## Study plan

## Name of study plan: Bachelor TET Common Part of Study Full-Time from 2023/24

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Technology in Transportation and Telecommunications

Type of study: Bachelor full-time

Required credits: 90 Elective courses credits: 0 Sum of credits in the plan: 90

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-BP-TET-20/21

Name of the group: 1st Sem. Bachelor Full-Time TET from 2020/21

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 11 courses

Credits in the group: 30 Note on the group:

Note on the g	ioup.					
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 Tasák, Magdalena Hykšová, Bohumil Ková , Ond ej Navrátil <b>Bohumil Ková</b> Ond ej Navrátil (Gar.)	Z,ZK	7	2P+4C+22E	Z	Z
11LA	Linear Algebra Lucie Kárná, Pavel Provinský, Martina Be vá ová Martina Be vá ová Martina Be vá ová (Gar.)	Z,ZK	3	2P+1C+10E	Z	Z
12ZYDI	Introduction to Transportation Engineering Zuzana arská, Dagmar Ko árková, Jan Kruntorád	Z,ZK	2	1P+1C	Z	Z
18MTY	Materials Science and Engineering Jaromír Kylar, Veronika Drechslerová, Jaromír Kylar, Nela Kr má ová, Jitka ezní ková, Jaroslav Valach, Vít Malinovský, Veronika Drechslerová, Jaromír Kylar Jaroslav Valach Jaroslav Valach (Gar.)	Z,ZK	3	2P+1C+10E	Z	Z
11GIE	Geometry Pavel Provinský, Old ich Hykš, Šárka Vorá ová Old ich Hykš Old ich Hykš (Gar.)	KZ	3	2P+2C+12E	Z	Z
14ASD	Algorithm and Data Structures Tomáš Brandejský, Michal Je ábek, Alena Kubá ová, Jan Procházka, Vít Fábera, Martin Fiala Vít Fábera Vít Fábera (Gar.)	KZ	3	0P+2C+8B	Z	Z
14KSP	Constructing with Computer Aid Vít Fábera, Radek Kratochvíl Lukáš Svoboda	KZ	2	0P+2C+8E	Z	Z
18TED	Technical Documentation  Jitka ezní ková, Vít Malinovský Jitka ezní ková Jitka ezní ková (Gar.)	KZ	2	1P+1C+8E	Z	Z
15DPLG	Transportation Psychology Eva Rezlerová, Jana Štikarová	Z	2	2P+0C+6E	Z	Z
16UDOP	Introduction into Vehicles Zuzana Radová, Petr Bouchner	Z	2	2P+0C+8E	Z	Z
TV-1	Physical Education	Z	1		Z	Z

### Characteristics of the courses of this group of Study Plan: Code=1S-BP-TET-20/21 Name=1st Sem. Bachelor Full-Time TET from 2020/21

11CAL1	Calculus 1	Z,ZK	7
Sequence of real number	ers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Indefinite integral, Newton in	tegral, Riemann ir	ntegral, 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.

1	Introduction to Transportation Engineering	Z,ZK	2
Role of transportation	on in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roa	ads, public mass tra	nsport. Negative
impacts of transport	tation to environment and safety.		
18MTY	Materials Science and Engineering	Z,ZK	3
Basic course of mat	terials science and engineering explains mechanical properties of structural materials based on their bonding forces and microst	ructure. However th	ne main attention
is paid to metals as	the most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and	d composites. Atter	ntion is also paid
to degradation proc	esses in materials, to defectoscopy and to main mechanical tests.		
11GIE	Geometry	KZ	3
Differential geometr	y of curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajecto	ory of the motion, th	ne velocity, and
acceleration of a pa	ırticle moving on a curved path.		
14ASD	Algorithm and Data Structures	KZ	3
Students will analyz	te 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 Book	ean algebra to construct constraints in algorithms. Students will be introduced to the basics of the Python programming languaç	ge - variable, branc	hing, loops, they
will learn to work wi	th 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" tern	n determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic commor	1	_
,	n determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic commor o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting pos	n work rules in grap	hic applications
and CA systems. Co		n work rules in grap	hic applications
and CA systems. Co	o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting pos-	n work rules in grap	hic applications
and CA systems. Coprofiles, drawings w	o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting positith raster foundaments).	work rules in grap ssibilites, AutoCAD	hic applications environment
and CA systems. Coprofiles, drawings w	o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting positith raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensions.	work rules in grap ssibilites, AutoCAD	hic applications environment
and CA systems. Coprofiles, drawings with 18TED Technical standards	o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting positith raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensions.	work rules in grap ssibilites, AutoCAD	hic applications environment
and CA systems. Corprofiles, drawings we 18TED Technical standards arrangement of draw 15DPLG	o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting postith raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional drawings, representation of technical objects, technical drawings, representation of technical objects, repres	work rules in grapssibilites, AutoCAD  KZ  Donal and geometric	hic applications environment  2 al accuracy,
and CA systems. Corprofiles, drawings we 18TED Technical standards arrangement of draw 15DPLG Subject of psychological control of the control	o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting positith raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization   Transportation Psychology	work rules in grapssibilites, AutoCAD  KZ  conal and geometric  Z  construction. Psych	hic applications environment  2 al accuracy,
and CA systems. Corprofiles, drawings we 18TED Technical standards arrangement of draw 15DPLG Subject of psychological contents of the content	o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting positity raster foundaments).    Technical Documentation   Technical standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional standardization   Transportation   Psychology	work rules in grapssibilites, AutoCAD  KZ  conal and geometric  Z  construction. Psych	hic applications environment  2 al accuracy,
and CA systems. Corprofiles, drawings with 18TED Technical standards arrangement of draw 15DPLG Subject of psychologof travel route and to 16UDOP	o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting positity raster foundaments).    Technical Documentation	work rules in grapssibilites, AutoCAD  KZ conal and geometric  Z construction. Psychtoperation. Z	hic applications environment  2 al accuracy,  2 nological aspects
and CA systems. Corprofiles, drawings with 18TED Technical standards arrangement of drawings with 15DPLG Subject of psychologo of travel route and to 16UDOP Vehicles and transp	o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting positith raster foundaments).    Technical Documentation	work rules in grapssibilites, AutoCAD  KZ conal and geometric  Z construction. Psychtoperation. Z	hic applications environment  2 al accuracy,  2 nological aspects
and CA systems. Corprofiles, drawings with 18TED Technical standards arrangement of drawings with 15DPLG Subject of psychologo of travel route and to 16UDOP Vehicles and transp	o-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting positith raster foundaments).    Technical Documentation	work rules in grapssibilites, AutoCAD  KZ conal and geometric  Z construction. Psychtoperation. Z	hic applications environment  2 al accuracy,  2 nological aspects

Code of the group: 2S-BP-TET-20/21

Name of the group: 2nd Sem. Bachelor Full-Time TET from 2020/21

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 grou	ιρ.					
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 Tasák, Magdalena Hykšová, Ond ej Navrátil, Old ich Hykš Magdalena Hykšová Ond ej 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 Javo ík, Ond ej Trešl Lukáš Týfa (Gar.)	Z,ZK	4	2P+2C+10B	L	Z
18SAT	Structural Analysis Jaromír Kylar, Veronika Drechslerová, Nela Kr má ová, Jitka ezní ková, Daniel Kytý, Jan Vy ichl, Tomáš Doktor, Jan Falta, Jan Šleichrt Daniel Kytý (Gar.)	Z,ZK	4	2P+2C+14B	L	Z
20SYSA	Systems Analysis Zuzana B linová, Ji í R ži ka, Patrik Horaž ovský, Petr Bureš Zuzana B linová (Gar.)	Z,ZK	5	2P+2C+14B	L	Z
14PRG	Programming Alena Kubá ová, Jan Procházka, Martin Fiala, Jana Kaliková, Jan Kr ál, Lukáš Svoboda <b>Jana Kaliková</b> Jana Kaliková (Gar.)	KZ	2	0P+2C+8B	L	Z
17TEDL	Transport Technology and Logistics Vít Janoš, Michal Drábek, Zden k Michl, Rudolf Vávra, Stanislav Metelka Zden k Michl Vít Janoš (Gar.)	KZ	3	2P+1C	L	Z
21ZALD	Basics of Air Transport Jakub Hospodka, Tomáš Tlu ho, Ji í Volt, Peter Olexa, Jan Slezá ek, Jakub Trýb, Sébastien Lán, Bo Stloukal	KZ	2	0P+2C+8B	L	Z
TV-2	Physical Education	Z	1		L	Z

# Characteristics of the courses of this group of Study Plan: Code=2S-BP-TET-20/21 Name=2nd Sem. Bachelor Full-Time TET from 2020/21

11CAL2	Calculus 2	j Z,ZK	5
Linear differential equat	ions and their systems, differential calculus of functions of several real variables. Riemann integral in Rn. Line and surface in	tegrals.	

11STAT	Statistics	Z,ZK	4
Basics of probability De	scriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parar	netric tests Nonpa	rametric tests
Regression and correla	tion analysis		
12ZTS	Railway Lines and Stations	Z,ZK	4
Rail transport. Railway	rack geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure	Spatial layout of r	ailway lines.
Railway control systems	s 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 force	s in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determin	ate beams and sin	nple girders.
Principle of virtual work.	Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructi	ons. Cross-section	al characteristics
of planar shapes. Fiber	polygons and chains.		
20SYSA	Systems Analysis	Z,ZK	5
Introduction to system s	ciences, system viewpoint, terminology, typical system analysis tasks, system identification, system interface and interface to	asks, processes, sy	stem 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 sys	stems, methods for soft system analysis.		
14PRG	Programming	KZ	2
The Course Programmi	ng builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python prog	ramming language	is expanded
here so that the particip	ant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and s	earching, tuples, se	ets, dictionaries,
working with date and t	me, regular expressions, functions and procedures, working with files (CSV, JSON, XML).		
17TEDL	Transport Technology and Logistics	KZ	3
Basic terms in transpor	technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight	transport, organisa	ation of traffic in
each transport modus,	echnologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication	using various trans	port modus.
21ZALD	Basics of Air Transport	KZ	2
History, definitions, term	inology, basic rules.VFR/IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio naviga	tion. Weight, baland	ce, performance.
Flight planning, optimiza	ation of speed and heights, minimum fuel. Limitations of operation, maintenance, service life of aircraft. Traffic management, :	ground handling, s	ecurity. Air crew.
Airlines and economics	Space technologies.		
7 IIIII C3 ANA CCONOTINGS			
TV-2	Physical Education	Z	1

Code of the group: 3S-BP-TET-24/25

Name of the group: 3rd Sem. Bachelor Full-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
11FYZ	Physics Old ich Hykš, Jana Kuklová, Pavel Demo, Zuzana Malá, Tomáš Vít Jana Kuklová Pavel Demo (Gar.)	Z,ZK	5	2P+2C+18E	B Z	Z
12MDE	Transport Models and Transport Excesses  Josef Kocourek, Tomáš Pad lek	Z,ZK	3	2P+1C+8E	3 Z	Z
11TGA	Graph Theory and its Applications in Transport Denisa Mocková, Dušan Teichmann Denisa Mocková Denisa Mocková (Gar.)	Z,ZK	4	2P+2C+12E	B Z	Z
18PZP	Elasticity and Strength  Jitka ezní ková, Daniel Kytý, Jan Vy ichl, Tomáš Doktor, Jan Šleichrt, Josef  Jíra, Ond ej Jiroušek Ond ej Jiroušek (Gar.)	Z,ZK	3	2P+1C+10E	B Z	Z
20UITS	Introduction to Intelligent Transport Systems Ji í R ži ka, Patrik Horaž ovský, Kristýna Navrátilová, Viktor Beneš, Eva Haj iarová, Martin Langr, Vladimír Faltus, Pavel Hrubeš <b>Martin Langr</b>	Z,ZK	7	3P+2C+20E	B Z	Z
12PPOK	Designing Roads, Highways and Motorways Josef Kocourek, Tomáš Pad lek, Polina Zayats, Petr Kumpošt	KZ	3	1P+2C+10E	B Z	Z
14DATS	Database Systems Jana Kaliková, Jan Kr ál <b>Jana Kaliková</b> Jana Kaliková (Gar.)	KZ	2	1P+1C+10E	B Z	Z
15JZ1A	Foreign Language - English 1 Eva Rezlerová, Markéta Vojanová, Dana Boušová, Marie Michlová, Marek Tome ek, Jan Feit, Markéta Musilová, Peter Morpuss, Lenka Monková,	Z	3	0P+4C+10E	B Z	Z

#### Characteristics of the courses of this group of Study Plan: Code=3S-BP-TET-24/25 Name=3rd Sem. Bachelor Full-Time TET from 2024/25 11FYZ Z,ZK **Physics** 5

Kinematics, dynamics, Newton's laws, force fields, mechanics of continuum, thermodynamics, introduction to electrostatics and electric current. Transport Models and Transport Excesses

Z,ZK 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 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. Z.ZK Elasticity and Strength

Tension and compression. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and welded joints of structures. Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability.

20UITS	Introduction to Intelligent Transport Systems			1 7	Z,ZK	7
	Introduction to intelligent mansport systems	their operation. Fi	undamentals		, I	<i>r</i> nmunicatio
0, 0	ciples and technical support measurement of traffic data, localization and navigation. Practical	•				
principles of ITS.						
12PPOK	Designing Roads, Highways and Motorways				KZ	3
	ership, maintenance, management and categorization of roads and highways. Curve and trar		•	•		
•	opping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drai	nage and compor	nents of road	ds. Safety de	evice. Crossing	s, junction
intersections.					1/7	
14DATS	Database Systems	tianal databasa d			KZ	2
	abase systems, conceptual model, relational data model, the principles of normal forms, rela ebra, SQL language, client / server, multilayer architectures, distributed database systems. A		•	ity and integ	grity of data, d	alabase
15JZ1A	Foreign Language - English 1	occoo to data via			Z	3
	es and Style. Selection of conversation topics relating to transportation sciences. Extending voc	abulary, developir	ng perceptive	l e and comm	_	_
	and written presentation of original research. Academic text principles and reading comprehen		• .			
	block: Elective courses					
Minimal num	ber of credits of the block: 0					
The role of th	e block: V					
Code of the	group: VP-BP-TET-20/21					
	group: Bachelor Full-Time TET voluntary					
	credits in the group:					
•	courses in the group:					
Credits in the	<u> </u>					
	• ,					
Note on the ເ	· ·					
	Name of the course / Name of the group of courses					
Code	(in case of groups of courses the list of codes of their members)	Completion	Credits	Scope	Semester	Role
	Tutors, <b>authors</b> and guarantors (gar.)					
44000	Digital Support for Designing of Roads and Highways	7		00.00	7	
14DPK	Libor Žídek, Drahomír Schmidt <b>Drahomír Schmidt</b> Drahomír Schmidt (Gar.)	Z	0	0P+2C	Z	V
14DZT	Digital Support for Railway Lines	Z	0	0P+2C	L	V

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
14DPK	Digital Support for Designing of Roads and Highways Libor Žídek, Drahomír Schmidt Drahomír Schmidt (Gar.)	Z	0	0P+2C	Z	V
14DZT	Digital Support for Railway Lines Martin Brumovský Martin Brumovský (Gar.)	Z	0	0P+2C	L	V
11SCFZ	Seminar of Physics Old ich Hykš, Jana Kuklová, Zuzana Malá, Tomáš Vít Zuzana Malá Zuzana Malá (Gar.)	Z	0	0P+2C	Z	V
21SLD	Seminar of Air Transport Vladimír Plos, Jakub Kraus, Natalia Guskova Vladimír Plos	Z	0	0P+2C	L	V
18SPP	Seminary from Elasticity and Strength Jan Vy ichl, Tomáš Doktor Jan Vy ichl Jan Vy ichl (Gar.)	Z	0	0P+2C	Z	V
18STD	Seminary from Technical Documentation	Z	0	0P+2C	Z	V
18SS	Seminary from Structural Analysis  Jan Vy ichl	Z	0	0P+2C	L	V
11SSF	Secondary School Physics Course Zuzana Malá <b>Zuzana Malá</b> Zuzana Malá (Gar.)	Z	0	0P+2C	L	V
TVKLV	Physical Education Course	Z	0	7dní	L	V
TVKZV	Physical Education Course	Z	0	7dní	Z	V

14DPK	the courses of this group of Study Plan: Code=VP-BP-TET-20/21 Name=Bachelor Full-Tim Digital Support for Designing of Roads and Highways	7	0				
	f technical processing problems focused on designing of roads and highways.	_					
14DZT	Digital Support for Railway Lines	Z	0				
Seminars possibilities of	f technical processing problems solved in the field of railway lines.		'				
11SCFZ	Seminar of Physics	Z	0				
Solving problems on kir	nematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermodynamics.		'				
21SLD	Seminar of Air Transport	Z	0				
History, definitions, tern	innology, basic rules. VFR / IFR. Basics of aerodynamics. Propulsion of aircraft. Aircraft design. Basics of navigation, radio na	vigation. Weight, I	balance,				
performance, Flight pla	formance. 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.

Seminary from Elasticity and Strength Z 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.

18STD Seminary from Technical Documentation Technical standards, international standardization, technical drawings, representation of technical objects, technical diagrams and charts, dimensional and geometrical accuracy,

arrangement of drawing sheets.

**18SS** Seminary from Structural Analysis 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.

11SSF	Secondary School Physics Course	Z	0			
Basics of kinematics, of	Basics of kinematics, dynamics, thermodynamics, electric field and magnetic field.					
TVKLV	Physical Education Course	Z	0			
TVKZV	Physical Education Course	Z	0			

## List of courses of this pass:

Code	Name of the course	Completion	Credits
11CAL1	Calculus 1	Z,ZK	7
Sequence of real n	numbers and its limit. Basic properties of mappings. Function of one real variable, its limit and derivative. Indefinite integral, Newton integral,	ral, Riemann integr	al, imprope
	Riemann integral. First-order differential equations, linear differential equations.		
11CAL2	Calculus 2	Z,ZK	5
Linea	ar 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 electrostatics and electrostatics.		
11GIE	Geometry	KZ	3
Differential geome	etry of curves - parameterization, the arc of the curve, torsion and curvature, Frenet's trihedron. Kinematics - a curve as a trajectory of	of the motion, the v	elocity, an
	acceleration of a particle moving on a curved path.	T	1
11LA	Linear Algebra	Z,ZK	3
ector spaces (line	ear combinations, linear independence, dimension, basis, coordinates). Matrices and operations. Systems of linear equations and the		minants ai
110057	their applications. Scalar product. Similarity of matrices (eigenvalues and eigenvectors). Quadratic forms and their classificat	1	
11SCFZ	Seminar of Physics	Z	0
	Solving problems on kinematics, particle dynamics, dynamics of particle systems and rigid body. Continuum mechanics, thermod		
11SSF	Secondary School Physics Course	Z	0
	Basics of kinematics, dynamics, thermodynamics, electric field and magnetic field.		
11STAT	Statistics Statistics	Z,ZK	4
Basics of probab	ility Descriptive statistics Population and sample, limit theorem Point estimate, construction and properties Interval estimates Parame	tric tests Nonparan	netric test
44TO A	Regression and correlation analysis	7 71/	
11TGA	Graph Theory and its Applications in Transport	Z,ZK	4
	of graph theory, paths in graphs, flows in networks, location problems, design problems on graphs, optimum routing, use of graphs in	1	·
12MDE	Transport Models and Transport Excesses	Z,ZK	3
	traffic flow and methods for their measurement. Models of the traffic flow, communications load, line and urban systems. Theory of quassessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identify and minimize the consequence.	,	,
transport and its	assessment. Statistical characteristics of transport. Transport excesses, their analysis, the causes, identity and minimize the consequences.	lences. Improving c	л папъро
12PPOK	Designing Roads, Highways and Motorways	KZ	3
_	ownership, maintenance, management and categorization of roads and highways. Curve and transition curve. Sinuosity and standar	1	_
	r stopping and overtaking. Road body - shapes and proportions, bottom and superstructure. Drainage and components of roads. Safe	•	
	intersections.	.,	,-, ,
12ZTS	Railway Lines and Stations	Z,ZK	4
	ailway track geometry parameters. Route layout of railway lines. Railway line construction - railway substructure and superstructure.		1
•	Railway control systems in relation to infrastructure. Operating and carriage points. Railway lines net and category. Traction in rail	-	•
12ZYDI	Introduction to Transportation Engineering	Z,ZK	2
	tion in land-use planning. Basic terms in transportation engineering. Traffic survey and traffic prognosis. Introduction to topic of roads, p		rt. Negati
	impacts of transportation to environment and safety.		
14ASD	Algorithm and Data Structures	KZ	3
tudents will analy	vze problems, design a theoretical solution to a given problem and write the resulting algorithm using flowcharts, practice reading algo	rithms written using	flowchar
nd use basic Boo	olean algebra to construct constraints in algorithms. Students will be introduced to the basics of the Python programming language - v	ariable, branching	, loops, th
	will learn to work with variables of basic data types (integer, floating point and string) and the list data structure in their progra		
14DATS	Database Systems	KZ	2
Basic concepts	of database systems, conceptual model, relational data model, the principles of normal forms, relational database design, security ar		database
	queries, relational algebra, SQL language, client / server, multilayer architectures, distributed database systems. Access to data via		
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
· -	rm determination. CAD role in projecting system model. Existing CAD systems on Czech market. Project creation, basic common wo		
and CA systems	c. Co-ordinated systems, CAD environment skill (basics of constructing, dimensioning, modifications, user interfaces, projecting possil	oilites, AutoCAD er	vironmen
	profiles, drawings with raster foundaments).	T	ı
14PRG	Programming	KZ	2
_	gramming builds on and fully extends the course 14ASD (Algorithmization and Data Structures). The knowledge of the Python program		-
ere so that the pa	articipant gains skills and can apply them to solve various follow-up tasks. Main topics: lists, multidimensional arrays, sorting and search	cning, tuples, sets,	aictionarie
	working with date and time, regular expressions, functions and procedures, working with files (CSV, JSON, XML).		

15DPLG	Transportation Psychology	Z	2
ubject of psychology a	and its basic concepts. Information intake, decision-making and behaviour. Performance. Engineering psychology and vehicle constructi	on. Psycholo	gical aspect
of travel ro	ute and traffic conditions, accidents and traffic incidents. Selection and training of the staff. Work and leisure. Age as a factor in transp	ort operation	
15JZ1A	Foreign Language - English 1	Z	3
rammatical Structures	s and Style. Selection of conversation topics relating to transportation sciences. Extending vocabulary, developing perceptive and commu	unicative skills	s. Elementai
	distics forms. Oral and written presentation of original research. Academic text principles and reading comprehension. Principles of rhe		
16UDOP	Introduction into Vehicles	Z	2
ehicles and transport	tation systems. Functionality and setup. Movement and drive principles. Engines and their characteristics. Rail, road, air and water trans	nsport. Altern	ative mean
	of transport. Lifting equipment and conveyors. Legislation.		_
17TEDL	Transport Technology and Logistics	ΚZ	3
•	rt technology and logistics, particular steps of transport planning, line planning, timetabling, planning in pasanger and freight transpor	-	
	s, technologic factors of the side of operator and client, organisation of city transport, logistic technologies and their aplication using v		
18MTY	Materials Science and Engineering	Z,ZK	3
	als science and engineering explains mechanical properties of structural materials based on their bonding forces and microstructure. H		
paid to metals as the	e most important engineering materials, also other major classes of materials are presented, namely ceramics, polymers and compos	ites. Attentior	n is also pa
	to degradation processes in materials, to defectoscopy and to main mechanical tests.		
18PZP	Elasticity and Strength	Z,ZK	3
ension and compressi	ion. Bending of beam. Shear stress in bending of beam. Design and analysis of cross section of beam. Design of riveted, bolted and w Analysis of deflection curve of beams. Torsion of circular cross sections. Combined loading. Stability.	velded joints	of structure
18SAT	Structural Analysis	Z,ZK	4
General system of fo	pres in plane and space. Calculation of reactions of bodies and structures. Assessment of internal forces on statically determinate bea	ams and sim	ole girders.
rinciple of virtual work	. Kinematic method for calculation of reactions of statically determinate systems. Determination of axial forces in truss constructions. Cros	s-sectional c	naracteristi
	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. An	alysis of defl	ection curv
	of beam. Torsion of circle cross section. Combined loading. Stability of compressed bar and buckling.		
18SS	Seminary from Structural Analysis	Z	
		_	0
xamples for practise.	General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate beam and simple	_	1
	General system of forces. Reactions of mass objects and compound systems. Internal forces on statically determinate beam and simply orks for calculation of reactions of staticaly determinate systems. Determination of axial forces in truss construction - method of joints	ole framework	c. Application
		ole framework	c. Application
	vorks for calculation of reactions of staticaly determinate systems. Determination of axial forces in truss construction - method of joints	ole framework	c. Application
of principle of virtual w	vorks for calculation of reactions of staticaly determinate systems. Determination of axial forces in truss construction - method of joints  Geometry of cross sections. Plane fiber polygons.	ole framework and method	of sections
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