Recomended pass through the study plan

Name of the pass: Bachelor TET-DOS Full-Time from 2024/25

Faculty/Institute/Others:
Department:
Pass through the study plan: Bachelor TET-DOS Full-Time from 2024/25
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
614ASD	**Algorithm and Data Structures** *Jan Mejstřík*	KZ	3	0P+2C+8B	Z	z
611CAL1	**Calculus 1** *Romana Zibnerová Ondřej Navrátil (Gar.)*	Z,ZK	7	2P+4C+22B	Z	z
615DPLG	**Transportation Psychology**	Z	2	2P+0C+6B	Z	z
611GIE	**Geometry** *Vít Malinovský Šárka Voráčová (Gar.)*	KZ	3	2P+2C+12B	Z	z
614KSP	**Constructing with Computer Aid**	KZ	2	0P+2C+8B	Z	z
611LA	**Linear Algebra** *Romana Zibnerová **Romana Zibnerová** Martina Bečvářová (Gar.)*	Z,ZK	3	2P+1C+10B	Z	z
618MTY	**Materials Science and Engineering** *Vít Malinovský Jaroslav Valach (Gar.)*	Z,ZK	3	2P+1C+10B	Z	z
618TED	**Technical Documentation**	KZ	2	1P+1C+8B	Z	z
TV-1	**Physical Education**	Z	1		Z	z
616UDOP	**Introduction into Vehicles** *Zuzana Radová Petr Bouchner (Gar.)*	Z	2	2P+0C+8B	Z	z
612ZYDI	**Introduction to Transportation Engineering**	Z,ZK	2	1P+1C	Z	z
618STD	**Seminary from Technical Documentation**	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
611CAL2	**Calculus 2** ***Romana Zibnerová***	Z,ZK	5	2P+3C+20B	L	z
614PRG	**Programming**	KZ	2	0P+2C+8B	L	z
618SAT	**Structural Analysis**	Z,ZK	4	2P+2C+14B	L	z
611STAT	**Statistics**	Z,ZK	4	2P+2C+12B	L	z
620SYSA	**Systems Analysis**	Z,ZK	5	2P+2C+14B	L	z
617TEDL	**Transport Technology and Logistics**	KZ	3	2P+1C	L	z
TV-2	**Physical Education**	Z	1		L	z
621ZALD	**Basics of Air Transport**	KZ	2	0P+2C+8B	L	z
612ZTS	**Railway Lines and Stations**	Z,ZK	4	2P+2C+10B	L	z
614DZT	**Digital Support for Railway Lines**	Z	0	0P+2C	L	v

621SLD	**Seminar of Air Transport**	Z	0	0P+2C	L	v
618SS	**Seminary from Structural Analysis**	Z	0	0P+2C	L	v
611SSF	**Secondary School Physics Course**	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
615JZ1A	**Foreign Language - English 1** *Jan Feit*	Z	3	0P+4C+10B	Z	z
614DATS	**Database Systems** *Ondřej Smíšek Jana Kaliková (Gar.)*	KZ	2	1P+1C+10B	Z	z
611FYZ	**Physics** *Goce Chadzitaskos Zuzana Malá (Gar.)*	Z,ZK	5	2P+2C+18B	Z	z
612MDE	**Transport Models and Transport Excesses** *Josef Kocourek, Tomáš Padělek Josef Kocourek (Gar.)*	Z,ZK	3	2P+1C+8B	Z	z
612PPOK	**Designing Roads, Highways and Motorways** *Tomáš Padělek Josef Kocourek (Gar.)*	KZ	3	1P+2C+10B	Z	z
618PZP	**Elasticity and Strength** *Tomáš Doktor Ondřej Jiroušek (Gar.)*	Z,ZK	3	2P+1C+10B	Z	z
611TGA	**Graph Theory and its Applications in Transport** *Denisa Mocková, Dušan Teichmann, Andrea Hrníčková **Denisa Mocková** Denisa Mocková (Gar.)*	Z,ZK	4	2P+2C+12B	Z	z
620UITS	**Introduction to Intelligent Transport Systems** *Vladimír Faltus Pavel Hrubeš (Gar.)*	Z,ZK	7	3P+2C+20B	Z	z
614DPK	**Digital Support for Designing of Roads and Highways**	Z	0	0P+2C	Z	v
611SCFZ	**Seminar of Physics**	Z	0	0P+2C	Z	v
618SPP	**Seminary from Elasticity and Strength**	Z	0	0P+2C	Z	v

Number of semester: 4

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
615JZ2A	**Foreign Language - English 2**	Z,ZK	3	0P+4C+10B	L	z
616DOKY	**Vehicle Technology**	Z,ZK	5	2P+2C	L	z
618KIDY	**Kinematics and Dynamics**	Z,ZK	4	2P+2C	L	z
611MSP	**Modeling of Systems and Processes**	Z,ZK	4	2P+2C+12B	L	z

Number of semester: 5

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
622DON	**Traffic Accidents** *Michal Frydrýn, Tomáš Mičunek, Luboš Nouzovský, Tomáš Kohout **Luboš Nouzovský** Tomáš Mičunek (Gar.)*	Z,ZK	6	3P+2C	Z	z
612ZELP	**Railway Operation** *Tomáš Javořík*	Z,ZK	4	2P+2C	Z	z

Number of semester: 6

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
622METD	**Measurement Methods and Technology in Transportation** ***Luboš Nouzovský***	ZK	4	2P+2C	L	z
612PRMK	**Urban Road Traffic and Design**	Z,ZK	5	2P+2C	L	z
612VHD	**Public Transport**	Z,ZK	5	3P+2C	L	z

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
611CAL1	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.			
611CAL2	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.			
611FYZ	Physics	Z,ZK	5
Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current.			
611GIE	Geometry	KZ	3
Orthographic and oblique projections, linear perspective. Topographic surfaces and their orthogonal projection. Differential geometry of curves - parameterization, arc of the curve, torsion and curvature, Frenet`s trihedron. Kinematics - a curve as a trajectory of the motion, the velocity and acceleration of a particle moving on a curved path.			
611LA	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.			
611MSP	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.			
611SCFZ	Seminar of Physics	Z	0
Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.			
611SSF	Secondary School Physics Course	Z	0
Basics of kinematics, dynamics, thermodynamics, electric field and magnetic field.			
611STAT	Statistics	Z,ZK	4
Definition of probability, random variable and its description, known distributions, random vector, function of random variable. Methods of point estimation. Testing of statistical hypothesis. Regression and correlation, linear regression, correlation coefficient, coefficient of determination, the general linear model, statistical inference in linear regression, analysis of variance, multiple regression, the use of matrices in regression.			
611TGA	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.			
612MDE	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.			
612PPOK	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.			
612PRMK	Urban Road Traffic and Design	Z,ZK	5
Composition of urban road, elements and routes for traffic, pedestrian and cycling transport, projection of intersections, traffic lights and its traffic safety proposal, roundabouts, calming of traffic, precaution for blind & partially-sighted, parking, traffic area, induction of traffic, organization and regulation of transport.			
612VHD	Public Transport	Z,ZK	5
Importance of public transport, transport research, evaluation, planning of lines routes and territory operation, planning of operation parameters, preparation of operation, network conceptions, operation-technology and operation-economically conditions of planning of operation conceptions, planning of operation conception, planing and realisation of timetables, prepare of infrastrukture (route, stops), preference of public transport, financing.			
612ZELP	Railway Operation	Z,ZK	4
Legislation in railway transport. Railway vehicles. Railway signals and signal devices. Railway traffic organisation and operation. Simplified railway traffic operation. Railway vehicles brakes. Railway vehicles marking. Operation intervals. Theoretical graph of train running.			
612ZTS	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.			
612ZYDI	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.			
614ASD	Algorithm and Data Structures	KZ	3
Students will be familiarized with selected basic and derived data structures, algorithms, their properties and their design procedure. Students will analyze problems, propose theoretical solutions to the set task and the resulting algorithm write by means of flowcharts, practice in reading algorithms recorded by means of the flowchart and use the basics of Boolean algebra with forming the conditions for the algorithms.			

614DATS	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.			
614DPK	Digital Support for Designing of Roads and Highways	Z	0
Seminars possibilities of technical processing problems focused on designing of roads and highways.			
614DZT	Digital Support for Railway Lines	Z	0
Seminars possibilities of technical processing problems solved in the field of railway lines.			
614KSP	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).			
614PRG	Programming	KZ	2
Algorithm development, methods of structured programming, high-level programming languages, basics of C programming languages (types, variables, conditions, cycles, arrays, functions), programming techniques, complexity.			
615DPLG	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.			
615JZ1A	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.			
615JZ2A	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.			
616DOKY	Vehicle Technology	Z,ZK	5
Technical nomenclature in transportation technology. Vehicle in legislation. Design. Operation. Influence on environment. Vehicle and ecology. Traction engine characteristics - combustion engines, electric engines, change of energy principles. Powertrain construction. Power transmission. Brake systems.			
616UDOP	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.			
617TEDL	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.			
618KIDY	Kinematics and Dynamics	Z,ZK	4
Friction. Motion along a line and a curve. Kinematics of rigid body. Kinematics of the point mass and the system of mass points. Dynamics of a mass point and a system of mass points, equation of motion. Method of Newton. D'Alembert principle. Free and forced vibration with one degree of freedom. Viscous damping. Impact theory. Introduction to the solution of vibration with two degrees of freedom.			
618MTY	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.			
618PZP	Elasticity and Strength	Z,ZK	3
Tension and compression. Bending of beam. Shear stress during bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and welded joint of structure. Analysis of deflection curve of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling. Beam on elastic foundation. Strength analysis.			
618SAT	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.			
618SPP	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.			
618SS	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.			
618STD	Seminary from Technical Documentation	Z	0
Technical standards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy, arrangement of drawing sheets.			
618TED	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.			
620SYSA	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.			
620UITS	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.			

621SLD	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.			
621ZALD	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.			
622DON	Traffic Accidents	Z,ZK	6
Introduction to Road Accidents and Forensic Expertise; Rail, Water and Air Accidents; Road Accident Documentation and Documentation Technology; Accident Data Recorders - EDR Systems; Road Accident Trace Analysis and Fake Accidents; Simulation Programmes for Road Accident Analysis; Pedestrian and Cyclist Accidents; Vehicle technologies and systems and autonomous vehicles; Safe road layout and collision diagrams; Not giving right of way; Technical defects of vehicles; Restraints - passive road safety; Accidents at level crossings; Prevention (traffic education, awareness, repression)			
622METD	Measurement Methods and Technology in Transportation	ZK	4
Measurement methods in transport, their meaning and use. Geodetic basics in Czechia. Angular, length and height measurements. Principles of mapping, accuracy and errors of geodetic measurements. Surveying and setting out. Challenges of localization, navigation and Global Navigation Satellite Systems. Laser scanning (terrestrial, mobile, UAV). Technical photography and photogrammetry. Dynamic measurements of vehicles. High-speed cameras.			
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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