Recomended pass through the study plan

Name of the pass: Master Full-Time IS (CS) from 2024/25

Faculty/Institute/Others:
Department:
Pass through the study plan: Master Full-Time IS (CS) from 2024/25
Branch of study guranteed by the department: Welcome page
Guarantor of the study branch:
Program of study: Intelligent Transport Systems
Type of study: Follow-up master full-time
Note on the pass:

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

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

Number of semester: 1

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
16DITS	**Vehicles within ITS** *Jan Leistner, Filip Kotas, David Lehet, Jaroslav Machan*	Z,ZK	4	2P+2C	Z	Z
20GINS	**Geographical, information, localization and navigation systems** *Pavel Hrubeš, Petr Bureš, Zuzana Purkrábková, František Kekula **Pavel Hrubeš***	Z,ZK	6	3P+3C	Z	Z
11MAI	**ITS Mathematical Tools** *Jan Pikryl **Jan Pikryl** Jan Pikryl (Gar.)*	Z,ZK	4	2P+2C	Z	Z
20TBSS	**Technology and Security of Sensor Networks** *Zdenk Lokaj, Jií Brož, Tomáš Tichý, Miroslav Vaniš **Zdenk Lokaj** Zdenk Lokaj (Gar.)*	KZ	2	2P+0C	Z	ZP
20TSJ	**Telematic systems and their design** *Pavel Hrubeš, Martin Langr **Martin Langr***	Z,ZK	6	3P+2C	Z	Z
15JIA1	**Foreign Language - English 1** *Markéta Musilová, Dana Boušová, Jitka Hemanová, Marie Michlová, Lenka Monková, Peter Morpuss, Eva Rezlerová*	Z	0	0P+2C	Z	Z
15JIF1	**Foreign Language - French 1** *Irena Veselková*	Z	0	0P+2C	Z	Z
15JIN1	**Foreign Language - German 1** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	Z	0	0P+2C	Z	V
15JIR1	**Foreign Language - Russian 1** *Marie Michlová*	Z	0	0P+2C	Z	V
15JIS1	**Foreign Language - Spanish 1** *Nina Hricsina Puškinová*	Z	0	0P+2C	Z	V
X2-NP-IS-CS-20/21	**Projekty Mgr. prezenní IS (CS) od 2020/21** *11XN1S,12XN1S,..... (see the list of groups below)*	Min. cours. 4 Max. cours. 4	Min/Max 27/27			ZP
1S-NP-IS-CS-V-20/21	**1. sem. Mgr. prezenní IS (CS) výbr pedmtu od 2020/21** *12TDP,16ESDP,..... (see the list of groups below)*	Min. cours. 1 Max. cours. 1	Min/Max 3/3			Z

Number of semester: 2

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
20BITS	**Safety and reliability of ITS Systems** *Tomáš Tichý, Vladimír Faltus*	KZ	3	2P+1C	L	Z

14CITS	**C-ITS Systems** *Zden k Lokaj, Tomáš Zelinka, Miroslav Vaniš **Zden k Lokaj** Zden k Lokaj (Gar.)*	Z,ZK	6	3P+3C	L	z
14PPRP	**Computer Aided Project Management** *Marek Kalika **Marek Kalika** Marek Kalika (Gar.)*	KZ	2	0P+2C	L	z
14PD	**Data processing** *Martin Šrotý , Miroslav Vaniš, Michal Je ábek **Martin Šrotý** Martin Šrotý (Gar.)*	Z,ZK	6	2P+4C	L	z
14PAM	**Programming and modelling** *Vít Fábera, Marek Kalika, Tomáš Brandejský, Martin Fiala **Vít Fábera** Vít Fábera (Gar.)*	Z,ZK	4	2P+2C	L	z
15JIA2	**Foreign Language - English 2** *Eva Rezlerová*	Z	0	0P+2C	L	ZP
15JIF2	**Foreign Language - French 2** *Irena Veselková*	Z	0	0P+2C	L	z
15JIN2	**Foreign Language - German 2** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	Z	0	0P+2C	L	V
15JIR2	**Foreign Language - Russian 2** *Marie Michlová*	Z	0	0P+2C	L	V
15JIS2	**Foreign Language - Spanish 2** *Nina Hricsina Puškinová*	Z	0	0P+2C	L	V
X2-NP-IS-CS-20/21	**Projekty Mgr. prezen ní IS (CS) od 2020/21** *11XN1S,12XN1S,..... (see the list of groups below)*	Min. cours. 4 Max. cours. 4	Min/Max 27/27			ZP
2S-NP-IS-CS-V-20/21	**2. sem. Mgr. prezen ní IS (CS) výb r p edm tu od 2020/21** *14MIM,16SHMI,..... (see the list of groups below)*	Min. cours. 1 Max. cours. 1	Min/Max 3/3			z

Number of semester: 3

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
20AIMI	**Application of ITS in Urban Engineering** *Ji í R ži ka, Tomáš Tichý, Josef Kocourek, Dagmar Ko árková, Josef Filip **Tomáš Tichý***	Z,ZK	6	3P+3C	Z	z
20HEI	**Evaluation and Economics of ITS** *František Kopecký **František Kopecký***	KZ	3	2P+1C	Z	z
11MMAD	**Mathematical Methods for Data Analysis** *Pavla Pecherková, Tetiana Reznychenko, Evženie Uglickich, Ivan Nagy **Pavla Pecherková** Ivan Nagy (Gar.)*	Z,ZK	6	3P+3C	Z	z
20SYIN	**System Engineering** *Zuzana B linová, Veronika Vl ková **Zuzana B linová***	Z,ZK	6	4P+2C	Z	ZP
15JIA3	**Foreign Language - English 3** *Markéta Musilová, Dana Boušová, Jitka He manová, Marie Michlová, Lenka Monková, Peter Morpuss, Eva Rezlerová, Markéta Vojanová*	Z	0	0P+2C	Z	z
15JIF3	**Foreign Language - French 3** *Irena Veselková*	Z	0	0P+2C	Z	z
15JIN3	**Foreign Language - German 3** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	Z	0	0P+2C	Z	V
15JIR3	**Foreign Language - Russian 3** *Marie Michlová*	Z	0	0P+2C	Z	V
15JIS3	**Foreign Language - Spanish 3** *Nina Hricsina Puškinová*	Z	0	0P+2C	Z	V
X2-NP-IS-CS-20/21	**Projekty Mgr. prezen ní IS (CS) od 2020/21** *11XN1S,12XN1S,..... (see the list of groups below)*	Min. cours. 4 Max. cours. 4	Min/Max 27/27			ZP
3S-NP-IS-CS-V-21/22	**3. sem. Mgr. prezen ní IS (CS) výb r p edm tu od 2021/22** *16KSD,20PRZP,..... (see the list of groups below)*	Min. cours. 1 Max. cours. 1	Min/Max 3/3			z

Number of semester: 4

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* **authors** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
15JIA4	**Foreign Language - English 4** *Eva Rezlerová*	Z	0	0P+2C	L	Z
15JIF4	**Foreign Language - French 4** *Irena Veselková*	Z	0	0P+2C	L	Z
15JIN4	**Foreign Language - German 4** *Eva Rezlerová, Martina Navrátilová, Jana Štikarová*	Z	0	0P+2C	L	ZP
15JIR4	**Foreign Language - Russian 4** *Marie Michlová*	Z	0	0P+2C	L	V
15JIS4	**Foreign Language - Spanish 4** *Nina Hricsina Puškinová*	Z	0	0P+2C	L	V
XD-NP-IS-CS-21/22	**DP Mgr. prezen ní IS (CS) od 2021/22** *11XNDS,12XNDS,..... (see the list of groups below)*	Min. cours. 1 Max. cours. 1	Min/Max 16/16			Z
XP-NP-IS-CS-21/22	**Praxe Mgr. prezen ní IS (CS) od 2021/22** *11XPXS,12XPXS,..... (see the list of groups below)*	Min. cours. 1 Max. cours. 1	Min/Max 4/4			Z
X2-NP-IS-CS-20/21	**Projekty Mgr. prezen ní IS (CS) od 2020/21** *11XN1S,12XN1S,..... (see the list of groups below)*	Min. cours. 4 Max. cours. 4	Min/Max 27/27			ZP

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

Kód	Name of the group of courses and codes of members of this group (for specification see here or below the list of courses)	Completion	Credits	Scope	Semester	Role
1S-NP-IS-CS-V-20/21	**1. sem. Mgr. prezen ní IS (CS) výb r p edm tu od 2020/21**	**Min. cours. 1 Max. cours. 1**	**Min/Max** 3/3			**Z**

12TDP	Traffic Flow Theory	16ESDP	Electronic systems in modern veh ...	20MZZ		Modern techniques of safety cont ...

Kód	Name					Role
2S-NP-IS-CS-V-20/21	**2. sem. Mgr. prezen ní IS (CS) výb r p edm tu od 2020/21**	**Min. cours. 1 Max. cours. 1**	**Min/Max** 3/3			**Z**

14MIM	Microsimulation Models	16SHMI	Simulation and HMI	20ITSR	ITS - R	

Kód	Name					Role
3S-NP-IS-CS-V-21/22	**3. sem. Mgr. prezen ní IS (CS) výb r p edm tu od 2021/22**	**Min. cours. 1 Max. cours. 1**	**Min/Max** 3/3			**Z**

16KSD	Quality and reliability in area ...	20PRZP	Computer aided railway traffic c ...	20TVHD		Telematics in Public Transport

Kód	Name					Role
X2-NP-IS-CS-20/21	**Projekty Mgr. prezen ní IS (CS) od 2020/21**	**Min. cours. 4 Max. cours. 4**	**Min/Max** 27/27			**ZP**

11XN1S	Master project 1 for study progr ...	12XN1S	Master project 1 for study progr ...	14XN1S	Master project 1 for study progr ...
15XN1S	Master project 1 for study progr ...	16XN1S	Master project 1 for study progr ...	17XN1S	Master project 1 for study progr ...
18XN1S	Master project 1 for study progr ...	20XN1S	Master project 1 for study progr ...	21XN1S	Master project 1 for study progr ...
22XN1S	Master project 1 for study progr ...	23XN1S	Master project 1 for study progr ...	11XN2S	Master project 2 for study progr ...
12XN2S	Master project 2 for study progr ...	14XN2S	Master project 2 for study progr ...	15XN2S	Master project 2 for study progr ...
16XN2S	Master project 2 for study progr ...	17XN2S	Master project 2 for study progr ...	18XN2S	Master project 2 for study progr ...
20XN2S	Master project 2 for study progr ...	21XN2S	Master project 2 for study progr ...	22XN2S	Master project 2 for study progr ...
23XN2S	Master project 2 for study progr ...	11XN3S	Master project 3 for study progr ...	12XN3S	Master project 3 for study progr ...
14XN3S	Master project 3 for study progr ...	15XN3S	Master project 3 for study progr ...	16XN3S	Master project 3 for study progr ...
17XN3S	Master project 3 for study progr ...	18XN3S	Master project 3 for study progr ...	20XN3S	Master project 3 for study progr ...
21XN3S	Master project 3 for study progr ...	22XN3S	Master project 3 for study progr ...	23XN3S	Master project 3 for study progr ...

11XN4S	Master project 4 for study progr ...	12XN4S	Master project 4 for study progr ...	14XN4S		Master project 4 for study progr ...				
15XN4S	Master project 4 for study progr ...	16XN4S	Master project 4 for study progr ...	17XN4S		Master project 4 for study progr ...				
18XN4S	Master project 4 for study progr ...	20XN4S	Master project 4 for study progr ...	21XN4S		Master project 4 for study progr ...				
22XN4S	Master project 4 for study progr ...	23XN4S	Master project 4 for study progr ...							

XD-NP-IS-CS-21/22	**DP Mgr. prezen ní IS (CS) od 2021/22**	Min. cours. 1 Max. cours. 1	Min/Max 16/16				z

11XNDS	Master Thesis for study programm ...	12XNDS	Master Thesis for study programm ...	14XNDS	Master Thesis for study programm ...
15XNDS	Master Thesis for study programm ...	16XNDS	Master Thesis for study programm ...	17XNDS	Master Thesis for study programm ...
18XNDS	Master Thesis for study programm ...	20XNDS	Master Thesis for study programm ...	21XNDS	Master Thesis for study programm ...
22XNDS	Master Thesis for study programm ...	23XNDS	Master Thesis for study programm ...		

XP-NP-IS-CS-21/22	**Praxe Mgr. prezen ní IS (CS) od 2021/22**	Min. cours. 1 Max. cours. 1	Min/Max 4/4			z

11XPXS	Training course for study progra ...	12XPXS	Training course for study progra ...	14XPXS	Training course for study progra ...
15XPXS	Training course for study progra ...	16XPXS	Training course for study progra ...	17XPXS	Training course for study progra ...
18XPXS	Training course for study progra ...	20XPXS	Training course for study progra ...	21XPXS	Training course for study progra ...
22XPXS	Training course for study progra ...	23XPXS	Training course for study progra ...		

List of courses of this pass:

Code	Name of the course	Completion	Credits
11MAI	ITS Mathematical Tools	Z,ZK	4
Series, Fourier Series. Discrete Fourier Transform. Segmentation of signals, windows, localization. Short-term Fourier Transform. From Fourier Analysis to PDE. Fundamentals of Numerical Mathematics. Numerical solutions to ODEs and PDEs. Continuous traffic flow models described by PDE. Car-following models as ODEs.			
11MMAD	Mathematical Methods for Data Analysis	Z,ZK	6
Stocastic modelling, estimation, prediction, filtration, control, methods of data analysis: k-means, DBSCAN, naive Bayes, decision trees, support vector machine.			
11XN1S	Master project 1 for study programme IS	Z	5
11XN2S	Master project 2 for study programme IS	Z	6
11XN3S	Master project 3 for study programme IS	Z	6
11XN4S	Master project 4 for study programme IS	Z	10
11XNDS	Master Thesis for study programme IS	Z	16
11XPXS	Training course for study programme IS	Z	4
12TDP	Traffic Flow Theory	Z,ZK	3
Mobility and associated human problems. Basic traffic parameters and their measurement. Estimation of quality of services. Theoretical fundamentals and applications of mathematical models. Macroscopic, statistical and microscopic models. Theory of shock waves, queuing theory and special theory of traffic phenomena. Relation between traffic models and traffic flow management.			
12XN1S	Master project 1 for study programme IS	Z	5
12XN2S	Master project 2 for study programme IS	Z	6
12XN3S	Master project 3 for study programme IS	Z	6
12XN4S	Master project 4 for study programme IS	Z	10
12XNDS	Master Thesis for study programme IS	Z	16
12XPXS	Training course for study programme IS	Z	4
14CITS	C-ITS Systems	Z,ZK	6
Detailed description of C-ITS systems architecture, description of use-cases - urban and rural applications, principles of C-ITS funcionality with focus on data exchange (CAM, DENM, IVI) and C-ITS security architecture. Status quo and modern trends of wireless telecommunication solutions ITS-G5 and LTE-V and description of its properties and specifics. Course will also cover signal processing.			
14MIM	Microsimulation Models	KZ	3
Basic knowledge of traffic modeling and simulation will be broaded by the application of traffic control algorithms to traffic microsimulation models used in ITS. These include, for example, the proposal of algorithms for actuated signal control, pedestrian preference, dynamic network routing, road line traffic control, crossing security equipment, and PT preference. Algorithms will be designed, applied, and tested by students themselves.			
14PAM	Programming and modelling	Z,ZK	4
Object oriented programming, dynamic memory allocation, inheritance, generic programming, STL, abstract data types, programming techniques, recursion, complexity, Lindenmeyer's grammars, paralism in nature and in real systems, paralel computer systems, paralel programming, discrete simulation, models of processes, model types As-Is a To-Be, acquisition of analytical sources for modelling, BPMN language, SW Bizagi, model creation and life cycle.			
14PD	Data processing	Z,ZK	6
Students will learn about tools for data processing and analysis, using practical examples to try out the most common options used in data processing, including advanced options for presenting the results of analyses. In advanced methods, students will also perform specific analysis using Bayesian networks. Students will then independently perform data analysis on data from existing open systems.			

14PPRP	Computer Aided Project Management	KZ	2
What is the project? The basic terms a concepts of project management. Life cycle of the project and its phased approach. Analysis and specification of the assignment, activity definition, stages, objectives and measurability. Risk events and risk planning. Project change management during implementation. Preparation of the project outline (activities, restrictions, assignments, calendars etc.) Project planning and optimization - time, resources.				
14XN1S	Master project 1 for study programme IS	Z	5
14XN2S	Master project 2 for study programme IS	Z	6
14XN3S	Master project 3 for study programme IS	Z	6
14XN4S	Master project 4 for study programme IS	Z	10
14XNDS	Master Thesis for study programme IS	Z	16
14XPXS	Training course for study programme IS	Z	4
15JIA1	Foreign Language - English 1	Z	0
Work on specialised texts and technical terminology. Lexical-grammatical structures of higher command. Formal language. Improvement of communication skills. Active use of foreign language in presentations within students´ specialization field both in verbal and written forms. Language laboratory environment used alternatively as a tool for active learning (Programmes - English Connections, English Library, the Internet).			
15JIA2	Foreign Language - English 2	Z	0
Work on specialised texts and technical terminology. Lexical-grammatical structures of higher command. Formal language. Improvement of communication skills. Active use of foreign language in presentations within students´ specialization field both in verbal and written form. Language laboratory environment used alternatively as a tool for active learning (Programmes - English Connections, English Library, the Internet).			
15JIA3	Foreign Language - English 3	Z	0
Presentation skills - expert technical discourse and style. Analysis of expert texts and their production. Preparation for overseas work engagement. Optional courses for certificates FCE, CAE.			
15JIA4	Foreign Language - English 4	Z	0
Presentation Skills - expert technical discourse and style. Analysis of expert texts and their production. Preparation for overseas work engagement. Optional courses for certificates FCE, CAE.			
15JIF1	Foreign Language - French 1	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIF2	Foreign Language - French 2	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIF3	Foreign Language - French 3	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIF4	Foreign Language - French 4	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIN1	Foreign Language - German 1	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIN2	Foreign Language - German 2	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIN3	Foreign Language - German 3	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIN4	Foreign Language - German 4	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIR1	Foreign Language - Russian 1	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIR2	Foreign Language - Russian 2	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIR3	Foreign Language - Russian 3	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIR4	Foreign Language - Russian 4	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIS1	Foreign Language - Spanish 1	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15JIS2	Foreign Language - Spanish 2	Z	0
Basic structures of Spanish language, communication in everyday life, study, work, leisere time activities, introducing myself, phonetics of Spanish language, writing skills.			
15JIS3	Foreign Language - Spanish 3	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			

Code	Course	Type	Credits
15JIS4	Foreign Language - Spanish 4	Z	0
Basic structures of foreign language, communication in everyday life, study, work, leiser time activities, introducing myself, phonetics of foreign language, writing skills, in advanced groups texts with professional topics.			
15XN1S	Master project 1 for study programme IS	Z	5
15XN2S	Master project 2 for study programme IS	Z	6
15XN3S	Master project 3 for study programme IS	Z	6
15XN4S	Master project 4 for study programme IS	Z	10
15XNDS	Master Thesis for study programme IS	Z	16
15XPXS	Training course for study programme IS	Z	4
16DITS	Vehicles within ITS	Z,ZK	4
Design of the vehicle with focus on its use and function in frame of ITS. User requirement analyses. Economic aspects. Process of constructions in a concept phase, functional dependences and structure of the designed object. Creation of functional models. Energy management and storages for ground vehicles, energy transformations leading to kinetic one. Propulsion systems / traditional and alternative ones. Life-cycle analysis.			
16ESDP	Electronic systems in modern vehicles	Z,ZK	3
Advanced vehicle systems, electromobility, V2I and V2V, autonomous driving. Combustion engine control and electronic control units. Electric propulsion, its components, basic characteristics and control. Management of hybrid propulsion for attaining its optimal efficiency. Vehicle communication bus (CAN, LIN, FlexRay etc.). Safety, communication and comfort electronic vehicle systems. Practical exercises with real and simulated systems.			
16KSD	Quality and reliability in area of transportation means and systems	Z,ZK	3
Quality methods used for design, manufacturing and operation. Methods QFD, DFM, DFA, DFS. Longtime testing. FMEA method. Operation reliability. Methods for process optimizing, process design and quality improvement (Six Sigma etc.). Certification and accreditation, quality management, tools and methods for quality stabilization and improvement. Students will work on real problems in the QFD laboratory.			
16SHMI	Simulation and HMI	Z,ZK	3
Simulation for the systems in transportation and vehicle systems. User interface, HMI (human-machine interaction), virtual reality and computer graphics for ITS. Simulation theory with application of computing equipment. Creating computing models. Mechanic and dynamic systems and their mathematical models. Simulation of vehicle dynamics, on-land carriage in particular. Virtual reality systems.			
16XN1S	Master project 1 for study programme IS	Z	5
16XN2S	Master project 2 for study programme IS	Z	6
16XN3S	Master project 3 for study programme IS	Z	6
16XN4S	Master project 4 for study programme IS	Z	10
16XNDS	Master Thesis for study programme IS	Z	16
16XPXS	Training course for study programme IS	Z	4
17XN1S	Master project 1 for study programme IS	Z	5
17XN2S	Master project 2 for study programme IS	Z	6
17XN3S	Master project 3 for study programme IS	Z	6
17XN4S	Master project 4 for study programme IS	Z	10
17XNDS	Master Thesis for study programme IS	Z	16
17XPXS	Training course for study programme IS	Z	4
18XN1S	Master project 1 for study programme IS	Z	5
18XN2S	Master project 2 for study programme IS	Z	6
18XN3S	Master project 3 for study programme IS	Z	6
18XN4S	Master project 4 for study programme IS	Z	10
18XNDS	Master Thesis for study programme IS	Z	16
18XPXS	Training course for study programme IS	Z	4
20AIMI	Application of ITS in Urban Engineering	Z,ZK	6
The course focuses mainly on the issue of the installation of engineering networks in the area, coordination of engineering activities in the area, organization of the public space, concept of public space solutions, design of systems for traffic and transport telematics management, coordination of transport modes - automobil, pedestrian, MHD, cyclo, modes etc. New approaches to the development of Smart and green approaches Promoting into Public.			
20BITS	Safety and reliability of ITS Systems	KZ	3
The basic concepts of safety and reliability in the job and application. Basic schema and types of diagnostic systems including reliability diagnostics of technical equipment and ITS. Investigation of acceptability and reliability prediction, traffic crity and sensitivity analysis. Neural Networks and other optimization algorithms and ETA, FMEA failure analysis. HMI in traffic including operator testing on simulator and in real-world situatiation			
20GINS	Geographical, information, localization and navigation systems	Z,ZK	6
The subject is specialized in problems of work with applications of geographic information systems with special attention to the specialization in the field of transport and telecommunication. It introduces students to geographic data management practices and tools, real world modeling, geographic data storage models, data entry and digitization methods, and a number of other GIS related technologies such as problem mapping, webmap, etc.			
20HEI	Evaluation and Economics of ITS	KZ	3
Introduction of subject is devoted to the basics of system approach to development of ITS architecture and fundamentals in the field of economic attributes connected with development of ITS. Subsequently, the basic principles of system and application creation in the technical field are discussed, defining the penetration of the technical solution into the economy. The subject is terminated by a detailed breakdown of case studies.			
20ITSR	ITS - R	Z,ZK	3
The introduction is devoted to description of the architecture and interface of the system with the ITS-R concept, the communication interface of the system, principles of ensuring functional and security features are defined. The principles of ERTMS / ETCS application level 3, UGTMS, CBTC are discussed in detail. Current and future communication technologies are described.			
20MZZ	Modern techniques of safety control of moving railway vehicles	Z,ZK	3
ERTMS / ETCS concepts, ETCS architecture and interface descriptions, ERTMS system level, infrastructure and mobile part of the system, linking to stationary security systems, operating and application modes of the system, infrastructure orientation, interface (DMI), integration of the ETCS mobile part into the driving vehicle, GSM-R functional specification, testing and legislation.			

Code	Name		Exam	Credits
20PRZP	Computer aided railway traffic control		Z,ZK	3
	Introduction is devoted to clarifying the reasons and basic principles of automation of the management of railway transport. It explains the structure of railway traffic management, including the main principles applied in the management of railway traffic. The main part is devoted to detailed description of the individual components of the system, which must be included in the systems for automation of railway traffic control using computer technologies.			
20SYIN	System Engineering		Z,ZK	6
	Enhanced system definition in engineering tasks, specification of selected system types against related tools of system analysis and design, refinement of selected types of system engineering tasks, definition of system strategy, connection to science-based methodological basics of transport, strategic thinking processes, strategic management system, context of sustainable development.			
20TBSS	Technology and Security of Sensor Networks		KZ	2
	Basic concepts of safety and reliability in transport and its application. Basic scheme and types of diagnostic systems, including reliability diagnostics of technological equipment and ITS. Investigation of the area of acceptability and prediction of reliability, sensitivity in transport and sensitivity analysis. Neural networks and other optimization algorithms and fault analysis ETA, FMEA. HMI in transport, including operator testing on a simulator and in real situations.			
20TSJ	Telematic systems and their design		Z,ZK	6
	Gradual detailed analysis of individual existing telematics systems in modes of transport, such as toll systems, vehicle weighing, fleet management, traffic management, etc.			
20TVHD	Telematics in Public Transport		Z,ZK	3
	Ticketing and information systems; foreinght experiences; vehicle technology; dispatching systems; Information Systems; data structures; clearing; Public Transport preferences; vehicle position monitoring; legislative framework; standardization, certification and interoperability.			
20XN1S	Master project 1 for study programme IS		Z	5
20XN2S	Master project 2 for study programme IS		Z	6
20XN3S	Master project 3 for study programme IS		Z	6
20XN4S	Master project 4 for study programme IS		Z	10
20XNDS	Master Thesis for study programme IS		Z	16
20XPXS	Training course for study programme IS		Z	4
21XN1S	Master project 1 for study programme IS		Z	5
21XN2S	Master project 2 for study programme IS		Z	6
21XN3S	Master project 3 for study programme IS		Z	6
21XN4S	Master project 4 for study programme IS		Z	10
21XNDS	Master Thesis for study programme IS		Z	16
21XPXS	Training course for study programme IS		Z	4
22XN1S	Master project 1 for study programme IS		Z	5
22XN2S	Master project 2 for study programme IS		Z	6
22XN3S	Master project 3 for study programme IS		Z	6
22XN4S	Master project 4 for study programme IS		Z	10
22XNDS	Master Thesis for study programme IS		Z	16
22XPXS	Training course for study programme IS		Z	4
23XN1S	Master project 1 for study programme IS		Z	5
23XN2S	Master project 2 for study programme IS		Z	6
23XN3S	Master project 3 for study programme IS		Z	6
23XN4S	Master project 4 for study programme IS		Z	10
23XNDS	Master Thesis for study programme IS		Z	16
23XPXS	Training course for study programme IS		Z	4

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