Study plan

Name of study plan: Bachelor TET-LOG Part-Time from 2025/26

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 combined
Required credits: 90
Elective courses credits: 90
Sum of credits in the plan: 180
Note on the plan:

Name of the block: Compulsory courses
Minimal number of credits of the block: 90
The role of the block: Z

Code of the group: 1S-BK-TET-24/25
Name of the group: 1st Sem. Bachelor Part-Time TET from 2024/25
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** *Olga Vraštilová, Tomáš Třasák, Magdalena Hykšová, Bohumil Kovář, Ondřej Navrátil* ***Bohumil Kovář*** *Ondřej Navrátil (Gar.)*	Z,ZK	7	2P+4C+22B	Z	z
11LA	**Linear Algebra** *Lucie Kárná, Pavel Provinský, Martina Bečvářová* ***Martina Bečvářová*** *Martina Bečvářová (Gar.)*	Z,ZK	3	2P+1C+10B	Z	z
12ZADK	**Introduction to Transportation Engineering** *Dagmar Kočárková, Jana Štikarová*	Z,ZK	5	12B	Z	z
18MTY	**Materials Science and Engineering** *Jaromír Kylar, Veronika Drechslerová, Jaromír Kylar, Nela Krčmářová, Jitka Řezníčková, Jaroslav Valach, Vít Malinovský, Veronika Drechslerová, Jaromír Kylar* ***Jaroslav Valach*** *Jaroslav Valach (Gar.)*	Z,ZK	3	2P+1C+10B	Z	z
11GIE	**Geometry** *Pavel Provinský, Oldřich Hykš, Šárka Voráčová* ***Oldřich Hykš*** *Oldřich Hykš (Gar.)*	KZ	3	2P+2C+12B	Z	z
14ASD	**Algorithm and Data Structures** *Tomáš Brandejský, Michal Jeřábek, Alena Kubáčová, Jan Procházka, Vít Fábera, Martin Fiala* ***Vít Fábera*** *Vít Fábera (Gar.)*	KZ	3	0P+2C+8B	Z	z
18TKK	**Technical Drawing and Designing** *Jitka Řezníčková, Vít Malinovský, Jan Šleichrt, Martin Brumovský, Jan Mejstřík, Drahomír Schmidt, Lukáš Svoboda, Jan Vogl, Jiří Zeisek, ...* ***Jan Šleichrt*** *Jan Šleichrt (Gar.)*	KZ	4	2P+2C+16B	Z	z
16UDOP	**Introduction into Vehicles** *Zuzana Radová, Petr Bouchner*	Z	2	2P+0C+8B	Z	z

Characteristics of the courses of this group of Study Plan: Code=1S-BK-TET-24/25 Name=1st Sem. Bachelor Part-Time TET from 2024/25

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.			
12ZADK	Introduction to Transportation Engineering	Z,ZK	5

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.			
18TKK	Technical Drawing and Designing	KZ	4
16UDOP	Introduction into Vehicles	Z	2
Vehicles and transportation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and water transport. Alternative means of transport. Lifting equipment and conveyors. Legislation.			

Code of the group: 2S-BK-TET-24/25
Name of the group: 2nd Sem. Bachelor Part-Time TET from 2024/25
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
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	z
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	z
12ZTS	**Railway Lines and Stations** *Lukáš Týfa, Martin Jacura, Petr Šatra, Tomáš Javořík, Ondřej Trešl Lukáš Týfa (Gar.)*	Z,ZK	4	2P+2C+10B	L	z
18SAT	**Structural Analysis** *Jaromír Kylar, Veronika Drechslerová, Nela Krčmářová, Jitka Řezníčková, Jan Šleichrt, Daniel Kytýř, Jan Vyčichl, Tomáš Doktor, Jan Falta Daniel Kytýř (Gar.)*	Z,ZK	4	2P+2C+14B	L	z
20SYSA	**Systems Analysis** *Zuzana Bělinová, Jiří Růžička, Patrik Horažďovský, Petr Bureš Zuzana Bělinová (Gar.)*	Z,ZK	5	2P+2C+14B	L	z
14PRG	**Programming** *Alena Kubáčová, Jan Procházka, Martin Fiala, Lukáš Svoboda, Jana Kaliková, Jan Krčál* ***Jana Kaliková*** *Jana Kaliková (Gar.)*	KZ	2	0P+2C+8B	L	z
17TEDK	**Transport Technology and Logistics** *Michal Drábek Michal Drábek (Gar.)*	KZ	4	12B	L	z
21ZALD	**Basics of Air Transport** *Jakub Hospodka, Tomáš Tlučhoř, Jiří Volt, Peter Olexa, Jan Slezáček, Jakub Trýb, Sébastien Lán, Bo Stloukal*	KZ	2	0P+2C+8B	L	z

Characteristics of the courses of this group of Study Plan: Code=2S-BK-TET-24/25 Name=2nd Sem. Bachelor Part-Time TET from 2024/25

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			
12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Railway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. Spatial layout of railway lines. Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport.			
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.			
20SYSA	Systems Analysis	Z,ZK	5
Introduction to system sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks, processes, system behaviour and its analysis, strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tables, algorithms for structural tasks. Soft and hard systems, methods for soft system analysis.			

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).			
17TEDK	Transport Technology and Logistics	KZ	4
Basic terms in transport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight transport, organisation of traffic in each transport modus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication using various transport modus.			
21ZALD	Basics of Air Transport	KZ	2
History, definitions, terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation. Weight, balance, performance. Flight planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ground handling, security. Air crew. Airlines and economics. Space technologies.			

Code of the group: 3S-BK-TET-25/26
Name of the group: 3rd Sem. Bachelor Part-Time TET from 2025/26
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
11FYZ	**Physics** *Oldřich Hykš, Jana Kuklová, Pavel Demo, Zuzana Malá, Tomáš Vítů* ***Jana Kuklová*** *Pavel Demo (Gar.)*	Z,ZK	5	2P+2C+18B	Z	z
12MDE	**Transport Models and Transport Excesses** *Josef Kocourek, Tomáš Padělek*	Z,ZK	3	2P+1C+8B	Z	z
11TGA	**Graph Theory and its Applications in Transport** *Denisa Mocková, Dušan Teichmann* ***Denisa Mocková*** *Denisa Mocková (Gar.)*	Z,ZK	4	2P+2C+12B	Z	z
18PZP	**Elasticity and Strength** *Jitka Řezníčková, Jan Šleichrt, Daniel Kytýř, Jan Vyčichl, Tomáš Doktor, Josef Jíra, Ondřej Jiroušek* ***Ondřej Jiroušek*** *Ondřej Jiroušek (Gar.)*	Z,ZK	3	2P+1C+10B	Z	z
20UITS	**Introduction to Intelligent Transport Systems** *Jiří Růžička, Patrik Horažďovský, Kristýna Navrátilová, Viktor Beneš, Eva Hajčiarová, Martin Langr, Vladimír Faltus, Pavel Hrubeš* ***Martin Langr***	Z,ZK	7	3P+2C+20B	Z	z
12PPOK	**Designing Roads, Highways and Motorways** *Josef Kocourek, Tomáš Padělek, Polina Zayats, Petr Kumpošt Josef Kocourek (Gar.)*	KZ	3	1P+2C+10B	Z	z
14DATS	**Database Systems** *Jana Kaliková, Jan Krčál* ***Jana Kaliková*** *Jana Kaliková (Gar.)*	KZ	2	1P+1C+10B	Z	z
15JZ1A	**Foreign Language - English 1** *Markéta Vojanová, Dana Boušová, Marie Michlová, Marek Tomeček, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, Jitka Heřmanová, ...*	Z	3	0P+4C+10B	Z	z

Characteristics of the courses of this group of Study Plan: Code=3S-BK-TET-25/26 Name=3rd Sem. Bachelor Part-Time TET from 2025/26

11FYZ	Physics	Z,ZK	5
Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current.			
12MDE	Transport Models and Transport Excesses	Z,ZK	3
Parameters of the traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shock waves. Quality of transport and its assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. Improving of transport safety and fluency.			
11TGA	Graph Theory and its Applications in Transport	Z,ZK	4
Basic terms of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in other scientific disciplines.			
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.			
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
Terminology and legislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of information and telecommunication systems for ITS. Principles and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples of possible applications of the principles of ITS.			
12PPOK	Designing Roads, Highways and Motorways	KZ	3
Definition, types, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. Route in rural areas. Range of vision for stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device. Crossings, junctions, intersections.			
14DATS	Database Systems	KZ	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.			
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.			

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.		
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.		
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		
11TGA	Graph Theory and its Applications in Transport	Z,ZK	4
	Basic terms of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in other scientific disciplines.		
12MDE	Transport Models and Transport Excesses	Z,ZK	3
	Parameters of the traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of queues, shock waves. Quality of transport and its assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequences. Improving of transport safety and fluency.		
12PPOK	Designing Roads, Highways and Motorways	KZ	3
	Definition, types, ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standard speed. Route in rural areas. Range of vision for stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safety device. Crossings, junctions, intersections.		
12ZADK	Introduction to Transportation Engineering	Z,ZK	5
12ZTS	Railway Lines and Stations	Z,ZK	4
	Rail transport. Railway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure. Spatial layout of railway lines. Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail transport.		
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.		
14DATS	Database Systems	KZ	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.		
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).		
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.		
16UDOP	Introduction into Vehicles	Z	2
	Vehicles and transportation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and water transport. Alternative means of transport. Lifting equipment and conveyors. Legislation.		
17TEDK	Transport Technology and Logistics	KZ	4
	Basic terms in transport technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight transport, organisation of traffic in each transport modus, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication using various transport modus.		
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.		
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.		
18TKK	Technical Drawing and Designing	KZ	4

20SYSA	Systems Analysis	Z,ZK	5
Introduction to system sciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface tasks, processes, system behaviour and its analysis, strong functions and processes, genetic code, system identity, system architecture. Tools for system analysis - Petri nets, decision tables, algorithms for structural tasks. Soft and hard systems, methods for soft system analysis.			
20UITS	Introduction to Intelligent Transport Systems	Z,ZK	7
Terminology and legislative framework telematics systems and their architecture. Telematics systems in practice and their operation. Fundamentals of information and telecommunication systems for ITS. Principles and technical support measurement of traffic data, localization and navigation. Practical work with traffic data. Real examples of possible applications of the principles of ITS.			
21ZALD	Basics of Air Transport	KZ	2
History, definitions, terminology, basic rules. VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio navigation. Weight, balance, performance. Flight planning, optimization of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, ground handling, security. Air crew. Airlines and economics. Space technologies.			

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