

# Study plan

**Name of study plan: navaz. mag. PRE program LA 20/21 (nová akreditace)**

Faculty/Institute/Others:

Department:

Branch of study guaranteed by the department: Welcome page

Garantor of the study branch:

Program of study: Logistics and Transport Processes Control

Type of study: Follow-up master full-time

Required credits: 47

Elective courses credits: 73

Sum of credits in the plan: 120

Note on the plan:

Name of the block: Compulsory courses

Minimal number of credits of the block: 26

The role of the block: Z

Code of the group: 1.S.NPLA 20/21

Name of the group: 1.sem.nav.prez 20/21 - program LA

Requirement credits in the group: In this group you have to gain 26 credits

Requirement courses in the group: In this group you have to complete 9 courses

Credits in the group: 26

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
11LIP2	<b>Linear Programming 2</b> Ivan Nagy, Pavla Pecherková Ivan Nagy (Gar.)	Z,ZK	3	2P+1C+10B	Z	z
11TER	<b>Game Theory and Optimal Decision-Making</b> Magdalena Hykšová Magdalena Hykšová (Gar.)	ZK	2	2P+0C+8B	Z	z
17LSC	<b>Logistics in Smart Cities</b> Tomáš Horák	Z,ZK	6	2P+2C+14B	Z	z
17TZND	<b>Technology of Railway Transport</b> Zdeněk Michl, Vít Janoš	Z,ZK	4	2P+2C	Z	z
17TZOR	<b>Inventory, Replacement and Scheduling Theory</b> Dušan Teichmann	Z,ZK	3	2P+1C	Z	z
14GISS	<b>Geographical Information Systems</b> Tomáš Janata, František Kekula, Zuzana Purkrábková Veronika Vlčková (Gar.)	KZ	2	0P+2C+8B	Z	z
17MADS	<b>Management of Transport Systems</b> Veronika Fajfrová, Roman Štrba	KZ	2	2P+0C+8B	Z	z
17TSI	<b>Technology of Road Transport</b> Zdeněk Michl, Vít Janoš, Michal Drábek	KZ	2	2P+0C+8B	Z	z
15J2A1	<b>Language - English 1</b> Eva Rezlířová, Dana Boušová, Jitka Hejmanová, Marie Michlová, Lenka Monková, Markéta Olehlová, Markéta Vojanová, Peter Morpuss, Barbora Horáková	Z	2	0P+2C+10B	Z	z

**Characteristics of the courses of this group of Study Plan: Code=1.S.NPLA 20/21 Name=1.sem.nav.prez 20/21 - program LA**

11LIP2	Linear Programming 2	Z,ZK	3	Formulation of the task of integer programming, branch and bound method of numerical solution, problems about knapsack, travelling salesman, sets, location of stores and post boxes, tasks of scheduling, heuristics, metaheuristics - genetic algorithms, ant colony optimization.
11TER	Game Theory and Optimal Decision-Making	ZK	2	Decision-making theory, utility theory. Explicit form games, backward induction. Normal form games. Antagonistic conflict, matrix games. Repeated games, evolutionary game theory. Cooperative games without transferable payoffs. Cooperative games with transferable payoffs (imputation, core, Shapley value, nucleolus). Applications of game theory above all in economics and transportation.
17LSC	Logistics in Smart Cities	Z,ZK	6	Development of cities in time, city and region, mobility of city residents and movement of goods, sustainability as a concept, Smart Cities, city as a system and its components, quality of life, individual quality of life, city "smartness" assessment, legislation in Smart Cities, Smart Cities transformation, last mile logistics, e-commerce, new approaches in last mile logistics, last mile logistics in cities and in regions.

17TZND	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			
17TZOR	Inventory, Replacement and Scheduling Theory	Z,ZK	3
Inventory theory - introduction, static models, deterministic dynamic models, stochastic dynamic models Replacement theory - introduction, models for replacement of items that deteriorate with time, models for replacement of items that fail completely Scheduling theory - introduction, single machine scheduling problems, parallel machine scheduling problems, flow shop scheduling problems and job shop scheduling problems			
14GISS	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			
17MADS	Management of Transport Systems	KZ	2
Functions, processes and systems of management in transport, organisational structures, strategy, social responsibility, soft skills.			
17TSI	Technology of Road Transport	KZ	2
Legislative, operational, technical, logistic and safety conditions of road transport, basic transport technologies, special transport, international agreements, requirements on the parameters and specialization of transport, handling and loading/unloading means, maintenance, service and repairs of road vehicles, safety of road transport and choice of optimal transport unit.			
15J2A1	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.			

Name of the block: Semestrální projekt

Minimal number of credits of the block: 13

The role of the block: ZP

Code of the group: XN LA 1-4 20/21

Name of the group: Projekty nav.prez.1.-4.sem programu LA

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
11XN1	<b>Master Project 1</b> Ivan Nagy	Z	2	0P+2C	Z	ZP
12XN1	<b>Master Project 1</b> Zuzana arská, Dagmar Ko árková, Karolína Moudrá, Kristýna Neubergerová, Martin Jacura, Vojtěch Novotný, Ondřej Trešl, David Vodák, Tomáš Javořík, .....	Z	2	0P+2C	Z	ZP
14XN1	<b>Master Project 1</b> Ota Hajzler, Jana Kalíková	Z	2	0P+2C	Z	ZP
15XN1	<b>Master Project 1</b> Eva Režlerová	Z	2	0P+2C	Z	ZP
16XN1	<b>Master Project 1</b> Josef Mík, Adam Orlický, Jaroslav Machan	Z	2	0P+2C	Z	ZP
17XN1	<b>Master Project 1</b> Tomáš Horák, Zdeněk Michl, Vít Janoš, Dušan Teichmann, Veronika Faifrová, Roman Štěrba, Michal Drábek, Václav Baroch, Edvard Bezina, .....	Z	2	0P+2C	Z	ZP
18XN1	<b>Master Project 1</b>	Z	2	0P+2C	Z	ZP
20XN1	<b>Master Project 1</b>	Z	2	0P+2C	Z	ZP
21XN1	<b>Master Project 1</b>	Z	2	0P+2C	Z	ZP
22XN1	<b>Master Project 1</b> Michal Frydriýn, Karel Kocián, Tomáš Míunek, Luboš Nouzovský, Zdeněk Svatý	Z	2	0P+2C	Z	ZP
23XN1	<b>Master Project 1</b>	Z	2	0P+2C	Z	ZP
11XN2	<b>Master Project 2</b> Ivan Nagy	Z	2	0P+2C	L	ZP
12XN2	<b>Master Project 2</b>	Z	2	0P+2C	L	ZP
14XN2	<b>Master Project 2</b>	Z	2	0P+2C	L	ZP
15XN2	<b>Master Project 2</b>	Z	2	0P+2C	L	ZP
16XN2	<b>Master Project 2</b>	Z	2	0P+2C	L	ZP
17XN2	<b>Master Project 2</b>	Z	2	0P+2C	L	ZP
18XN2	<b>Master Project 2</b>	Z	2	0P+2C	L	ZP
20XN2	<b>Master Project 2</b>	Z	2	0P+2C	L	ZP

21XN2	<b>Master Project 2</b>	Z	2	0P+2C	L	ZP
22XN2	<b>Master Project 2</b>	Z	2	0P+2C	L	ZP
23XN2	<b>Master Project 2</b>	Z	2	0P+2C	L	ZP
11XN3	<b>Master Project 3</b>	Z	1	0P+4C	Z	ZP
12XN3	<b>Master Project 3</b> <i>Zuzana arská, Dagmar Ko árková, Karolína Moudrá, Kristýna Neubergová, Martin Jacura, Vojt ch Novotný, Ond ej Trešl, David Vodák, Tomáš Javo ík, .....</i>	Z	1	0P+4C	Z	ZP
14XN3	<b>Master Project 3</b> <i>Jana Kalíková, Tomáš Zelinka, Martin Šrotý, Zden k Lokaj</i>	Z	1	0P+4C	Z	ZP
15XN3	<b>Master Project 3</b> <i>Eva Rezlerová</i>	Z	1	0P+4C	Z	ZP
16XN3	<b>Master Project 3</b> <i>Josef Mík</i>	Z	1	0P+4C	Z	ZP
17XN3	<b>Master Project 3</b> <i>Tomáš Horák, Zden k Michl, Vít Janoš, Dušan Teichmann, Veronika Faifrová, Roman Št rba, Michal Drábek, Václav Baroch, Edvard B ezina, .....</i>	Z	1	0P+4C	Z	ZP
18XN3	<b>Master Project 3</b>	Z	1	0P+4C	Z	ZP
20XN3	<b>Master Project 3</b>	Z	1	0P+4C	Z	ZP
21XN3	<b>Master Project 3</b> <i>Helena Bínová</i>	Z	1	0P+4C	Z	ZP
22XN3	<b>Master Project 3</b> <i>Michal Frydrýn, Karel Kocián, Tomáš Mi unek, Luboš Nouzovský, Zden k Svátý</i>	Z	1	0P+4C	Z	ZP
23XN3	<b>Master Project 3</b>	Z	1	0P+4C	Z	ZP
11XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
12XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
14XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
15XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
16XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
17XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
18XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
20XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
21XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
22XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP
23XN4	<b>Master Project 4</b>	Z	8	0P+4C	L	ZP

**Characteristics of the courses of this group of Study Plan: Code=XN LA 1-4 20/21 Name=Projekty nav.prez.1.-4.sem programu LA**

11XN1	Master Project 1	Z	2
12XN1	Master Project 1	Z	2
14XN1	Master Project 1	Z	2
15XN1	Master Project 1	Z	2
16XN1	Master Project 1	Z	2
17XN1	Master Project 1	Z	2
18XN1	Master Project 1	Z	2
20XN1	Master Project 1	Z	2
21XN1	Master Project 1	Z	2
22XN1	Master Project 1	Z	2
23XN1	Master Project 1	Z	2
11XN2	Master Project 2	Z	2
12XN2	Master Project 2	Z	2
14XN2	Master Project 2	Z	2
15XN2	Master Project 2	Z	2
16XN2	Master Project 2	Z	2
17XN2	Master Project 2	Z	2
18XN2	Master Project 2	Z	2
20XN2	Master Project 2	Z	2
21XN2	Master Project 2	Z	2
22XN2	Master Project 2	Z	2
23XN2	Master Project 2	Z	2
11XN3	Master Project 3	Z	1
12XN3	Master Project 3	Z	1
14XN3	Master Project 3	Z	1
15XN3	Master Project 3	Z	1

16XN3	Master Project 3	Z	1
17XN3	Master Project 3	Z	1
18XN3	Master Project 3	Z	1
20XN3	Master Project 3	Z	1
21XN3	Master Project 3	Z	1
22XN3	Master Project 3	Z	1
23XN3	Master Project 3	Z	1
11XN4	Master Project 4	Z	8
12XN4	Master Project 4	Z	8
14XN4	Master Project 4	Z	8
15XN4	Master Project 4	Z	8
16XN4	Master Project 4	Z	8
17XN4	Master Project 4	Z	8
18XN4	Master Project 4	Z	8
20XN4	Master Project 4	Z	8
21XN4	Master Project 4	Z	8
22XN4	Master Project 4	Z	8
23XN4	Master Project 4	Z	8

Name of the block: Jazyky

Minimal number of credits of the block: 8

The role of the block: J

Code of the group: JZ-N-LA 20/21

Name of the group: Jazyk nav.1.-4.sem.20/21 - program LA

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) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
15J2F1	<b>Language - French 1</b> <i>Eva Rezlerová, Irena Veselková</i>	Z	2	CP+2C+10B	Z	J
15J2I1	<b>Language - Italian 1</b>	Z	2	CP+2C+10B	Z	J
15J2N1	<b>Language - German 1</b> <i>Eva Rezlerová, Jana Štikarová</i>	Z	2	CP+2C+10B	Z	J
15J2R1	<b>Language - Russian 1</b> <i>Eva Rezlerová, Marie Michlová</i>	Z	2	CP+2C+10B	Z	J
15J2S1	<b>Language - Spanish 1</b> <i>Eva Rezlerová, Nina Hricsina Puškinová</i>	Z	2	CP+2C+10B	Z	J
15JBF2	<b>Language - French 2</b>	Z	2	CP+2C+10B	L	J
15JBI2	<b>Language - Italian 2</b>	Z	2	CP+2C+10B	L	J
15JBN2	<b>Language - German 2</b>	Z	2	CP+2C+10B	L	J
15JBR2	<b>Language - Russian 2</b>	Z	2	CP+2C+10B	L	J
15JBS2	<b>Language - Spanish 2</b>	Z	2	CP+2C+10B	L	J
15JBF3	<b>Language - French 3</b> <i>Eva Rezlerová, Irena Veselková</i>	Z	2	CP+2C+10B	Z	J
15JBI3	<b>Language - Italian 3</b>	Z	2	CP+2C+10B	Z	J
15JBN3	<b>Language - German 3</b> <i>Eva Rezlerová, Jana Štikarová</i>	Z	2	CP+2C+10B	Z	J
15JBR3	<b>Language - Russian 3</b> <i>Eva Rezlerová, Marie Michlová</i>	Z	2	CP+2C+10B	Z	J
15JBS3	<b>Language - Spanish 3</b> <i>Eva Rezlerová, Nina Hricsina Puškinová</i>	Z	2	CP+2C+10B	Z	J
15JBF4	<b>Language - French 4</b> <i>Irena Veselková</i>	ZK	2	CP+2C+10B	L	J
15JBI4	<b>Language - Italian 4</b> <i>Irena Veselková</i>	ZK	2	CP+2C+10B	L	J
15JBN4	<b>Language - German 4</b> <i>Eva Rezlerová, Jana Štikarová</i>	ZK	2	CP+2C+10B	L	J
15JBR4	<b>Language - Russian 4</b> <i>Marie Michlová</i>	ZK	2	CP+2C+10B	L	J

15JBS4	<b>Language - Spanish 4</b> <i>Nina Hricsina Puškinová</i>	ZK	2	CP+2C+10B	L	J
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**Characteristics of the courses of this group of Study Plan: Code=JZ-N-LA 20/21 Name=Jazyk nav.1.-4.sem.20/21 - program LA**

15J2F1	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.						
15J2I1	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.						
15J2N1	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.						
15J2R1	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.						
15J2S1	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.						
15JBF2	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.						
15JBI2	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.						
15JBN2	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.						
15JBR2	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.						
15JBS2	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.						
15JBF3	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.						
15JBI3	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.						
15JBN3	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.						
15JBR3	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.						
15JBS3	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.						
15JBF4	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.						
15JBI4	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.						

15JBN4	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.			
15JBR4	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.			
15JBS4	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
11LIP2	Linear Programming 2	Z,ZK	3
Formulation of the task of integer programming, branch and bound method of numerical solution, problems about knapsack, travelling salesman, sets, location of stores and post boxes, tasks of scheduling, heuristics, metaheuristics - genetic algorithms, ant colony optimization.			
11TER	Game Theory and Optimal Decision-Making	ZK	2
Decision-making theory, utility theory. Explicit form games, backward induction. Normal form games. Antagonistic conflict, matrix games. Repeated games, evolutionary game theory. Cooperative games without transferable payoffs. Cooperative games with transferable payoffs (imputation, core, Shapley value, nucleolus). Applications of game theory above all in economics and transportation.			
11XN1	Master Project 1	Z	2
11XN2	Master Project 2	Z	2
11XN3	Master Project 3	Z	1
11XN4	Master Project 4	Z	8
12XN1	Master Project 1	Z	2
12XN2	Master Project 2	Z	2
12XN3	Master Project 3	Z	1
12XN4	Master Project 4	Z	8
14GISS	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			
14XN1	Master Project 1	Z	2
14XN2	Master Project 2	Z	2
14XN3	Master Project 3	Z	1
14XN4	Master Project 4	Z	8
15J2A1	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.			
15J2F1	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.			
15J2I1	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.			
15J2N1	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.			
15J2R1	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.			
15J2S1	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.			
15JBF2	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.			

15JBF3	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.			
15JBF4	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.			
15JBI2	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.			
15JBI3	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.			
15JBI4	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.			
15JBN2	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.			
15JBN3	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.			
15JBN4	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.			
15JBR2	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.			
15JBR3	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.			
15JBR4	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.			
15JBS2	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.			
15JBS3	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.			
15JBS4	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.			
15XN1	Master Project 1	Z	2
15XN2	Master Project 2	Z	2
15XN3	Master Project 3	Z	1
15XN4	Master Project 4	Z	8
16XN1	Master Project 1	Z	2
16XN2	Master Project 2	Z	2
16XN3	Master Project 3	Z	1
16XN4	Master Project 4	Z	8
17LSC	Logistics in Smart Cities	Z,ZK	6
Development of cities in time, city and region, mobility of city residents and movement of goods, sustainability as a concept, Smart Cities, city as a system and its components, quality of life, individual quality of life, city "smartness" assessment, legislation in Smart Cities, Smart Cities transformation, last mile logistics, e-commerce, new approaches in last mile logistics, last mile logisitics in cities and in regions.			
17MADS	Management of Transport Systems	KZ	2
Functions, processes and systems of management in transport, organisational structures, strategy, social responsibility, soft skills.			

17TSI	Technology of Road Transport	KZ	2
Legislative, operational, technical, logistic and safety conditions of road transport, basic transport technologies, special transport, international agreements, requirements on the parameters and specialization of transport, handling and loading/unloading means, maintenance, service and repairs of road vehicles, safety of road transport and choice of optimal transport unit.			
17TZND	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			
17TZOR	Inventory, Replacement and Scheduling Theory	Z,ZK	3
Inventory theory - introduction, static models, deterministic dynamic models, stochastic dynamic models Replacement theory - introduction, models for replacement of items that deteriorate with time, models for replacement of items that fail completely Scheduling theory - introduction, single machine scheduling problems, parallel machine scheduling problems, flow shop scheduling problems and job shop scheduling problems			
17XN1	Master Project 1	Z	2
17XN2	Master Project 2	Z	2
17XN3	Master Project 3	Z	1
17XN4	Master Project 4	Z	8
18XN1	Master Project 1	Z	2
18XN2	Master Project 2	Z	2
18XN3	Master Project 3	Z	1
18XN4	Master Project 4	Z	8
20XN1	Master Project 1	Z	2
20XN2	Master Project 2	Z	2
20XN3	Master Project 3	Z	1
20XN4	Master Project 4	Z	8
21XN1	Master Project 1	Z	2
21XN2	Master Project 2	Z	2
21XN3	Master Project 3	Z	1
21XN4	Master Project 4	Z	8
22XN1	Master Project 1	Z	2
22XN2	Master Project 2	Z	2
22XN3	Master Project 3	Z	1
22XN4	Master Project 4	Z	8
23XN1	Master Project 1	Z	2
23XN2	Master Project 2	Z	2
23XN3	Master Project 3	Z	1
23XN4	Master Project 4	Z	8

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Generated: day 30. 10. 2020, time 05:37.