Recomended pass through the study plan

Name of the pass: Bachelor Full-Time TET-Common Part of the Study from 2023/24

Faculty/Institute/Others:
Department:
Pass through the study plan: Bachelor TET Common Part of Study Full-Time from 2023/24
Branch of study guranteed by the department: Welcome page
Guarantor of the study branch:
Program of study: Technology in Transportation and Telecommunications
Type of study: Bachelor full-time
Note on the pass:

Coding of roles of courses and groups of courses:
P - compulsory courses of the program, PO - compulsory courses of the branch, Z - compulsory courses, S - compulsory elective courses, PV - compulsory elective courses, F - elective specialized courses, V - elective courses, T - physical training courses

Coding of ways of completion of courses (KZ/Z/ZK) and coding of semesters (Z/L):
KZ - graded assesment, Z - assesment, ZK - examination, L - summer semester, Z - winter semester

Number of semester: 1

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
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
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
15DPLG	**Transportation Psychology** *Eva Rezlerová, Jana Štikarová*	Z	2	2P+0C+6B	Z	z
11GIE	**Geometry** *Oldřich Hykš, Pavel Provinský, Šárka Voráčová **Oldřich Hykš** Oldřich Hykš (Gar.)*	KZ	3	2P+2C+12B	Z	z
14KSP	**Constructing with Computer Aid** *Vít Fábera, Radek Kratochvíl **Lukáš Svoboda***	KZ	2	0P+2C+8B	Z	z
11LA	**Linear Algebra** *Pavel Provinský, Lucie Kárná, Martina Bečvářová **Martina Bečvářová** Martina Bečvářová (Gar.)*	Z,ZK	3	2P+1C+10B	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
18TED	**Technical Documentation** *Jitka Řezníčková, Vít Malinovský **Jitka Řezníčková** Jitka Řezníčková (Gar.)*	KZ	2	1P+1C+8B	Z	z
TV-1	**Physical Education**	Z	1		Z	z
16UDOP	**Introduction into Vehicles** *Zuzana Radová, Petr Bouchner*	Z	2	2P+0C+8B	Z	z
12ZYDI	**Introduction to Transportation Engineering** *Zuzana Čarská, Dagmar Kočárková, Jan Kruntorád*	Z,ZK	2	1P+1C	Z	z
18STKK	**Seminary from Technical Drawing and Designing** *Jitka Řezníčková, Vít Malinovský **Jitka Řezníčková** Jitka Řezníčková (Gar.)*	Z	0	0P+2C	Z	v
TVKZV	**Physical Education Course**	Z	0	7dní	Z	v

Number of semester: 2

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
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	z
18SAT	**Structural Analysis** *Nela Krčmářová, Jitka Řezníčková, Daniel Kytýř, Jan Vyčichl, Tomáš Doktor, Jan Falta, Jan Šleichrt Daniel Kytýř (Gar.)*	Z,ZK	4	2P+2C+14B	L	z

11STAT	**Statistics** *Pavel Provinský, Evženie Uglickich, Pavla Pecherková, Michal Matowicki, Natálie Blahitka, Ivan Nagy* ***Pavla Pecherková*** *Evženie Uglickich (Gar.)*	Z,ZK	4	2P+2C+12B	L	z
20SYSA	**Systems Analysis** *Zuzana Bělinová, Jiří Růžička, Patrik Horažďovský, Petr Bureš Zuzana Bělinová (Gar.)*	Z,ZK	5	2P+2C+14B	L	z
17TEDL	**Transport Technology and Logistics** *Vít Janoš, Michal Drábek, Zdeněk Michl, Rudolf Vávra* ***Zdeněk Michl*** *Vít Janoš (Gar.)*	KZ	3	2P+1C	L	z
TV-2	**Physical Education**	Z	1		L	z
21ZALD	**Basics of Air Transport** *Jakub Hospodka, Tomáš Tlučhoř, Jiří Volt, Peter Olexa, Jan Slezáček, Jakub Trýb*	KZ	2	0P+2C+8B	L	z
12ZTS	**Railway Lines and Stations** *Lukáš Týfa, Petr Šatra, Martin Jacura, Tomáš Javořík, Ondřej Trešl Lukáš Týfa (Gar.)*	Z,ZK	4	2P+2C+10B	L	z
14DZT	**Digital Support for Railway Lines** *Martin Brumovský* ***Martin Brumovský*** *Martin Brumovský (Gar.)*	Z	0	0P+2C	L	v
21SLD	**Seminar of Air Transport** *Vladimír Plos* ***Vladimír Plos***	Z	0	0P+2C	L	v
18SS	**Seminary from Structural Analysis** *Jan Vyčichl*	Z	0	0P+2C	L	v
11SSF	**Secondary School Physics Course** *Zuzana Malá* ***Zuzana Malá*** *Zuzana Malá (Gar.)*	Z	0	0P+2C	L	v
TVKLV	**Physical Education Course**	Z	0	7dní	L	v

Number of semester: 3

Code	**Name of the course / Name of the group of courses** ***(in case of groups of courses the list of codes of their members)*** *Tutors,* ***authors*** *and guarantors (gar.)*	**Completion**	**Credits**	**Scope**	**Semester**	**Role**
15JZ1A	**Foreign Language - English 1** *Eva Rezlerová, Markéta Vojanová, Dana Boušová, Marie Michlová, Marek Tomeček, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková, ...*	Z	3	0P+4C+10B	Z	z
14DATS	**Database Systems** *Jana Kaliková, Jan Krčál* ***Jana Kaliková*** *Jana Kaliková (Gar.)*	KZ	2	1P+1C+10B	Z	z
11FYZ	**Physics** *Oldřich Hykš, Zuzana Malá, Pavel Demo, Tomáš Vítů, Jana Kuklová* ***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
12PPOK	**Designing Roads, Highways and Motorways** *Josef Kocourek, Tomáš Padělek, Polina Zayats, Petr Kumpošt*	KZ	3	1P+2C+10B	Z	z
18PZP	**Elasticity and Strength** *Jitka Řezníčková, Daniel Kytýř, Jan Vyčichl, Tomáš Doktor, Jan Šleichrt, Ondřej Jiroušek* ***Ondřej Jiroušek*** *Ondřej Jiroušek (Gar.)*	Z,ZK	3	2P+1C+10B	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
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
14DPK	**Digital Support for Designing of Roads and Highways** *Libor Žídek, Drahomír Schmidt* ***Drahomír Schmidt*** *Drahomír Schmidt (Gar.)*	Z	0	0P+2C	Z	v
11SCFZ	**Seminar of Physics** *Oldřich Hykš, Zuzana Malá, Tomáš Vítů, Jana Kuklová* ***Zuzana Malá*** *Zuzana Malá (Gar.)*	Z	0	0P+2C	Z	v
18SPP	**Seminary from Elasticity and Strength** *Jan Vyčichl, Tomáš Doktor* ***Jan Vyčichl*** *Jan Vyčichl (Gar.)*	Z	0	0P+2C	Z	v

List of groups of courses of this pass with the complete content of members of individual groups

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.		
11SCFZ	Seminar of Physics	Z	0
	Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.		
11SSF	Secondary School Physics Course	Z	0
	Basics of kinematics, dynamics, thermodynamics, electric field and magnetic field.		
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.		
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.		
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2
	Role of transportation in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, public mass transport. Negative impacts of transportation to environment and safety.		
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.		
14DPK	Digital Support for Designing of Roads and Highways	Z	0
	Seminars possibilities of technical processing problems focused on designing of roads and highways.		
14DZT	Digital Support for Railway Lines	Z	0
	Seminars possibilities of technical processing problems solved in the field of railway lines.		
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).		
15DPLG	Transportation Psychology	Z	2
	Subject of psychology and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle construction. Psychological aspects of travel route and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transport operation.		
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.			
17TEDL	Transport Technology and Logistics	KZ	3
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.			
18SPP	Seminary from Elasticity and Strength	Z	0
Excersise for practice. Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Analysis of deflection curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling.			
18SS	Seminary from Structural Analysis	Z	0
Examples for practise. General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate beam and simple framework. Application of principle of virtual works for calculation of reactions of staticaly determinate systems. Determination of axial forces in truss construction - method of joints and method of sections. Geometry of cross sections. Plane fiber polygons.			
18STKK	Seminary from Technical Drawing and Designing	Z	0
18TED	Technical Documentation	KZ	2
Technical standards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy, arrangement of drawing sheets.			
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.			
21SLD	Seminar of Air Transport	Z	0
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.			
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.			
TV-1	Physical Education	Z	1
TV-2	Physical Education	Z	1
TVKLV	Physical Education Course	Z	0
TVKZV	Physical Education Course	Z	0

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