway lines routing. Superstructure and substructure Switches. Railway stations. City rail transport.  Designing Roads, Highways and Motorways  vereship, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. topping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device intersections.	zution, probastributions, zZK on, linear restrictes in zZK nock waves mproving of zZK re of the rational control contr	2 ability mass mixture of 2 egression, regression 3 s. Quality of transport 3 ailway lines 3 ural areas. s, junctions
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**14DB Database Systems** ΚZ 2 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. 14ELT Electrotechnics 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 K7 2 State-of-the-art tools of objects control (control and planning) including problems related to these toole 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 ΚZ 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 foundaments). 14SIAP Networks and Protocols ΚZ 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. Introduction to Automatization and Telecommunication Systems 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 infromation system in post, principle of telecommunication signal transmission, solving of telecommunication networks, modulating methods, multimedial networks and services, NGN networks. 14UPRO Introduction to Programming ΚZ 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 ΚZ Fundamentals of Electrotechnics 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-triplangel and principle of superposition in direct current circuits. 14ZINF ΚZ Fundamentals of Informatics 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. 15JZ1A Foreign Language - English 1 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 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 Ζ 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 Ζ Foreign Language - Russian 1 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 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 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. Foreign Language - French 2 Z,ZK 15JZ2F 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. 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15JZ3A	Foreign Language - English 3	l Z	3
	and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's	i fields of study pilo	t. Focus on
	ceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral ar		
	and their features; terminology.		
15JZ4A	Foreign Language - English 4	Z,ZK	3
	and stylistics. Conversational and specialised topics selected according to the language group level and with regard to the Faculty's		_
	ceptive and communicative skills; widening the vocabulary. Basic kinds of compositions. Presentations of own findings in both oral at		
	and their features; terminology.		
16UDDM	Introduction to Transportation and Manipulation Technics	ZK	2
	ation and transportation systems. Principles, functions and arrangement of means of transportation. Motors and their characteristics. Wa	1	1
Wicaria of transporte	technics. Principles of lifting machines and conveyors. Legislature.	tor transportation.	viainpalating
17TDI		Z,ZK	3
17TDL	Transport Technology and Logistics  Posticular standard of transport planning. Quantification of continuo relations. Line planning. Timetabling Dis		_
	sport technology and logistics. Particular steps of transport planning. Quantification of carriage relations. Line planning. Timetabling. Pl		-
transport. Organisa	tion of traffic in each transport means. Technological factors from the point of view of operator and client. Organisation of public city t	ransport. Logistic t	echnologies
	and their application using various transport means.		
18CSU	Parts of Machines	KZ	3
Transmissions, ove	rview and classification, mechanical transmission, parts of transmission, gear relation, design and dimensioning of shafts and bearir	ngs, gears, materia	als 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 sys	tem of point
masses, equation	n of motion. Method of Newton. Princle of D´Alembert. Free and forced vibration with one degree of freedom. Viscous damping. Impa	ct theory. Introduct	tion to the
	solution of vibration with multiple degrees of freedom.		
18MC	Materials Exercices	Z	2
100	Different kinds of processing applied to metals and their alloys. Casting, forming, welding, machining and powder metallurg	_	' -
18MRI1		Z,ZK	3
	Materials 1		_
Crystal structure.	Basics of thermodynamics of metals and their alloys. Balanced binary diagrams. Alloys of iron with carbon. Deterioration of solid solu	ulions. Healing pro	cessing of
	steel and cast irons. Physical features. Mechanical features. Dephectostopic testing. Corosion.		_
18MRI2	Materials 2	KZ	2
Fundamen	tal concepts, notions. The main materials groups. Semiconductors. Polymers. Special types of steel. Properties and application of the	e composite materi	ials.
18PZP	Elasticity and Strength	Z,ZK	3
Tension and compr	ession. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted a	and welded joints o	f structures.
	Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability.		
18SAS	Joints and Parts of Technical Joints	KZ	3
100110	Connection of machine parts, their construction and technology production, design of joints, kinds of fit, bearings, bearing loca	1	' -
18ST	Statics	Z,ZK	3
1001	Statics	4,41	
Conoral system	of forces. Calculation of reactions of mass objects and compound systems. Assessment of internal forces on statically determinate by	1	-
	of forces. Calculation of reactions of mass objects and compound systems. Assessment of internal forces on statically determinate b	eam and simple fra	amework.
	vorks. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss construction	eam and simple fra	amework.
Principle of virtual w	vorks. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructio of sections. Geometry of cross sections. Plane fiber polygons and catenary cables.	eam and simple france, method of joints	amework. and method
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21LLG2	Aviation Legislation 2	ZK	2
	Commission regulation (EU) 1321/2014, Part 66, Part 145, Part 147, Part CAMO, Part CAO, Commission regulation (EU) 965	/2012	_
21LR	Radio Technology in Aviation	ZK	2
Electric signals ar	nd the wave spectrum, Analog and digital modulations, Noises, Filters, Resonance circuits. Electromagnetic field. Electromagnetic w	1	ave ranges
_	in aviation, radiation and reception of electromagnetic field, antennas in aviation, receivers and transmitters.		_
21LRY	Aircraft Engines	Z,ZK	2
Aircraft piston eng	ine, theoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Turbine ei	ngine, theoretical b	ackground,
thermal cycles, c	onstruction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational cl	haracteristics. Eng	ne control.
21LTA2	Aircraft 2	Z,ZK	2
fanufacturers resp	onsibility, responsibilities of operator and professional supervising. Legislation in area of airworthiness. International and national sta	ndards. Static solic	lity of aircra
	structures. Aeroelasticity. Inherent and operational reliability of aircraft structure. Fatigue strength. Aircraft structure lifetime presu	ımption.	
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, shafe	t, springs.	
21PY3	Aircraft Maintenance Technology 3	KZ	4
Par	ticular technologies: diagnostics, surface treatments, airframe production, airframe jointing/bonding, sandwich construction, composi	ite construction.	'
21TMY1	Turbine Engines 1	KZ	3
irst part of the cou	rse Turbine Engines is focused on the explanation and description of the purpose, operation and construction characteristics of aircraf	t turbojet and turbo	fan engine
Thermal en	gine, thermal cycle and its basic parameters, power output and thermal efficiency, basic construction modules, operational and cons	truction characteri	stics.
21TMY2	Turbine Engines 2	Z,ZK	4
Second part of th	e course Turbine Engines is focused on explanation and description of the purpose, operation and construction characteristics of foll	owing aircraft turb	ne engines
utility systems: Lu	brication system, cooling and internal air systems, fuel systems, starting and ignition, controls and instrumentation. Purpose, operati	on 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. C	1	_
Air transport as a	component of complex transport system. International status of civil aviation. International organizations in Europe and worldwide. C  Commercial air transport. Technical operations of aeroplanes.	1	_
Air transport as a		1	_
21ZLE1	Commercial air transport. Technical operations of aeroplanes.	Characteristics of a	ir transport
21ZLE1 Aerodynamic drag	Commercial air transport. Technical operations of aeroplanes.  Principles of Flight 1	KZ essures around w	ir transport
21ZLE1 Aerodynamic drag	Commercial air transport. Technical operations of aeroplanes.  Principles of Flight 1 , relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, lift and drag, air flow and pr	KZ essures around w	ir transport
21ZLE1 Aerodynamic drag	Commercial air transport. Technical operations of aeroplanes.  Principles of Flight 1, relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, lift and drag, air flow and priving 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	KZ essures around w	ir transport  3 ng, angle o
21ZLE1 Aerodynamic drag ttack, reactions of	Commercial air transport. Technical operations of aeroplanes.  Principles of Flight 1 , relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, lift and drag, air flow and priving 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 lift and drag increase.	KZ essures around w	ir transport  3 ng, angle ce, devices f
21ZLE1 Aerodynamic drag ttack, reactions of 21ZLE2 Vays of producing	Commercial air transport. Technical operations of aeroplanes.  Principles of Flight 1 , relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, lift and drag, air flow and pr 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 lift and drag increase.  Principles of Flight 2	KZ essures around w d drag, interference Z,ZK eller operation mode	3 ng, angle ce, devices for 4 les, propelle
21ZLE1 Aerodynamic drag tttack, reactions of 21ZLE2 Vays of producing	Commercial air transport. Technical operations of aeroplanes.  Principles of Flight 1 , relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, lift and drag, air flow and pr 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 lift and drag increase.  Principles of Flight 2 thrust, propeller, jet propulsion, thrust and momentum, propulsion efficiency, aerodynamics of fixed and variable pitch propeller, propegyroscopic effect, balance of forces in horizontal flight, glide and landing, performances, take off and climb, acceleration, positive load.	KZ essures around w d drag, interference Z,ZK eller operation mode	3 ng, angle ce, devices for 4 es, propelle
21ZLE1 Aerodynamic drag ttack, reactions of 21ZLE2 Vays of producing airstream effect,	Commercial air transport. Technical operations of aeroplanes.  Principles of Flight 1 , relation between drag and speed, streamline, boundary layer, continuity equation, Bernoulli's equation, lift and drag, air flow and pr 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 lift and drag increase.  Principles of Flight 2 thrust, propeller, jet propulsion, thrust and momentum, propulsion efficiency, aerodynamics of fixed and variable pitch propeller, propegyroscopic effect, balance of forces in horizontal flight, glide and landing, performances, take off and climb, acceleration, positive load controllability, transsonic speeds.	KZ ressures around w d drag, interference Z,ZK eller operation mod ad, manoeuvres, st	3 ng, angle of etc. 4 es, propell ability and

For updated information see <a href="http://bilakniha.cvut.cz/en/FF.html">http://bilakniha.cvut.cz/en/FF.html</a> Generated: day 2023-04-01, time 06:58.