Study plan

Name of study plan: Bachelor TUL Full-Time from 2022/23

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Technology of Aviation Maintenance
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: 57
The role of the block: Z

Code of the group: 5S-BP-TUL-24/25
Name of the group: 5th Sem. Bachelor Full-Time TUL from 2024/25
Requirement credits in the group: In this group you have to gain 28 credits
Requirement courses in the group: In this group you have to complete 8 courses
Credits in the group: 28
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
21KSY1	**Aircraft Construction and Systems 1** *Kateřina Stuchlíková, Karel Mündel* ***Karel Mündel***	Z,ZK	7	4P+3C	Z	z
21RATE	**Radiotechnology** *Vladimír Machula* ***Vladimír Machula***	ZK	2	2P+0C	Z	z
21LES2	**Aviation Legislation 2** *Jiří Ďuk* ***Jiří Ďuk***	KZ	2	2P+0C	Z	z
21PYD2	**Aircraft Maintenance Technology 2** *Martin Novák* ***Martin Novák***	KZ	4	3P+1C	Z	z
21TUM1	**Turbine Engines 1** *Tomáš Hejna, Jakub Kraus, Ondřej Vítovec, Daniel Hanus* ***Daniel Hanus***	KZ	7	3P+3C	Z	z
21KTVL	**Aircraft Structures and Production Technology** *Jakub Kraus* ***Jakub Kraus*** *Jakub Kraus (Gar.)*	Z	3	0P+2C	Z	z
21LAU1	**Aviation English 1 for Technology of Maintenance** *Jitka Heřmanová* ***Jitka Heřmanová***	Z	2	0P+2C	Z	z
21SBU2	**Bachelor Thesis Seminar 2** *Lenka Hanáková, Vladimír Socha* ***Vladimír Socha***	Z	1	1P+0C	Z	z

Characteristics of the courses of this group of Study Plan: Code=5S-BP-TUL-24/25 Name=5th Sem. Bachelor Full-Time TUL from 2024/25

21KSY1	Aircraft Construction and Systems 1	Z,ZK	7
Aircraft construction requirements and functions - fuselage, wings, flight controls, undercarriage, aircraft pylon, nacelle. Aircraft systems requirements and functions - drainage, water distribution systems and aircraft ligthing.			
21RATE	Radiotechnology	ZK	2
EM field, radio waves, propagation, radio spectrum, information transmission, signal processing, modulations, signal coding, radio transceivers, antennas, and application of radio systems in aviation.			
21LES2	Aviation Legislation 2	KZ	2
Commission regulation (EU) 1321/2014, Part 66, Part 145, Part 147, Part CAMO, Part CAO, Commission regulation (EU) 965/2012			
21PYD2	Aircraft Maintenance Technology 2	KZ	4
The second part of the course introduces all currently used inspection methods, including non-destructive ones, that are used in aviation. Focus is also on the issues of material fatigue and corrosion. Students are also introduced to aircraft handling methods and the effect of the environment on the operation of the aircraft. Methods of weighing and balancing an aircraft are introduced, including the determination of its centre of gravity.			
21TUM1	Turbine Engines 1	KZ	7
First part of the course 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.			

21KTVL	Aircraft Structures and Production Technology	Z	3
Practical knowledge of the construction and technology of aircraft production, within which excursions to production and maintenance organizations will be carried out. The individual parts will focus on the production technologies of aircraft, aircraft components, engines and propellers from traditional (metal) and modern (composite) materials.			
21LAU1	Aviation English 1 for Technology of Maintenance	Z	2
Lectures include various types of the language exercises and are focused on the following topics - aicraft construction components, aicraft systems and principles, maintenance technology, maintenance organizations, maintenance tools and equipment, material science.			
21SBU2	Bachelor Thesis Seminar 2	Z	1
Methodology of thesis writing (introduction, analysis of the current state, specification of the problem, objectives and hypotheses). Definition of materials and methods, approach to obtaining results, presentation and discussion of results, formulation of thesis conclusions. Basics of LaTeX, working with LaTeX and Word template.			

Code of the group: 6S-BP-TUL-24/25
Name of the group: 6th Sem. Bachelor Full-Time TUL from 2024/25
Requirement credits in the group: In this group you have to gain 29 credits
Requirement courses in the group: In this group you have to complete 7 courses
Credits in the group: 29
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
11MSP	**Modeling of Systems and Processes** *Bohumil Kovář, Lucie Kárná* ***Bohumil Kovář*** *Bohumil Kovář (Gar.)*	Z,ZK	4	2P+2C+12B	L	z
21AVIA	**Avionics** *Jan Roháč, Martin Šipoš* ***Jan Roháč*** *Jan Roháč (Gar.)*	Z,ZK	3	2P+2C	L	z
21KSY2	**Aircraft Construction and Systems 2** *Karel Mündel* ***Karel Mündel***	Z,ZK	7	4P+3C	L	z
21TUM2	**Turbine Engines 2** *Tomáš Hejna, Daniel Hanus* ***Daniel Hanus***	Z,ZK	7	3P+3C	L	z
21PYD3	**Aircraft Maintenance Technology 3** *Pavol Hajla*	KZ	5	3P+1C	L	z
21LAU2	**Aviation English 2 for Technology of Maintenance** *Jitka Heřmanová* ***Jitka Heřmanová***	Z	2	0P+2C	L	z
21SBU3	**Bachelor Thesis Seminar 3** *Lenka Hanáková* ***Lenka Hanáková***	Z	1	1P+0C	L	z

Characteristics of the courses of this group of Study Plan: Code=6S-BP-TUL-24/25 Name=6th Sem. Bachelor Full-Time TUL from 2024/25

11MSP	Modeling of Systems and Processes	Z,ZK	4
System and subsystem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differential and differential equations. Linear and nonlinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function. Stability of LTI systems. Discretization of continuous systems. System interconnection.			
21AVIA	Avionics	Z,ZK	3
Aircraft instrumentation, electromagnetic compatibility, aircraft pilot-navigation instrumentation, central electronic aircraft monitoring system, electronic flight instrument system, integrated modular avionics, flight control and optimization system, on-board and information systems.			
21KSY2	Aircraft Construction and Systems 2	Z,ZK	7
Aircraft systems requirements and functions - air condition, pressurization, oxygen systems, tyres, hydraulics, fuel systems, electrical systems, deicing system, fire protection system.			
21TUM2	Turbine Engines 2	Z,ZK	7
Second part of the course is focused on the 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.			
21PYD3	Aircraft Maintenance Technology 3	KZ	5
Course provides students with a detailed overview of organisations involved in heavy aircraft maintenance, maintenance planning and also technical documentation. Last but not least, this course introduces how to deal with various aircraft system failures as well as various structural damage and aircraft modifications. Students are also introduced to the self management system and storage procedures in heavy aircraft maintenance.			
21LAU2	Aviation English 2 for Technology of Maintenance	Z	2
Lectures include various types of the language exercises and are focused on the following topics - aicraft systems and principles, maintenance technology, maintenance organizations, maintenance tools and equipment, material science and manterials application, ecology.			
21SBU3	Bachelor Thesis Seminar 3	Z	1
Formal and graphic design of the thesis. Data collection and presentation, basic statistical reasoning, validation of results and designs. Achieving the objectives of the thesis and evaluation of hypothesis tests. Preparation of the presentation, principles of presentation of the thesis.			

Name of the block: Semestrální projekt
Minimal number of credits of the block: 4
The role of the block: ZP

Code of the group: X1-BP-TUL-23/24
Name of the group: Research Groups Bachelor Full-Time TUL from 2023/24
Requirement credits in the group: In this group you have to gain 4 credits
Requirement courses in the group: In this group you have to complete 3 courses

Credits in the group: 4
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
11X31U	**Project 1 TUL**	Z	1	0P+1C	L	ZP
12X31U	**Project 1 TUL**	Z	1	0P+1C	L	ZP
14X31U	**Project 1 TUL**	Z	1	0P+1C	L	ZP
15X31U	**Project 1 TUL**	Z	1	0P+1C	L	ZP
16X31U	**Project 1 TUL**	Z	1	0P+1C	L	ZP
17X31U	**Project 1 TUL**	Z	1	0P+1C	L	ZP
18X31U	**Project 1 TUL**	Z	1	0P+1C	L	ZP
20X31U	**Project 1 TUL**	Z	1	0P+1C	L	ZP
21X31U	**Project 1 TUL** *Jakub Kraus, Lenka Hanáková, Andrej Lališ, Kateřina Grötschelová, Natalia Guskova, Jakub Hospodka, Terézia Pilmannová, Slobodan Stojić, Lukáš Popek*	Z	1	0P+1C	L	ZP
22X31U	**Project 1 TUL**	Z	1	0P+1C	L	ZP
23X31U	**Project 1 TUL**	Z	1	0P+1C	L	ZP
11X32U	**Project 2 TUL**	Z	2	0P+3C	Z	ZP
12X32U	**Project 2 TUL**	Z	2	0P+3C	Z	ZP
14X32U	**Project 2 TUL**	Z	2	0P+3C	Z	ZP
15X32U	**Project 2 TUL**	Z	2	0P+3C	Z	ZP
16X32U	**Project 2 TUL**	Z	2	0P+3C	Z	ZP
17X32U	**Project 2 TUL**	Z	2	0P+3C	Z	ZP
18X32U	**Project 2 TUL**	Z	2	0P+3C	Z	ZP
20X32U	**Project 2 TUL**	Z	2	0P+3C	Z	ZP
21X32U	**Project 2 TUL** *Jakub Kraus, Andrej Lališ, Natalia Guskova, Terézia Pilmannová, Daniel Urban*	Z	2	0P+3C	Z	ZP
22X32U	**Project 2 TUL**	Z	2	0P+3C	Z	ZP
23X32U	**Project 2 TUL**	Z	2	0P+3C	Z	ZP
11X33U	**Project 3 TUL**	Z	1	0P+2C	L	ZP
12X33U	**Project 3 TUL**	Z	1	0P+2C	L	ZP
14X33U	**Project 3 TUL**	Z	1	0P+2C	L	ZP
15X33U	**Project 3 TUL**	Z	1	0P+2C	L	ZP
16X33U	**Project 3 TUL**	Z	1	0P+2C	L	ZP
17X33U	**Project 3 TUL**	Z	1	0P+2C	L	ZP
18X33U	**Project 3 TUL** *Nela Krčmářová*	Z	1	0P+2C	L	ZP
20X33U	**Project 3 TUL**	Z	1	0P+2C	L	ZP
21X33U	**Project 3 TUL** *Kateřina Stuchlíková, Jakub Kraus, Andrej Lališ, Natalia Guskova, Jakub Hospodka, Terézia Pilmannová, Daniel Urban, Martin Kála, Tomáš Tlučhoř, ...*	Z	1	0P+2C	L	ZP
22X33U	**Project 3 TUL**	Z	1	0P+2C	L	ZP
23X33U	**Project 3 TUL**	Z	1	0P+2C	L	ZP

Characteristics of the courses of this group of Study Plan: Code=X1-BP-TUL-23/24 Name=Research Groups Bachelor Full-Time TUL from 2023/24

11X31U	Project 1 TUL	Z	1
12X31U	Project 1 TUL	Z	1
14X31U	Project 1 TUL	Z	1
15X31U	Project 1 TUL	Z	1
16X31U	Project 1 TUL	Z	1
17X31U	Project 1 TUL	Z	1
18X31U	Project 1 TUL	Z	1
20X31U	Project 1 TUL	Z	1
21X31U	Project 1 TUL	Z	1
22X31U	Project 1 TUL	Z	1
23X31U	Project 1 TUL	Z	1
11X32U	Project 2 TUL	Z	2

12X32U	Project 2 TUL	Z	2
14X32U	Project 2 TUL	Z	2
15X32U	Project 2 TUL	Z	2
16X32U	Project 2 TUL	Z	2
17X32U	Project 2 TUL	Z	2
18X32U	Project 2 TUL	Z	2
20X32U	Project 2 TUL	Z	2
21X32U	Project 2 TUL	Z	2
22X32U	Project 2 TUL	Z	2
23X32U	Project 2 TUL	Z	2
11X33U	Project 3 TUL	Z	1
12X33U	Project 3 TUL	Z	1
14X33U	Project 3 TUL	Z	1
15X33U	Project 3 TUL	Z	1
16X33U	Project 3 TUL	Z	1
17X33U	Project 3 TUL	Z	1
18X33U	Project 3 TUL	Z	1
20X33U	Project 3 TUL	Z	1
21X33U	Project 3 TUL	Z	1
22X33U	Project 3 TUL	Z	1
23X33U	Project 3 TUL	Z	1

Name of the block: Compulsory courses in the program
Minimal number of credits of the block: 119
The role of the block: P

Code of the group: 1S-BP-TUL-22/23
Name of the group: 1st Sem. Bachelor Full-Time TUL from 2022/23
Requirement credits in the group: In this group you have to gain 30 credits
Requirement courses in the group: In this group you have to complete 8 courses
Credits in the group: 30
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
11CAL1	**Calculus 1** *Bohumil Kovář, Olga Vraštilová, Tomáš Třasák, Magdalena Hykšová, Ondřej Navrátil* ***Bohumil Kovář*** *Ondřej Navrátil (Gar.)*	Z,ZK	7	2P+4C+22B	Z	P
11LA	**Linear Algebra** *Lucie Kárná, Pavel Provinský, Martina Bečvářová* ***Martina Bečvářová*** *Martina Bečvářová (Gar.)*	Z,ZK	3	2P+1C+10B	Z	P
14ZEL1	**Electronics Basics 1** *Tomáš Musil, Vít Fábera* ***Vít Fábera*** *Vít Fábera (Gar.)*	Z,ZK	5	3P+2C	Z	P
18MTY	**Materials Science and Engineering** *Nela Krčmářová, Jaromír Kylar, Veronika Drechslerová, Jaromír Kylar, Jitka Řezníčková, Jaroslav Valach, Vít Malinovský, Veronika Drechslerová, Jaromír Kylar* ***Jaroslav Valach*** *Jaroslav Valach (Gar.)*	Z,ZK	3	2P+1C+10B	Z	P
11GIE	**Geometry** *Pavel Provinský, Oldřich Hykš, Šárka Voráčová* ***Oldřich Hykš*** *Oldřich Hykš (Gar.)*	KZ	3	2P+2C+12B	Z	P
14ASD	**Algorithm and Data Structures** *Vít Fábera, Tomáš Brandejský, Michal Jeřábek, Alena Kubáčová, Jan Procházka, Martin Fiala* ***Vít Fábera*** *Vít Fábera (Gar.)*	KZ	3	0P+2C+8B	Z	P
14KSP	**Constructing with Computer Aid** *Vít Fábera, Radek Kratochvíl* ***Lukáš Svoboda***	KZ	2	0P+2C+8B	Z	P
21ZLKS	**Basics of Aircraft Structures and Systems** *Pavol Hajla* ***Pavol Hajla***	KZ	4	2P+2C	Z	P

Characteristics of the courses of this group of Study Plan: Code=1S-BP-TUL-22/23 Name=1st Sem. Bachelor Full-Time TUL from 2022/23

11CAL1	Calculus 1	Z,ZK	7
Sequence of real numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Indefinite integral, Newton integral, Riemann integral, improper Riemann integral. First-order differential equations, linear differential equations.			
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.			

14ZEL1	Electronics Basics 1	Z,ZK	5
Electrotechnic terms, electron theory, static electricity, electrical conductivity and terminology, electrical resistance, resistor, capacity and capacitor, inductance and inductor, powers, DC circuits - simplicity method, superposition, node-voltage method, mesh - circuit method, AC current, characteristics of AC waveforms, 3-phase el. power, AC circuits - Steinmetz's symbolic method, power, filters.			
18MTY	Materials Science and Engineering	Z,ZK	3
Basic course of materials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructure. However the main attention is paid to metals as the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and composites. Attention is also paid to degradation processes in materials, to defectoscopy and to main mechanical tests.			
11GIE	Geometry	KZ	3
Differential geometry of curves - parameterization, the arc of the curve, torsion and curvature, Frenet`s trihedron. Kinematics - a curve as a trajectory of the motion, the velocity, and acceleration of a particle moving on a curved path.			
14ASD	Algorithm and Data Structures	KZ	3
Students will analyze problems, design a theoretical solution to a given problem and write the resulting algorithm using flowcharts, practice reading algorithms written using flowcharts, and use basic Boolean algebra to construct constraints in algorithms. Students will be introduced to the basics of the Python programming language - variable, branching, loops, they will learn to work with variables of basic data types (integer, floating point and string) and the list data structure in their programs.			
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 possibilites, AutoCAD environment profiles, drawings with raster foundaments).			
21ZLKS	Basics of Aircraft Structures and Systems	KZ	4
Basics of screening, technical drawing, technological and operational signs. Hydraulic, pneumatic, fuel, electricity and block diagrams in aviation.			

Code of the group: 2S-BP-TUL-22/23
Name of the group: 2nd Sem. Bachelor Full-Time TUL from 2022/23
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 9 courses
Credits in the group: 30
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
11CAL2	**Calculus 2** *Olga Vraštilová, Tomáš Třasák, Magdalena Hykšová, Ondřej Navrátil, Oldřich Hykš* ***Magdalena Hykšová*** *Ondřej Navrátil (Gar.)*	Z,ZK	5	2P+3C+20B	L	P
11STAT	**Statistics** *Pavel Provinský, Evženie Uglickich, Pavla Pecherková, Michal Matowicki, Natálie Blahitka, Ivan Nagy, Jana Kuklová* ***Pavla Pecherková*** *Evženie Uglickich (Gar.)*	Z,ZK	4	2P+2C+12B	L	P
14ZEL2	**Electronics Basics 2** *Tomáš Musil, Vít Fábera, Daniel Beránek* ***Vít Fábera*** *Vít Fábera (Gar.)*	Z,ZK	4	2P+2C	L	P
18SAT	**Structural Analysis** *Nela Krčmářová, Jaromír Kylar, Veronika Drechslerová, Jitka Řezníčková, Daniel Kytýř, Jan Vyčichl, Tomáš Doktor, Jan Falta, Jan Šleichrt Daniel Kytýř (Gar.)*	Z,ZK	4	2P+2C+14B	L	P
21PRJ1	**Instrumentation 1**	ZK	2	2P+0C	L,Z	P
21ZKL1	**Principles of Flight 1** *Vladimír Machula, Přemysl Vávra, Jakub Trýb* ***Přemysl Vávra*** *Přemysl Vávra (Gar.)*	ZK	3	2P+1C	L	P
14PRG	**Programming** *Alena Kubáčová, Jan Procházka, Martin Fiala, Jana Kaliková, Jan Krčál, Lukáš Svoboda* ***Jana Kaliková*** *Jana Kaliková (Gar.)*	KZ	2	0P+2C+8B	L	P
16LLA1	**Aircraft 1** *Karel Mündel, Daniel Urban, Vladimír Plos, Michal Černý, Karel Hylmar Vladimír Plos (Gar.)*	KZ	3	2P+1C	L	P
21LRY1	**Aircraft Engines 1** *Vladimír Machula, Daniel Hanus, Tomáš Parýzek Daniel Hanus (Gar.)*	KZ	3	2P+1C	L	P

Characteristics of the courses of this group of Study Plan: Code=2S-BP-TUL-22/23 Name=2nd Sem. Bachelor Full-Time TUL from 2022/23

11CAL2	Calculus 2	Z,ZK	5
Linear differential equations and their systems, differential calculus of functions of several real variables. Riemann integral in Rn. Line and surface integrals.			
11STAT	Statistics	Z,ZK	4
Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparametric tests Regression and correlation analysis			
14ZEL2	Electronics Basics 2	Z,ZK	4
Production of electricity and the DC power sources, magnetism, DC motors and generators, AC motors (synchronous, asynchronous, 1-phase, 3-phase), stepper motors, BLDC motors, AC generators.			
18SAT	Structural Analysis	Z,ZK	4
General system of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate beams and simple girders. Principle of virtual work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions. Cross-sectional characteristics of planar shapes. Fiber polygons and chains.			

21PRJ1	Instrumentation 1	ZK	2
Basic construction principles of instrumentation, electronic displays, basics of measurement - sensitivity and errors, engine instrumentation (pressure gauges, thermometers, fuel quantity and fuel flow measurement, torque and EPR measurement), indication in other aircraft systems (position, fire and icing indication, vibration monitoring, pressurisation system monitoring, aerometric instruments (sensors, altimeter, air speed indicator, VSI, ADC).			
21ZKL1	Principles of Flight 1	ZK	3
Aerodynamic drag, relation between drag and speed, streamline, boundary layer, formula of continuity, formula of Bernoulli, lift and drag, air flow and pressures around wing, angle of attack, reactions of wing in air flow, lift and drag of a wing and an aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, induced drag, interference, devices for lift and drag increase.			
14PRG	Programming	KZ	2
The Course Programming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python programming language is expanded here so that the participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and searching, tuples, sets, dictionaries, working with date and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).			
16LLA1	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.			
21LRY1	Aircraft Engines 1	KZ	3
Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational characteristics. Engine control.			

Code of the group: 3S-BP-TUL-23/24
Name of the group: 3rd Sem. Bachelor Full-Time TUL from 2023/24
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 9 courses
Credits in the group: 30
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
11FYZ	**Physics** *Oldřich Hykš, Jana Kuklová, Pavel Demo, Zuzana Malá, Tomáš Vítů* ***Jana Kuklová*** *Pavel Demo (Gar.)*	Z,ZK	5	2P+2C+18B	Z	P
16LLA2	**Aircraft 2** *Karel Mündel, Daniel Urban, Karel Hylmar, Jan Slezáček*	Z,ZK	2	2P+1C	Z	P
18PZP	**Elasticity and Strength** *Jitka Řezníčková, Daniel Kytýř, Jan Vyčichl, Tomáš Doktor, Jan Šleichrt, Josef Jíra, Ondřej Jiroušek* ***Ondřej Jiroušek*** *Ondřej Jiroušek (Gar.)*	Z,ZK	3	2P+1C+10B	Z	P
21LEUL	**Aviation Maintenance Human Factors** *Oliver Dzvoník* ***Oliver Dzvoník***	Z,ZK	5	3P+2C	Z	P
21LRY2	**Aircraft Engines 2** *Daniel Hanus, Tomáš Parýzek* ***Daniel Hanus***	Z,ZK	3	2P+1C	Z	P
21PRJ2	**Instrumentation 2** *Pavel Hovorka* ***Pavel Hovorka***	ZK	3	2P+0C	L,Z	P
14ZLEN	**Basics of Electronics** *Tomáš Musil, Vít Fábera* ***Vít Fábera*** *Vít Fábera (Gar.)*	KZ	3	2P+1C	Z	P
21UPUL	**Introduction to Aircraft Maintenance Technology** *Kateřina Stuchlíková, Pavel Hovorka* ***Pavel Hovorka***	Z	3	3P+0C	Z	P
15JZ1A	**Foreign Language - English 1** *Jitka Heřmanová, Markéta Vojanová, Dana Boušová, Marie Michlová, Marek Tomeček, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, ...*	Z	3	0P+4C+10B	Z	P

Characteristics of the courses of this group of Study Plan: Code=3S-BP-TUL-23/24 Name=3rd Sem. Bachelor Full-Time TUL from 2023/24

11FYZ	Physics	Z,ZK	5
Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current.			
16LLA2	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.			
18PZP	Elasticity and Strength	Z,ZK	3
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.			
21LEUL	Aviation Maintenance Human Factors	Z,ZK	5
Human factor, basic models of human factor, human performance and limitations, factors influencing performance, social psychology, communication, human errors.			
21LRY2	Aircraft Engines 2	Z,ZK	3
Compressors, centrifugal compressor, combustion chamber, turboshaft engines, ramjets, power, thermal efficiency and fuel consumption, starting aircraft turbine engines, idling and idling speed.			
21PRJ2	Instrumentation 2	ZK	3
Compass, gyroscopic instruments (turn indicator, attitude indicator, directional gyro), inertial instruments, recording and monitoring systems, warning systems (TCAS, GPWS), AFCS (autopilot, flight director, autothrust), FMS, flight envelope protection, communication systems, flight computers.			
14ZLEN	Basics of Electronics	KZ	3
Semiconductors, PN junction, diodes, rectifiers, SCR, diac, triac, Zener diode, Schottky diode, photodiode, bipolar junction transistor, transistor circuits, unipolar junction tranzistors and circuits, technology of integrated circuits, feedback theory, operational amplifiers, printed circuit boards, servo-systems, oscillators, switching power suplies.			

21UPUL	Introduction to Aircraft Maintenance Technology	Z	3
Students are given an overview of safe work practices as well as an insight into the history of aircraft maintenance. In addition, tools used in heavy aircraft maintenance are introduced as well as basic care procedures. A significant portion of the course is devoted to technical drawings as well as the Electrical Wiring Inspection System (EWIS).			
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.			

Code of the group: 4S-BP-TUL-23/24
Name of the group: 4th Sem. Bachelor Full-Time TUL from 2023/24
Requirement credits in the group: In this group you have to gain 29 credits
Requirement courses in the group: In this group you have to complete 9 courses
Credits in the group: 29
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
11ELMO	**Electromagnetic Field and Optics** *Oldřich Hykš, Jana Kuklová, Zuzana Malá, Tomáš Vítů* ***Zuzana Malá*** *Pavel Demo (Gar.)*	Z,ZK	5	2P+2C	L	P
21V	**Aircraft Propellers** *Martin Novák* ***Martin Novák*** *Martin Novák (Gar.)*	Z,ZK	6	3P+2C	L	P
21ZT	**ATM Systems** *Stanislav Pleninger Stanislav Pleninger (Gar.)*	ZK	2	2P+0C	Z,L	P
14ENIK	**Electronics** *Tomáš Musil, Vít Fábera* ***Vít Fábera*** *Vít Fábera (Gar.)*	KZ	4	2P+2C	L	P
18POMY	**Advanced Materials** *Jaroslav Valach, Jaroslav Valach Jaroslav Valach (Gar.)*	KZ	2	2P+0C	L	P
21PYD1	**Aircraft Maintenance Technology 1** *Pavol Hajla Jakub Kraus (Gar.)*	KZ	3	3P+1C	L	P
21LES1	**Aviation Legislation 1** ***Jiří Ďuk***	Z	3	3P+0C	L	P
21SBU1	**Bachelor Thesis Seminar 1** *Lenka Hanáková* ***Lenka Hanáková*** *Lenka Hanáková (Gar.)*	Z	1	1P+0C	L	P
15JZ2A	**Foreign Language - English 2** *Jitka Heřmanová, Markéta Vojanová, Marie Michlová, Marek Tomeček, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, Eva Rezlerová, ...*	Z,ZK	3	0P+4C+10B	L	P

Characteristics of the courses of this group of Study Plan: Code=4S-BP-TUL-23/24 Name=4th Sem. Bachelor Full-Time TUL from 2023/24

11ELMO	Electromagnetic Field and Optics	Z,ZK	5
Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.			
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.			
21ZT	ATM Systems	ZK	2
The course introduces classical and modern facilities, systems and technologies designated for ATS. Student obtains knowledge of technical principles and solutions as far as communication, navigation and surveillance aviation systems are concerned.			
14ENIK	Electronics	KZ	4
Analog and digital representation, radix systems, combinational logical circuits, Karnaugh maps, logical circuits realization, sequential logical circuits, integrated circuits SSI - VLSI, coders, decoders, counters, A/D and D/A convertors, programmable circuits (FPGA, SoC), computer terminology, computer architecture, single-chip controllers, RISC, CISC, memories, controllers, electrical buses.			
18POMY	Advanced Materials	KZ	2
The knowledge gained in primary materials course is further developed. In greater physical detail it explains dynamics of strcture defects, phase diagrams of binary systems and other concepts. Special processes of structure control are discussed. The gained knowledge is utilized on description of contemporary technologies of material production for key industrial applications.			
21PYD1	Aircraft Maintenance Technology 1	KZ	3
The first part of the course, which introduces students to the basic techniques of joining both metallic and non-metallic materials. These techniques are mainly riveting, welding, soldering and gluing. It also introduces the basic metals and non-metals, including composites, which are part of modern aircraft. Last but not least, techniques for fitting springs, gears, gear cables, pipes and hoses to aircraft are presented.			
21LES1	Aviation Legislation 1	Z	3
Introduction to aviation legislation. Sphere of action of the CAA, ICAO, EASA. Part M and ML (continuing airworthiness), maintenance programmes, ADs, airworthiness reviews. Part 21 (initial airworthiness), design and production of aircraft.			
21SBU1	Bachelor Thesis Seminar 1	Z	1
Types of thesis (review, applied research, basic research, thesis dealing with design proposals). Working with citation sources (citation sources, citation databases, citation styles, how to cite). Analyzing the state of the art (standards of research writing). Defining the limitations of the state of the art. Introduction to the thesis methodology.			
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.			

Name of the block: Elective courses
Minimal number of credits of the block: 0

The role of the block: V

Code of the group: VP-BP-TUL
Name of the group: Bachelor Full-Time TUL voluntary
Requirement credits in the group:
Requirement courses in the group:
Credits in the group: 0
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
21PIS1	**Piston Engine 1** *Jakub Kraus* ***Jakub Kraus*** *Jakub Kraus (Gar.)*	Z	0	2P+2C	Z	V
21PIS2	**Piston Engine 2**	Z	0	2P+2C	L	V
21PXE1	**Training Course 1** *Kateřina Stuchlíková, Ondřej Vítovec* ***Ondřej Vítovec***	Z	0	0P+4C	Z	V
21PXE2	**Training Course 2** *Kateřina Stuchlíková*	Z	0	0P+4C	L	V
11SCFZ	**Seminar of Physics** *Oldřich Hykš, Jana Kuklová, Zuzana Malá, Tomáš Vítů* ***Zuzana Malá*** *Zuzana Malá (Gar.)*	Z	0	0P+2C	Z	V

Characteristics of the courses of this group of Study Plan: Code=VP-BP-TUL Name=Bachelor Full-Time TUL voluntary

21PIS1	Piston Engine 1	Z	0
Piston engine efficiency, duty cycles, stroke and compression ratio, engine layout and ignition. Engine power calculation. Measurement of key engine parameters: pressure, temperature, fuel flow. Engine design. Valve distributions. Starting systems. Engine exhaust systems. Engine cooling system.			
21PIS2	Piston Engine 2	Z	0
Design and operation of supercharged engines. Lubrication and fuel system. Engine mounting and covers. Engine storage. Construction of hoses and pipes. Startup procedure. Inspection and storage of the engine, including its accessories.			
21PXE1	Training Course 1	Z	0
Tools identification and their use. Various material treatment. Joining methods for different joints and their removal.			
21PXE2	Training Course 2	Z	0
Special tools and measurement equipment identification and their use. Basics of machine-tool control.			
11SCFZ	Seminar of Physics	Z	0
Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
11CAL1	Calculus 1	Z,ZK	7
Sequence of real numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Indefinite integral, Newton integral, Riemann integral, improper Riemann integral. First-order differential equations, linear differential equations.			
11CAL2	Calculus 2	Z,ZK	5
Linear differential equations and their systems, differential calculus of functions of several real variables. Riemann integral in Rn. Line and surface integrals.			
11ELMO	Electromagnetic Field and Optics	Z,ZK	5
Electric field. Electric current. Magnetic field. Electromagnetic field. Optics. Basics of solid-state physics.			
11FYZ	Physics	Z,ZK	5
Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current.			
11GIE	Geometry	KZ	3
Differential geometry of curves - parameterization, the arc of the curve, torsion and curvature, Frenet`s trihedron. Kinematics - a curve as a trajectory of the motion, the velocity, and acceleration of a particle moving on a curved path.			
11LA	Linear Algebra	Z,ZK	3
Vector spaces (linear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and their solvability. Determinants and their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classification.			
11MSP	Modeling of Systems and Processes	Z,ZK	4
System and subsystem, external and internal system description, continuous and discrete system, mathematics as a tool, examples of formulation of differential and differential equations. Linear and nonlinear system, stationary and non-stationary system, causality. Convolutional integral. Laplace and Z transformations. Transfer function. Stability of LTI systems. Discretization of continuous systems. System interconnection.			
11SCFZ	Seminar of Physics	Z	0
Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.			

11STAT	Statistics	Z,ZK	4
Basics of probability Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parametric tests Nonparametric tests Regression and correlation analysis			
11X31U	Project 1 TUL	Z	1
11X32U	Project 2 TUL	Z	2
11X33U	Project 3 TUL	Z	1
12X31U	Project 1 TUL	Z	1
12X32U	Project 2 TUL	Z	2
12X33U	Project 3 TUL	Z	1
14ASD	Algorithm and Data Structures	KZ	3
Students will analyze problems, design a theoretical solution to a given problem and write the resulting algorithm using flowcharts, practice reading algorithms written using flowcharts, and use basic Boolean algebra to construct constraints in algorithms. Students will be introduced to the basics of the Python programming language - variable, branching, loops, they will learn to work with variables of basic data types (integer, floating point and string) and the list data structure in their programs.			
14ENIK	Electronics	KZ	4
Analog and digital representation, radix systems, combinational logical circuits, Karnaugh maps, logical circuits realization, sequential logical circuits, integrated circuits SSI - VLSI, coders, decoders, counters, A/D and D/A convertors, programmable circuits (FPGA, SoC), computer terminology, computer architecture, single-chip controllers, RISC, CISC, memories, controllers, electrical buses.			
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 possibilites, AutoCAD environment profiles, drawings with raster foundaments).			
14PRG	Programming	KZ	2
The Course Programming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python programming language is expanded here so that the participant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and searching, tuples, sets, dictionaries, working with date and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).			
14X31U	Project 1 TUL	Z	1
14X32U	Project 2 TUL	Z	2
14X33U	Project 3 TUL	Z	1
14ZEL1	Electronics Basics 1	Z,ZK	5
Electrotechnic terms, electron theory, static electricity, electrical conductivity and terminology, electrical resistance, resistor, capacity and capacitor, inductance and inductor, powers, DC circuits - simplicity method, superposition, node-voltage method, mesh - circuit method, AC current, characteristics of AC waveforms, 3-phase el. power, AC circuits - Steinmetz's symbolic method, power, filters.			
14ZEL2	Electronics Basics 2	Z,ZK	4
Production of electricity and the DC power sources, magnetism, DC motors and generators, AC motors (synchronous, asynchronous, 1-phase, 3-phase), stepper motors, BLDC motors, AC generators.			
14ZLEN	Basics of Electronics	KZ	3
Semiconductors, PN junction, diodes, rectifiers, SCR, diac, triac, Zener diode, Schottky diode, photodiode, bipolar junction transistor, transistor circuits, unipolar junction tranzistors and circuits, technology of integrated circuits, feedback theory, operational amplifiers, printed circuit boards, servo-systems, oscillators, switching power suplies.			
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.			
15X31U	Project 1 TUL	Z	1
15X32U	Project 2 TUL	Z	2
15X33U	Project 3 TUL	Z	1
16LLA1	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.			
16LLA2	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.			
16X31U	Project 1 TUL	Z	1
16X32U	Project 2 TUL	Z	2
16X33U	Project 3 TUL	Z	1
17X31U	Project 1 TUL	Z	1
17X32U	Project 2 TUL	Z	2
17X33U	Project 3 TUL	Z	1
18MTY	Materials Science and Engineering	Z,ZK	3
Basic course of materials science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructure. However the main attention is paid to metals as the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and composites. Attention is also paid to degradation processes in materials, to defectoscopy and to main mechanical tests.			
18POMY	Advanced Materials	KZ	2
The knowledge gained in primary materials course is further developed. In greater physical detail it explains dynamics of strcture defects, phase diagrams of binary systems and other concepts. Special processes of structure control are discussed. The gained knowledge is utilized on description of contemporary technologies of material production for key industrial applications.			

18PZP	Elasticity and Strength	Z,ZK	3
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.			
18SAT	Structural Analysis	Z,ZK	4
General system of forces in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate beams and simple girders. Principle of virtual work. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions. Cross-sectional characteristics of planar shapes. Fiber polygons and chains.			
18X31U	Project 1 TUL	Z	1
18X32U	Project 2 TUL	Z	2
18X33U	Project 3 TUL	Z	1
20X31U	Project 1 TUL	Z	1
20X32U	Project 2 TUL	Z	2
20X33U	Project 3 TUL	Z	1
21AVIA	Avionics	Z,ZK	3
Aircraft instrumentation, electromagnetic compatibility, aircraft pilot-navigation instrumentation, central electronic aircraft monitoring system, electronic flight instrument system, integrated modular avionics, flight control and optimization system, on-board and information systems.			
21KSY1	Aircraft Construction and Systems 1	Z,ZK	7
Aircraft construction requirements and functions - fuselage, wings, flight controls, undercarriage, aircraft pylon, nacelle. Aircraft systems requirements and functions - drainage, water distribution systems and aircraft ligthing.			
21KSY2	Aircraft Construction and Systems 2	Z,ZK	7
Aircraft systems requirements and functions - air condition, pressurization, oxygen systems, tyres, hydraulics, fuel systems, electrical systems, deicing system, fire protection system.			
21KTVL	Aircraft Structures and Production Technology	Z	3
Practical knowledge of the construction and technology of aircraft production, within which excursions to production and maintenance organizations will be carried out. The individual parts will focus on the production technologies of aircraft, aircraft components, engines and propellers from traditional (metal) and modern (composite) materials.			
21LAU1	Aviation English 1 for Technology of Maintenance	Z	2
Lectures include various types of the language exercises and are focused on the following topics - aicraft construction components, aicraft systems and principles, maintenance technology, maintenance organizations, maintenance tools and equipment, material science.			
21LAU2	Aviation English 2 for Technology of Maintenance	Z	2
Lectures include various types of the language exercises and are focused on the following topics - aicraft systems and principles, maintenance technology, maintenance organizations, maintenance tools and equipment, material science and manterials application, ecology.			
21LES1	Aviation Legislation 1	Z	3
Introduction to aviation legislation. Sphere of action of the CAA, ICAO, EASA. Part M and ML (continuing airworthiness), maintenance programmes, ADs, airworthiness reviews. Part 21 (initial airworthiness), design and production of aircraft.			
21LES2	Aviation Legislation 2	KZ	2
Commission regulation (EU) 1321/2014, Part 66, Part 145, Part 147, Part CAMO, Part CAO, Commission regulation (EU) 965/2012			
21LEUL	Aviation Maintenance Human Factors	Z,ZK	5
Human factor, basic models of human factor, human performance and limitations, factors influencing performance, social psychology, communication, human errors.			
21LRY1	Aircraft Engines 1	KZ	3
Aircraft piston engine, theoretical background, operational characteristics and construction schemes. Propellers, operational characterictics. Turbine engine, theoretical background, thermal cycles, construction schemes, operational characteristics. Turbojet and turbofan engines, basic construction modules, and their operational characteristics. Engine control.			
21LRY2	Aircraft Engines 2	Z,ZK	3
Compressors, centrifugal compressor, combustion chamber, turboshaft engines, ramjets, power, thermal efficiency and fuel consumption, starting aircraft turbine engines, idling and idling speed.			
21PIS1	Piston Engine 1	Z	0
Piston engine efficiency, duty cycles, stroke and compression ratio, engine layout and ignition. Engine power calculation. Measurement of key engine parameters: pressure, temperature, fuel flow. Engine design. Valve distributions. Starting systems. Engine exhaust systems. Engine cooling system.			
21PIS2	Piston Engine 2	Z	0
Design and operation of supercharged engines. Lubrication and fuel system. Engine mounting and covers. Engine storage. Construction of hoses and pipes. Startup procedure. Inspection and storage of the engine, including its accessories.			
21PRJ1	Instrumentation 1	ZK	2
Basic construction principles of instrumentation, electronic displays, basics of measurement - sensitivity and errors, engine instrumentation (pressure gauges, thermometers, fuel quantity and fuel flow measurement, torque and EPR measurement), indication in other aircraft systems (position, fire and icing indication, vibration monitoring, pressurisation system monitoring, aerometric instruments (sensors, altimeter, air speed indicator, VSI, ADC).			
21PRJ2	Instrumentation 2	ZK	3
Compass, gyroscopic instruments (turn indicator, attitude indicator, directional gyro), inertial instruments, recording and monitoring systems, warning systems (TCAS, GPWS), AFCS (autopilot, flight director, autothrust), FMS, flight envelope protection, communication systems, flight computers.			
21PXE1	Training Course 1	Z	0
Tools identification and their use. Various material treatment. Joining methods for different joints and their removal.			
21PXE2	Training Course 2	Z	0
Special tools and measurement equipment identification and their use. Basics of machine-tool control.			
21PYD1	Aircraft Maintenance Technology 1	KZ	3
The first part of the course, which introduces students to the basic techniques of joining both metallic and non-metallic materials. These techniques are mainly riveting, welding, soldering and gluing. It also introduces the basic metals and non-metals, including composites, which are part of modern aircraft. Last but not least, techniques for fitting springs, gears, gear cables, pipes and hoses to aircraft are presented.			
21PYD2	Aircraft Maintenance Technology 2	KZ	4
The second part of the course introduces all currently used inspection methods, including non-destructive ones, that are used in aviation. Focus is also on the issues of material fatigue and corrosion. Students are also introduced to aircraft handling methods and the effect of the environment on the operation of the aircraft. Methods of weighing and balancing an aircraft are introduced, including the determination of its centre of gravity.			

21PYD3	Aircraft Maintenance Technology 3	KZ	5
Course provides students with a detailed overview of organisations involved in heavy aircraft maintenance, maintenance planning and also technical documentation. Last but not least, this course introduces how to deal with various aircraft system failures as well as various structural damage and aircraft modifications. Students are also introduced to the self management system and storage procedures in heavy aircraft maintenance.			
21RATE	Radiotechnology	ZK	2
EM field, radio waves, propagation, radio spectrum, information transmission, signal processing, modulations, signal coding, radio transceivers, antennas, and application of radio systems in aviation.			
21SBU1	Bachelor Thesis Seminar 1	Z	1
Types of thesis (review, applied research, basic research, thesis dealing with design proposals). Working with citation sources (citation sources, citation databases, citation styles, how to cite). Analyzing the state of the art (standards of research writing). Defining the limitations of the state of the art. Introduction to the thesis methodology.			
21SBU2	Bachelor Thesis Seminar 2	Z	1
Methodology of thesis writing (introduction, analysis of the current state, specification of the problem, objectives and hypotheses). Definition of materials and methods, approach to obtaining results, presentation and discussion of results, formulation of thesis conclusions. Basics of LaTeX, working with LaTeX and Word template.			
21SBU3	Bachelor Thesis Seminar 3	Z	1
Formal and graphic design of the thesis. Data collection and presentation, basic statistical reasoning, validation of results and designs. Achieving the objectives of the thesis and evaluation of hypothesis tests. Preparation of the presentation, principles of presentation of the thesis.			
21TUM1	Turbine Engines 1	KZ	7
First part of the course 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.			
21TUM2	Turbine Engines 2	Z,ZK	7
Second part of the course is focused on the 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.			
21UPUL	Introduction to Aircraft Maintenance Technology	Z	3
Students are given an overview of safe work practices as well as an insight into the history of aircraft maintenance. In addition, tools used in heavy aircraft maintenance are introduced as well as basic care procedures. A significant portion of the course is devoted to technical drawings as well as the Electrical Wiring Inspection System (EWIS).			
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.			
21X31U	Project 1 TUL	Z	1
21X32U	Project 2 TUL	Z	2
21X33U	Project 3 TUL	Z	1
21ZKL1	Principles of Flight 1	ZK	3
Aerodynamic drag, relation between drag and speed, streamline, boundary layer, formula of continuity, formula of Bernoulli, lift and drag, air flow and pressures around wing, angle of attack, reactions of wing in air flow, lift and drag of a wing and an aircraft, coefficient of lift and drag, critical angle of attack, wing with final span, induced drag, interference, devices for lift and drag increase.			
21ZLKS	Basics of Aircraft Structures and Systems	KZ	4
Basics of screening, technical drawing, technological and operational signs. Hydraulic, pneumatic, fuel, electricity and block diagrams in aviation.			
21ZT	ATM Systems	ZK	2
The course introduces classical and modern facilities, systems and technologies designated for ATS. Student obtains knowledge of technical principles and solutions as far as communication, navigation and surveillance aviation systems are concerned.			
22X31U	Project 1 TUL	Z	1
22X32U	Project 2 TUL	Z	2
22X33U	Project 3 TUL	Z	1
23X31U	Project 1 TUL	Z	1
23X32U	Project 2 TUL	Z	2
23X33U	Project 3 TUL	Z	1

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