Study plan

Name of study plan: Master Full-Time DS from 2026/27

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Transportation Systems and Technology
Type of study: Follow-up master full-time
Required credits: 120
Elective courses credits: 0
Sum of credits in the plan: 120
Note on the plan:

Name of the block: Compulsory courses
Minimal number of credits of the block: 93
The role of the block: Z

Code of the group: 1S-NP-DS-24/25-DC
Name of the group: 1st Sem. Master Full-Time DS from 2024/25
Requirement credits in the group: In this group you have to gain 22 credits
Requirement courses in the group: In this group you have to complete 7 courses
Credits in the group: 22
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
612IKD	**Rail Transport Infrastructure** *Tomáš Javořík*	Z,ZK	5	2P+2C	Z	z
612TKVP	**Highway Engineering Materials** *Otakar Vacín Otakar Vacín (Gar.)*	Z,ZK	4	2P+2C	Z	z
618GAZ	**Geomechanics and Foundation Engineering** *Vít Malinovský Vít Malinovský (Gar.)*	Z,ZK	3	2P+1C	Z	z
618TIK	**Theory of Engineering Structures** *Ján Kopačka Josef Kocourek (Gar.)*	Z,ZK	4	2P+1C	Z	z
614GISS	**Geographical Information Systems** *Zuzana Purkrábková, František Kekula*	KZ	2	0P+2C+8B	Z	z
622MSV	**Modelling and Vehicle Movement Simulation** *Drahomír Schmidt, Michal Frydrýn* ***Michal Frydrýn*** *Drahomír Schmidt (Gar.)*	KZ	2	0P+2C	Z	z
615J2A1	**Language - English 1** *Karolina Beauxisová, Jan Feit*	Z	2	0P+2C+10B	Z	z

Characteristics of the courses of this group of Study Plan: Code=1S-NP-DS-24/25-DC Name=1st Sem. Master Full-Time DS from 2024/25

612IKD	Rail Transport Infrastructure	Z,ZK	5
Non-compensated lateral acceleration, parameters eduction for transition curve and cant transition, curves without straight, track spacing change. Track detailed construction. Substructure design, slab track. Tram-train. Interoperability. Noise precautions. Railway line modernization for non-tilting and tilting trains.			
612TKVP	Highway Engineering Materials	Z,ZK	4
The theory of road construction - Material Aspects. The course emphasizes the development of road construction from the beginning of the 20th century to the present, focusing on materials, understanding the production and placing of asphalt mixtures.			
618GAZ	Geomechanics and Foundation Engineering	Z,ZK	3
Geology (basics of pertrographyand stratigraphy), mechanics of soils (classification of fundamental soils, mechanic properties of fundamental soils, permeability), planar foundations (footings, footers, plates, depth of founding), determination of planar foundations bearing and deformation, depth foundations classification of depth foundations elements, examples of their use, piles (classification, technology od performing).			
618TIK	Theory of Engineering Structures	Z,ZK	4
The course builds upon the knowledge gained in basic mechanics courses in bachelor study (especially Statics and Elasticity) in the field of mathematical theory of elasticity. Emphasis is placed on plane and axisymmetric problems, as well as on the calculation of stress and strain in plates and shells. Students are further acquainted with methods of modeling the behavior of subsoil used in the design of line structures.			
614GISS	Geographical Information Systems	KZ	2
Construction of saving format of space-oriented information land-survey and cartography minimum basic tasks of spatial operations principles of territorial identification			
622MSV	Modelling and Vehicle Movement Simulation	KZ	2
Principles and posibilities of simulation tools with regards to vehicle movement analysis and vehicle crash analysis. Kinematic and dynamic modelling of vehicle/set of vehicles movement. View conditions. Proposed road space passage. Processing of road 3D models.			

615J2A1	Language - English 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of English and practical application, formal and technical registers and their use, language of management.			

Code of the group: 1S-NP-DS-V1-24/25-DC
Name of the group: 1st Sem. Master Full-Time DS Alternative from 2024/25
Requirement credits in the group: In this group you have to gain 4 credits
Requirement courses in the group: In this group you have to complete 1 course
Credits in the group: 4
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
617DOPD	**Transportation Planning and Modeling** *Milan Kříž Milan Kříž (Gar.)*	Z,ZK	4	2P+2C	Z	z
617TZND	**Technology of Railway Transport** *Michal Drábek Vít Janoš (Gar.)*	Z,ZK	4	2P+2C	Z	z

Characteristics of the courses of this group of Study Plan: Code=1S-NP-DS-V1-24/25-DC Name=1st Sem. Master Full-Time DS Alternative from 2024/25

617DOPD	Transportation Planning and Modeling	Z,ZK	4
Basic steps and tools used within four step model (trip generation, trip distribution, mode choice and trip distribution). Mobility and availability in urban areas, land use. New trends for transportation planning and modelling.			
617TZND	Technology of Railway Transport	Z,ZK	4
Track line capacity assesment, model operational situation with a system running time between IPT-nodes, calculation of traction energy savings compared with infrastructure costs for designing of fleeting crossing station, solving of capacity problem and blocking time in relation to train protection system, robustness of timetable, system concept of freight train paths, guidelines for centralised operational traffic control and management.			

Code of the group: 2S-NP-DS-24/25-DC
Name of the group: 2nd Sem. Bachelor Full-Time DS from 2024/25
Requirement credits in the group: In this group you have to gain 20 credits
Requirement courses in the group: In this group you have to complete 6 courses
Credits in the group: 20
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
612NAPI	**Design and Maintenance of Transportation Structures** *Otakar Vacín, Gabriela Sidorinová Otakar Vacín (Gar.)*	Z,ZK	4	2P+2C	L	z
612UMUP	**Sustainable Mobility and Land - Use Planning** *Dagmar Kočárková Dagmar Kočárková (Gar.)*	Z,ZK	5	2P+2C	L	z
612ZSUZ	**Railway Stations and Centres** *Tomáš Javořík, Martin Jacura Martin Jacura (Gar.)*	Z,ZK	3	2P+1C	L	z
616PDP	**Principles of Vehicle Design** *Jaroslav Machan, Jan Leistner Jaroslav Machan (Gar.)*	ZK	2	2P+0C+8B	L	z
622AMMD	**Measuring Methods Applied to Transportation** *Drahomír Schmidt, Michal Frydrýn, Tomáš Kohout, Tomáš Mičunek, Luboš Nouzovský, Zdeněk Svatý* ***Luboš Nouzovský*** *Tomáš Mičunek (Gar.)*	KZ	4	1P+3C	L	z
615JBA2	**Language - English 2** *Karolina Beauxisová, Jan Feit, Věra Pastorková*	Z	2	0P+2C+10B	L	z

Characteristics of the courses of this group of Study Plan: Code=2S-NP-DS-24/25-DC Name=2nd Sem. Bachelor Full-Time DS from 2024/25

612NAPI	Design and Maintenance of Transportation Structures	Z,ZK	4
Design and construction of cement-concrete pavements and their maintenance. Construction of bridge objects, examples and choice of bridge construction materials. Construction and operation of tunnels.			
612UMUP	Sustainable Mobility and Land - Use Planning	Z,ZK	5
Spatial planning - objectives and tasks, development over time. Land-use planning tools. SUMP. Territorial and transport planning context. Ways of urban growth in connection with transport. Basic principles of the transport solution. The impact of transport on the size and shape of the city, on the development of the street and the square and the roads. Solutions for pedestrian and bicycle transport. Suburbanization and transport. City economics.			
612ZSUZ	Railway Stations and Centres	Z,ZK	3
Equipment for passenger transport. Platform construction. Access roads to platforms. Modification of railway stations according to the TSI PRM. Station heads design. Variant solutions of station heads for current ride. Junction stations. Crossing stations. Passenger stations. Moving stations. Public transport terminals.			
616PDP	Principles of Vehicle Design	ZK	2
Design of transportation vehicle according to its usage and function. Marketing and user demands. Vehicle dynamics. Propulsion systems. Design process, functional design and vehicle structure. Evaluation of variant concepts. Design phases. Realiability, technological aspects etc.			

622AMMD	Measuring Methods Applied to Transportation	KZ	4
Geodetic location and technical processing of traffic route with geodetic total station, GPS and photogrammetry, 3D scanning. Transport corridor setting out using geodetic methods. Detection and technical processing of several vehicle dynamic characteristics using high-speed cameras and accelerometers. It is a week course and the terms are usually set in June and September - usually in examination period.			
615JBA2	Language - English 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of English and practical application, formal and technical registers and their use, language of management.			

Code of the group: 2S-NP-DS-V1-24/25-DC
Name of the group: 2nd Sem. Master Full-Time DS Alternative from 2024/25
Requirement credits in the group: In this group you have to gain 4 credits
Requirement courses in the group: In this group you have to complete 1 course
Credits in the group: 4
Note on the group:

Code	**Name of the course / Name of the group of courses** ***(in case of groups of courses the list of codes of their members)*** *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
612BED	**Road Safety Audit** *Josef Kocourek Josef Kocourek (Gar.)*	Z,ZK	4	2P+1C	L	z
618TEAM	**Theoretical and Applied Mechanics** *Ján Kopačka Ondřej Jiroušek (Gar.)*	Z,ZK	4	2P+1C	L	z

Characteristics of the courses of this group of Study Plan: Code=2S-NP-DS-V1-24/25-DC Name=2nd Sem. Master Full-Time DS Alternative from 2024/25

612BED	Road Safety Audit	Z,ZK	4
Schedules of applications of safety assessments (especially Road Safety Audit, Road Safety Inspection) during the process of preparations, and of the particular realization of the road network that should minimize traffic accident risks for all those who take part in road traffic. Application of European Directive 2008/96/EC on road safety infrastructure management.			
618TEAM	Theoretical and Applied Mechanics	Z,ZK	4
Fundamentals of theory of plasticity. Plasticity conditions. Elastoplastic and plastic states of cross-sections and beams. Reliability and durability of structures. The stress and strain state around a notch. Stress intensity factor. Fracture toughness. Energy methods of linear fracture mechanics. Crack driving force.			

Code of the group: 3S-NP-DS-25/26-DC
Name of the group: 3rd Sem. Bachelor Full-Time DS from 2025/26
Requirement credits in the group: In this group you have to gain 20 credits
Requirement courses in the group: In this group you have to complete 5 courses
Credits in the group: 20
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
611STS	**Stochastic Systems** *Ivan Nagy, Pavla Pecherková Ivan Nagy (Gar.)*	Z,ZK	4	2P+2C+14B	Z	z
612DAZP	**Transport and Environment** *Tomáš Javořík*	Z,ZK	4	2P+1C	Z	z
612TEAP	**Theory of Road Traffic Operation** *Vladimír Faltus, Zuzana Čarská Vladimír Faltus (Gar.)*	Z,ZK	7	3P+2C	Z	z
612VRZ	**High Speed Rail Transport** *Lukáš Týfa, Martin Ráž Lukáš Týfa (Gar.)*	KZ	3	2P+0C	Z	z
615JBA3	**Language - English 3** *Karolina Beauxisová, Jan Feit Karolina Beauxisová (Gar.)*	Z	2	0P+2C+10B	Z	z

Characteristics of the courses of this group of Study Plan: Code=3S-NP-DS-25/26-DC Name=3rd Sem. Bachelor Full-Time DS from 2025/26

611STS	Stochastic Systems	Z,ZK	4
The subject deals with the problems of mathematical modelling of dynamical systems, estimation od these models and their utilization for prediction. The results are illustrated on practical transportation tasks. Mathematical theory roots from probability and mathematical statistics and they use the methods of the Bayesian probabilistic approach.			
612DAZP	Transport and Environment	Z,ZK	4
This course aims the impact of transport on environment. The accent is put mainly on noise and vibration, emission, barrier effect and energy demands. The noise measury is part and parcel of this course.			
612TEAP	Theory of Road Traffic Operation	Z,ZK	7
Traffic parameters and their measurement, acquisition and processing. Road capacity analysis. Theoretical foundations and applications of mathematical models - macroscopic, statistical and microscopic traffic models. Theory of traffic management. Traffic light signals, roundabouts, coordination, public transport priority. Urban and highway management. Traffic excesses management. Road assessment and maintenance methods. Health risks assessment.			

612VRZ	High Speed Rail Transport	KZ	3
High speed railway (HSR) transport characteristics and position in transportation system. Types / models of HSR systems, preparation of high speed railway lines building in the Czech Republic conditions. Non-adhesion HSR systems. City and region traffic service by HSR. HSR operating points. HSR worldwide network. HSR routing and traffic conception. Specifics of HSR track construction and layout track parameteres.			
615JBA3	Language - English 3	Z	2
Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of English and practical application, formal and technical registers and their use, language of management.			

Code of the group: 3S-NP-DS-V1-25/26-DC
Name of the group: 3rd Sem. Master Full-Time DS Alternative from 2025/26
Requirement credits in the group: In this group you have to gain 3 credits
Requirement courses in the group: In this group you have to complete 1 course
Credits in the group: 3
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
612IDOS	**Integrated Transport Systems** *Jan Kruntorád, Martin Jareš*	ZK	3	2P+0C	Z	z
616STK	**Simulation and Testing of Vehicle Body and Systems**	ZK	3	2P+0C	Z	z

Characteristics of the courses of this group of Study Plan: Code=3S-NP-DS-V1-25/26-DC Name=3rd Sem. Master Full-Time DS Alternative from 2025/26

612IDOS	Integrated Transport Systems	ZK	3
Reasons for building of integrated transport systems, principle of integration, dividing of integration methods, traffic, infrastructure, technical, organizational methods, integration of tariff, sales systems, information systems, marketing of system, examples of non-integration.			
616STK	Simulation and Testing of Vehicle Body and Systems	ZK	3
Simulation theory. Computing equipment for simulation. Modeling of mechanical and dynamic systems. Simulation and optimization methods. Hardware in the Loop (HIL). Simulation approaches for vehicle design. Simulation of propulsion and electric systems. Strength and material analyses of dynamical phenomena for vehicles of on-land carriage.			

Code of the group: 4S-NP-DS-25/26-DC
Name of the group: 4th Sem. Bachelor Full-Time DS from 2025/26
Requirement credits in the group: In this group you have to gain 2 credits
Requirement courses in the group: In this group you have to complete 1 course
Credits in the group: 2
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
615JBA4	**Language - English 4** *Karolina Beauxisová Karolina Beauxisová (Gar.)*	ZK	2	0P+2C+10B	L	z

Characteristics of the courses of this group of Study Plan: Code=4S-NP-DS-25/26-DC Name=4th Sem. Bachelor Full-Time DS from 2025/26

615JBA4	Language - English 4	ZK	2
Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of English and practical application, formal and technical registers and their use, language of management.			

Code of the group: XD-NP-DS-25/26-DC
Name of the group: Thesis Master Full-Time DS from 2025/26
Requirement credits in the group: In this group you have to gain 18 credits
Requirement courses in the group: In this group you have to complete 1 course
Credits in the group: 18
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
611XNDD	**Master Thesis for study programme DS**	Z	18	0P+20C	L	z

612XNDD	**Master Thesis for study programme DS** *Josef Kocourek*	Z	18	0P+20C	L	z
614XNDD	**Master Thesis for study programme DS**	Z	18	0P+20C	L	z
615XNDD	**Master Thesis for study programme DS**	Z	18	0P+20C	L	z
616XNDD	**Master Thesis for study programme DS**	Z	18	0P+20C	L	z
617XNDD	**Master Thesis for study programme DS**	Z	18	0P+20C	L	z
618XNDD	**Master Thesis for study programme DS**	Z	18	0P+20C	L	z
620XNDD	**Master Thesis for study programme DS**	Z	18	0P+20C	L	z
621XNDD	**Master Thesis for study programme DS**	Z	18	0P+20C	L	z
622XNDD	**Master Thesis for study programme DS** ***Michal Frydrýn***	Z	18	0P+20C	L	z

Characteristics of the courses of this group of Study Plan: Code=XD-NP-DS-25/26-DC Name=Thesis Master Full-Time DS from 2025/26

611XNDD	Master Thesis for study programme DS	Z	18
612XNDD	Master Thesis for study programme DS	Z	18
614XNDD	Master Thesis for study programme DS	Z	18
615XNDD	Master Thesis for study programme DS	Z	18
616XNDD	Master Thesis for study programme DS	Z	18
617XNDD	Master Thesis for study programme DS	Z	18
618XNDD	Master Thesis for study programme DS	Z	18
620XNDD	Master Thesis for study programme DS	Z	18
621XNDD	Master Thesis for study programme DS	Z	18
622XNDD	Master Thesis for study programme DS	Z	18

Name of the block: Semestrální projekt
Minimal number of credits of the block: 13
The role of the block: ZP

Code of the group: X2-NP-DS-24/25-DC
Name of the group: Research Groups Master Full-Time DS from 2024/25
Requirement credits in the group: In this group you have to gain 13 credits
Requirement courses in the group: In this group you have to complete 4 courses
Credits in the group: 13
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**
622XN1	**Master Project 1**	Z	2	0P+2C	Z	ZP
621XN1	**Master Project 1**	Z	2	0P+2C	Z	ZP
614XN1	**Master Project 1**	Z	2	0P+2C	Z	ZP
611XN1	**Master Project 1**	Z	2	0P+2C	Z	ZP
617XN1	**Master Project 1**	Z	2	0P+2C	Z	ZP
612XN1	**Master Project 1** *Josef Kocourek, Dagmar Kočárková*	Z	2	0P+2C	Z	ZP
620XN1	**Master Project 1**	Z	2	0P+2C	Z	ZP
618XN1	**Master Project 1**	Z	2	0P+2C	Z	ZP
616XN1	**Master Project 1**	Z	2	0P+2C	Z	ZP
615XN1	**Master Project 1** *Petr Musil*	Z	2	0P+2C	Z	ZP
616XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
615XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
622XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
614XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
612XN2	**Master Project 2** *Josef Kocourek, Dagmar Kočárková*	Z	2	0P+2C	L	ZP
611XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
621XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
617XN2	**Master Project 2**	Z	2	0P+2C	L	ZP

620XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
618XN2	**Master Project 2**	Z	2	0P+2C	L	ZP
618XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
617XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
616XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
612XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
611XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
614XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
622XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
615XN3	**Master Project 3** *Petr Musil*	Z	1	0P+4C	Z	ZP
621XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
620XN3	**Master Project 3**	Z	1	0P+4C	Z	ZP
616XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
614XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
621XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
612XN4	**Master Project 4** *Josef Kocourek*	Z	8	0P+4C	L	ZP
618XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
615XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
620XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
611XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
617XN4	**Master Project 4**	Z	8	0P+4C	L	ZP
622XN4	**Master Project 4**	Z	8	0P+4C	L	ZP

Characteristics of the courses of this group of Study Plan: Code=X2-NP-DS-24/25-DC Name=Research Groups Master Full-Time DS from 2024/25

622XN1	Master Project 1	Z	2
621XN1	Master Project 1	Z	2
614XN1	Master Project 1	Z	2
611XN1	Master Project 1	Z	2
617XN1	Master Project 1	Z	2
612XN1	Master Project 1	Z	2
620XN1	Master Project 1	Z	2
618XN1	Master Project 1	Z	2
616XN1	Master Project 1	Z	2
615XN1	Master Project 1	Z	2
616XN2	Master Project 2	Z	2
615XN2	Master Project 2	Z	2
622XN2	Master Project 2	Z	2
614XN2	Master Project 2	Z	2
612XN2	Master Project 2	Z	2
611XN2	Master Project 2	Z	2
621XN2	Master Project 2	Z	2
617XN2	Master Project 2	Z	2
620XN2	Master Project 2	Z	2
618XN2	Master Project 2	Z	2
618XN3	Master Project 3	Z	1
617XN3	Master Project 3	Z	1
616XN3	Master Project 3	Z	1
612XN3	Master Project 3	Z	1
611XN3	Master Project 3	Z	1
614XN3	Master Project 3	Z	1
622XN3	Master Project 3	Z	1
615XN3	Master Project 3	Z	1
621XN3	Master Project 3	Z	1
620XN3	Master Project 3	Z	1
616XN4	Master Project 4	Z	8
614XN4	Master Project 4	Z	8
621XN4	Master Project 4	Z	8
612XN4	Master Project 4	Z	8

618XN4	Master Project 4	Z	8
615XN4	Master Project 4	Z	8
620XN4	Master Project 4	Z	8
611XN4	Master Project 4	Z	8
617XN4	Master Project 4	Z	8
622XN4	Master Project 4	Z	8

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 6
The role of the block: PV

Code of the group: Y2-NP-DS-24/25-DC
Name of the group: Comp. Sel. Courses Master Full-Time DS from 2024/25
Requirement credits in the group: In this group you have to gain 6 credits
Requirement courses in the group: In this group you have to complete 3 courses
Credits in the group: 6
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
612Y2KS	**Rail Transport in Settlements and Regions** *Martin Jacura Martin Jacura (Gar.)*	KZ	2	2P+0C	Z	PV
612Y2MD	**Methods of Traffic Regulation and Prediction** *Zuzana Čarská Zuzana Čarská (Gar.)*	KZ	2	2P+0C	L	PV

Characteristics of the courses of this group of Study Plan: Code=Y2-NP-DS-24/25-DC Name=Comp. Sel. Courses Master Full-Time DS from 2024/25

612Y2KS	Rail Transport in Settlements and Regions	KZ	2
Modernization and development of railway infrastructure in Czech Republic. Arrangement of railway networks and junctions. Suburban railway services. Network configuration and operation of metro systems. Network configuration and operation of tram systems. Special thematic lectures (rail transport in selected countries / regions).			
612Y2MD	Methods of Traffic Regulation and Prediction	KZ	2
Basic ways of traffic prognosis, traffic prognosis for large area (calculation of future traffic volumes, calculation of future traffic volumes between areas (analogical and synthetic methods, modal split, traffic distribution to road network). Shock wave in traffic flow. Service levels and their traffic volumes. Acceleration noise.			

Name of the block: Jazyky
Minimal number of credits of the block: 8
The role of the block: J

Code of the group: JZ-NP-DS-24/25-DC
Name of the group: Language Courses Master Full-Time DS from 2024/25
Requirement credits in the group: In this group you have to gain 8 credits
Requirement courses in the group: In this group you have to complete 4 courses
Credits in the group: 8
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
615J2F1	**Language - French 1**	Z	2	0P+2C+10B	Z	J
615JBF2	**Language - French 2**	Z	2	0P+2C+10B	L	J
615JBF3	**Language - French 3**	Z	2	0P+2C+10B	Z	J
615JBF4	**Language - French 4**	ZK	2	0P+2C+10B	L	J
615J2I1	**Language - Italian 1**	Z	2	0P+2C+10B	Z	J
615JBI2	**Language - Italian 2**	Z	2	0P+2C+10B	L	J
615JBI3	**Language - Italian 3**	Z	2	0P+2C+10B	Z	J
615JBI4	**Language - Italian 4**	ZK	2	0P+2C+10B	L	J
615J2N1	**Language - German 1** *Eva Rezlerová*	Z	2	0P+2C+10B	Z	J
615JBN2	**Language - German 2** *Eva Rezlerová, Lucie Obrová*	Z	2	0P+2C+10B	L	J

615JBN3	**Language - German 3** *Eva Rezlerová*	Z	2	0P+2C+10B	Z	J
615JBN4	**Language - German 4** *Lucie Obrová*	ZK	2	0P+2C+10B	L	J
615J2R1	**Language - Russian 1** *Marie Michlová*	Z	2	0P+2C+10B	Z	J
615JBR2	**Language - Russian 2** *Marie Michlová, Vilma Gottwaldová*	Z	2	0P+2C+10B	L	J
615JBR3	**Language - Russian 3** *Marie Michlová*	Z	2	0P+2C+10B	Z	J
615JBR4	**Language - Russian 4**	ZK	2	0P+2C+10B	L	J
615J2S1	**Language - Spanish 1**	Z	2	0P+2C+10B	Z	J
615JBS2	**Language - Spanish 2**	Z	2	0P+2C+10B	L	J
615JBS3	**Language - Spanish 3**	Z	2	0P+2C+10B	Z	J
615JBS4	**Language - Spanish 4**	ZK	2	0P+2C+10B	L	J

Characteristics of the courses of this group of Study Plan: Code=JZ-NP-DS-24/25-DC Name=Language Courses Master Full-Time DS from 2024/25

615J2F1	Language - French 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBF2	Language - French 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBF3	Language - French 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBF4	Language - French 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615J2I1	Language - Italian 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBI2	Language - Italian 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBI3	Language - Italian 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBI4	Language - Italian 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615J2N1	Language - German 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBN2	Language - German 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBN3	Language - German 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBN4	Language - German 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615J2R1	Language - Russian 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			

615JBR2	Language - Russian 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBR3	Language - Russian 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBR4	Language - Russian 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615J2S1	Language - Spanish 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBS2	Language - Spanish 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBS3	Language - Spanish 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBS4	Language - Spanish 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			

List of courses of this pass:

Code	Name of the course	Completion	Credits
611STS	Stochastic Systems	Z,ZK	4
The subject deals with the problems of mathematical modelling of dynamical systems, estimation od these models and their utilization for prediction. The results are illustrated on practical transportation tasks. Mathematical theory roots from probability and mathematical statistics and they use the methods of the Bayesian probabilistic approach.			
611XN1	Master Project 1	Z	2
611XN2	Master Project 2	Z	2
611XN3	Master Project 3	Z	1
611XN4	Master Project 4	Z	8
611XNDD	Master Thesis for study programme DS	Z	18
612BED	Road Safety Audit	Z,ZK	4
Schedules of applications of safety assessments (especially Road Safety Audit, Road Safety Inspection) during the process of preparations, and of the particular realization of the road network that should minimize traffic accident risks for all those who take part in road traffic. Application of European Directive 2008/96/EC on road safety infrastructure management.			
612DAZP	Transport and Environment	Z,ZK	4
This course aims the impact of transport on environment. The accent is put mainly on noise and vibration, emission, barrier effect and energy demands. The noise measury is part and parcel of this course.			
612IDOS	Integrated Transport Systems	ZK	3
Reasons for building of integrated transport systems, principle of integration, dividing of integration methods, traffic, infrastructure, technical, organizational methods, integration of tariff, sales systems, information systems, marketing of system, examples of non-integration.			
612IKD	Rail Transport Infrastructure	Z,ZK	5
Non-compensated lateral acceleration, parameters eduction for transition curve and cant transition, curves without straight, track spacing change. Track detailed construction. Substructure design, slab track. Tram-train. Interoperability. Noise precautions. Railway line modernization for non-tilting and tilting trains.			
612NAPI	Design and Maintenance of Transportation Structures	Z,ZK	4
Design and construction of cement-concrete pavements and their maintenance. Construction of bridge objects, examples and choice of bridge construction materials. Construction and operation of tunnels.			
612TEAP	Theory of Road Traffic Operation	Z,ZK	7
Traffic parameters and their measurement, acquisition and processing. Road capacity analysis. Theoretical foundations and applications of mathematical models - macroscopic, statistical and microscopic traffic models. Theory of traffic management. Traffic light signals, roundabouts, coordination, public transport priority. Urban and highway management. Traffic excesses management. Road assessment and maintenance methods. Health risks assessment.			
612TKVP	Highway Engineering Materials	Z,ZK	4
The theory of road construction - Material Aspects. The course emphasizes the development of road construction from the beginning of the 20th century to the present, focusing on materials, understanding the production and placing of asphalt mixtures.			
612UMUP	Sustainable Mobility and Land - Use Planning	Z,ZK	5
Spatial planning - objectives and tasks, development over time. Land-use planning tools. SUMP. Territorial and transport planning context. Ways of urban growth in connection with transport. Basic principles of the transport solution. The impact of transport on the size and shape of the city, on the development of the street and the square and the roads. Solutions for pedestrian and bicycle transport. Suburbanization and transport. City economics.			

612VRZ	High Speed Rail Transport	KZ	3
High speed railway (HSR) transport characteristics and position in transportation system. Types / models of HSR systems, preparation of high speed railway lines building in the Czech Republic conditions. Non-adhesion HSR systems. City and region traffic service by HSR. HSR operating points. HSR worldwide network. HSR routing and traffic conception. Specifics of HSR track construction and layout track parameteres.			
612XN1	Master Project 1	Z	2
612XN2	Master Project 2	Z	2
612XN3	Master Project 3	Z	1
612XN4	Master Project 4	Z	8
612XNDD	Master Thesis for study programme DS	Z	18
612Y2KS	Rail Transport in Settlements and Regions	KZ	2
Modernization and development of railway infrastructure in Czech Republic. Arrangement of railway networks and junctions. Suburban railway services. Network configuration and operation of metro systems. Network configuration and operation of tram systems. Special thematic lectures (rail transport in selected countries / regions).			
612Y2MD	Methods of Traffic Regulation and Prediction	KZ	2
Basic ways of traffic prognosis, traffic prognosis for large area (calculation of future traffic volumes, calculation of future traffic volumes between areas (analogical and synthetic methods, modal split, traffic distribution to road network). Shock wave in traffic flow. Service levels and their traffic volumes. Acceleration noise.			
612ZSUZ	Railway Stations and Centres	Z,ZK	3
Equipment for passenger transport. Platform construction. Access roads to platforms. Modification of railway stations according to the TSI PRM. Station heads design. Variant solutions of station heads for current ride. Junction stations. Crossing stations. Passenger stations. Moving stations. Public transport terminals.			
614GISS	Geographical Information Systems	KZ	2
Construction of saving format of space-oriented information land-survey and cartography minimum basic tasks of spatial operations principles of territorial identification			
614XN1	Master Project 1	Z	2
614XN2	Master Project 2	Z	2
614XN3	Master Project 3	Z	1
614XN4	Master Project 4	Z	8
614XNDD	Master Thesis for study programme DS	Z	18
615J2A1	Language - English 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of English and practical application, formal and technical registers and their use, language of management.			
615J2F1	Language - French 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615J2I1	Language - Italian 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615J2N1	Language - German 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615J2R1	Language - Russian 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615J2S1	Language - Spanish 1	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBA2	Language - English 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of English and practical application, formal and technical registers and their use, language of management.			
615JBA3	Language - English 3	Z	2
Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of English and practical application, formal and technical registers and their use, language of management.			
615JBA4	Language - English 4	ZK	2
Grammatical structures and style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of English and practical application, formal and technical registers and their use, language of management.			
615JBF2	Language - French 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBF3	Language - French 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			

615JBF4	Language - French 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBI2	Language - Italian 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBI3	Language - Italian 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBI4	Language - Italian 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBN2	Language - German 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBN3	Language - German 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBN4	Language - German 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBR2	Language - Russian 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBR3	Language - Russian 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBR4	Language - Russian 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBS2	Language - Spanish 2	Z	2
Grammatical Structures and Style. Selection of conversation topics relating to transportation sciences. Developing perceptive and communicative skills, feedback skills, summarising technical text content, structuring presentations and meeting minutes, elementary rhetorics of foreign language and practical application, formal and technical registers and their use, language of management.			
615JBS3	Language - Spanish 3	Z	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615JBS4	Language - Spanish 4	ZK	2
Grammar and stylistics. Selection of conversation and professional topics based on the language level and study focus at the Faculty. Improvement of language structure knowledge and perceptive and communicative skills, vocabulary development. Basic stylistic forms. Presentation of own knowledge in oral and written form. Work with (professional) text and its features. Practice of oral and written presentation.			
615XN1	Master Project 1	Z	2
615XN2	Master Project 2	Z	2
615XN3	Master Project 3	Z	1
615XN4	Master Project 4	Z	8
615XNDD	Master Thesis for study programme DS	Z	18
616PDP	Principles of Vehicle Design	ZK	2
Design of transportation vehicle according to its usage and function. Marketing and user demands. Vehicle dynamics. Propulsion systems. Design process, functional design and vehicle structure. Evaluation of variant concepts. Design phases. Realiability, technological aspects etc.			
616STK	Simulation and Testing of Vehicle Body and Systems	ZK	3
Simulation theory. Computing equipment for simulation. Modeling of mechanical and dynamic systems. Simulation and optimization methods. Hardware in the Loop (HIL). Simulation approaches for vehicle design. Simulation of propulsion and electric systems. Strength and material analyses of dynamical phenomena for vehicles of on-land carriage.			
616XN1	Master Project 1	Z	2
616XN2	Master Project 2	Z	2
616XN3	Master Project 3	Z	1
616XN4	Master Project 4	Z	8
616XNDD	Master Thesis for study programme DS	Z	18

617DOPD	Transportation Planning and Modeling	Z,ZK	4
Basic steps and tools used within four step model (trip generation, trip distribution, mode choice and trip distribution). Mobility and availability in urban areas, land use. New trends for transportation planning and modelling.			
617TZND	Technology of Railway Transport	Z,ZK	4
Track line capacity assesment, model operational situation with a system running time between IPT-nodes, calculation of traction energy savings compared with infrastructure costs for designing of fleeting crossing station, solving of capacity problem and blocking time in relation to train protection system, robustness of timetable, system concept of freight train paths, guidelines for centralised operational traffic control and management.			
617XN1	Master Project 1	Z	2
617XN2	Master Project 2	Z	2
617XN3	Master Project 3	Z	1
617XN4	Master Project 4	Z	8
617XNDD	Master Thesis for study programme DS	Z	18
618GAZ	Geomechanics and Foundation Engineering	Z,ZK	3
Geology (basics of pertrographyand stratigraphy), mechanics of soils (classification of fundamental soils, mechanic properties of fundamental soils, permeability), planar foundations (footings, footers, plates, depth of founding), determination of planar foundations bearing and deformation, depth foundations classification of depth foundations elements, examples of their use, piles (classification, technology od performing).			
618TEAM	Theoretical and Applied Mechanics	Z,ZK	4
Fundamentals of theory of plasticity. Plasticity conditions. Elastoplastic and plastic states of cross-sections and beams. Reliability and durability of structures. The stress and strain state around a notch. Stress intensity factor. Fracture toughness. Energy methods of linear fracture mechanics. Crack driving force.			
618TIK	Theory of Engineering Structures	Z,ZK	4
The course builds upon the knowledge gained in basic mechanics courses in bachelor study (especially Statics and Elasticity) in the field of mathematical theory of elasticity. Emphasis is placed on plane and axisymmetric problems, as well as on the calculation of stress and strain in plates and shells. Students are further acquainted with methods of modeling the behavior of subsoil used in the design of line structures.			
618XN1	Master Project 1	Z	2
618XN2	Master Project 2	Z	2
618XN3	Master Project 3	Z	1
618XN4	Master Project 4	Z	8
618XNDD	Master Thesis for study programme DS	Z	18
620XN1	Master Project 1	Z	2
620XN2	Master Project 2	Z	2
620XN3	Master Project 3	Z	1
620XN4	Master Project 4	Z	8
620XNDD	Master Thesis for study programme DS	Z	18
621XN1	Master Project 1	Z	2
621XN2	Master Project 2	Z	2
621XN3	Master Project 3	Z	1
621XN4	Master Project 4	Z	8
621XNDD	Master Thesis for study programme DS	Z	18
622AMMD	Measuring Methods Applied to Transportation	KZ	4
Geodetic location and technical processing of traffic route with geodetic total station, GPS and photogrammetry, 3D scanning. Transport corridor setting out using geodetic methods. Detection and technical processing of several vehicle dynamic characteristics using high-speed cameras and accelerometers. It is a week course and the terms are usually set in June and September - usually in examination period.			
622MSV	Modelling and Vehicle Movement Simulation	KZ	2
Principles and posibilities of simulation tools with regards to vehicle movement analysis and vehicle crash analysis. Kinematic and dynamic modelling of vehicle/set of vehicles movement. View conditions. Proposed road space passage. Processing of road 3D models.			
622XN1	Master Project 1	Z	2
622XN2	Master Project 2	Z	2
622XN3	Master Project 3	Z	1
622XN4	Master Project 4	Z	8
622XNDD	Master Thesis for study programme DS	Z	18

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