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### Study programme "Transport"

#### Main attributes

Title	Transport
Identification code	MDT0
Education classification code	51525
Level and type	Doctoral Study
Higher education study field	Mechanics and Metal Working, Heat Power, Heat Engineering and Mechanical Engineering
Head of the study field	Aldis Balodis
Department responsible	Faculty of Mechanical Engineering, Transport and Aeronautics
Head of the study programme	Ilmārs Blumbergs
Professional classification code	
The type of study programme	Full time, Extramural
Language	Latvian, English
Accreditation	29.05.2013 - 30.06.2022; Accreditation certificate No 2020/43
Variant 1	
Volume (credit points)	192.0
Duration of studies (years)	Full time studies - 4,0; Extramural - 5,0
Degree or/and qualification to be obtained	.
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	.
Variant 2	
Volume (credit points)	192.0
Duration of studies (years)	Full time studies - 4,0; Extramural - 5,0
Degree or/and qualification to be obtained	.
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	.
Variant 3	
Volume (credit points)	192.0
Duration of studies (years)	Full time studies - 4,0; Extramural - 5,0
Degree or/and qualification to be obtained	.
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	.
Variant 4	
Volume (credit points)	192.0
Duration of studies (years)	Full time studies - 4,0; Extramural - 5,0
Degree or/and qualification to be obtained	.
Qualification level to be obtained	The 8th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	.

#### Description

Abstract	<p>Engineering doctoral study program "Transport" (sub-branch: "Auto Transport") is a higher level study program in the field of transport and communication science. The doctoral study program is implemented by the Institute of Aeronautics of RTU Faculty of Transport and Mechanical Engineering. To provide a high quality methodical control over the study program content and implementation, the program is attached to the branch of mechanical engineering and transport. The study program "Transport" is implemented in cooperation with other structural units of RTU FTME.</p> <p>The duration of studies is 4 years; the scope of the program is 192 CP.</p> <p>The doctoral study program envisages the acquisition of theoretical subjects of fundamental nature and specialized subjects of narrow specialization, which are appropriate to the branch, as well as humanities and foreign languages. The contents of program subjects are regularly improved by completing the study process with the newest and most effective methods and principles of study process organization. Doctoral students work according to individual work plans developed for each academic year. Pedagogical work is an obligatory part of the plan. To acquire pedagogical skills and experience, the doctoral students of the study program are involved in the process of teaching by lecturing separate subjects to bachelor students, supervising laboratory, practical and course works, checking and assessing study and examination works. Doctoral students are offered to study abroad for different time periods as a result of which they get additional qualifications of different levels. Study courses of appropriate level and scope, which are acquired abroad, can be equated with and included into the doctoral study program</p>
Aim	<p>The goal of the doctoral study program "Transport" is to train highly skilled scientists in the field of transport and communication engineering, i.e. professionals able to perform pedagogical and scientific work, solve problems related to scientific innovations, provide the renovation of transport branch infrastructure and supply higher education and scientific research institutions with personnel.</p>
Tasks	<p>The objectives of the doctoral study program "Transport" are as follows:</p> <ul style="list-style-type: none"> <li>-to provide in-depth theoretical knowledge in the fundamental directions of transport and communication branch;</li> <li>-to provide the ability to carry out scientific-research;</li> <li>-to provide the ability to formulate and independently solve scientific problems;</li> <li>-to provide skills for scientific discussions about the work topics and acquire the ability to enter discussions on other scientific topics of the field;</li> <li>-to provide knowledge about innovative technical methods (training, studying, experience, science, techniques, technology, manufacturing);</li> <li>-to provide knowledge and skills to perform pedagogical work;</li> <li>-to consolidate the knowledge of foreign languages;</li> <li>-to foster scientific research of international significance and performances at international conferences and seminars.</li> </ul>
Learning outcomes	<p>Knowledge (knowledge and understanding) Students can prove that they know and understand the most topical scientific theories and facts related to mechanics, engineering and transport and communication, know modern scientific research methodology and methods in the professional field and in relation to other fields of science.</p> <p>Skills (ability to use knowledge, communication, general skills) Students can independently evaluate and select the methods that are appropriate to scientific research into transport and communication or mechanics and engineering.</p> <p>The achieved results give a new understanding of existing knowledge and its practical application, and help to implement voluminous original research a part of which can reach the level of internationally quoted publications.</p> <p>Students can communicate, both orally and in written form, with scientific circles and society in general about their own field of scientific activity, computer simulation and optimization of transport systems functioning, automated methods of designed products optimization, technological methods of vehicle safety improvement, calculation and design methods for vehicle precision modular systems.</p> <p>Students can independently upgrade their scientific qualification and carry out scientific projects in the field of transport and engineering with achievements that correspond to the international criteria of the science branch.</p> <p>Students can manage research or development tasks at transport systems enterprises, institutions and organizations where wide research knowledge and skills are required.</p> <p>Competence (analysis, synthesis and evaluation) By applying independent critical analysis, synthesis and evaluation, students can solve important research or innovation problems in the field of transport systems.</p> <p>Students can independently propose a research idea, structure and manage large-scale scientific projects including those on an international scale.</p>
Final/state examination procedure, assessment	<p>The doctoral study program envisages the acquisition of a theoretical course, mastery of practical skills through scientific and pedagogical work and independent development of a dissertation under the supervision of an experienced scientist, i.e. dissertation project adviser.</p> <p>The dissertation contains original results of scientific research and new developments in the field of transport and communication. The doctoral degree in science is awarded after successful public defence of a dissertation in the Dissertation Council. A doctoral student gets a doctoral degree in engineering.</p>
Description of the future employment	<p>As a result of doctoral studies a student gets knowledge for further pedagogical work in higher education institutions, scientific research institutions and companies.</p>
Special enrollment requirements	<p>Professional Master's degree in transport and communication or mechanics and engineering, or an equivalent academic degree or qualification the equalization of which has been accepted by the institute's council responsible for the branch or by FTME Heads Council.</p>
Opportunity to continue studies	N/A

Courses

No	Code	Name	C.p. [1]	C.p. [2]	C.p. [3]	C.p. [4]
<b>A</b>		<b>Compulsory study courses</b>	<b>15.0</b>			
1	EDE611	Design and Analysis of Experiments	5.0			
2	MAA608	Transport vehicle design reliability and ecology	10.0			
<b>B</b>		<b>Compulsory elective study courses</b>	<b>21.0</b>			
<b>B1</b>		<b>Field-specific study course</b>	<b>21.0</b>			
1	TST601	Logistics Systems in Transportation	5.0			
2	TST604	Modern Technologies of Damage Diagnostics in Transport Machines	5.0			
3	EDE603	Traffic Flow Theory	10.0			
4	EDE601	Computer-aided Transport Systems	5.0			
5	MAA603	Vehicle Crash Mechanics	5.0			
6	MAA604	Vehicular Accident Investigation and Reconstruction	5.0			
7	MAA606	Dynamics of Vehicle and Road System	5.0			
8	MAA605	Vehicle Transmissions and Suspensions	5.0			
9	MAA609	Scientific Seminar in Road Transport	6.0			
<b>C</b>		<b>Free elective study courses</b>	<b>6.0</b>			
<b>E</b>		<b>Final examination</b>	<b>150.0</b>			
1	MAA009	Research Work	150.0			
<b>A</b>		<b>Compulsory study courses</b>		<b>15.0</b>		
1	EDR612	Application of Mass Service Theory Elements to Transport		10.0		
2	EDR613	Technology of Transport Logistic System		5.0		
<b>B</b>		<b>Compulsory elective study courses</b>		<b>21.0</b>		
<b>B1</b>		<b>Field-specific study course</b>		<b>21.0</b>		
1	EDR605	Dynamic Loading of Rolling Stock Units		10.0		
2	EDR606	Horizontal Dynamic of Rolling Stock		10.0		
3	EDR607	Dynamics of Locomotive Traction Drive		5.0		
4	EDR608	Vibroacoustic diagnostics of rolling stock		5.0		
5	EDR609	Rail Track Safety and its Management		10.0		
6	EDR610	Rail Track Calculation		5.0		
7	EDR611	Analysis of Railway Stations and Divisions Interaction		10.0		
8	EDR614	Statistical Theory of Train Traffic Safety		5.0		
9	EDR615	Train Flow Optimization		5.0		
10	EDE611	Design and Analysis of Experiments		5.0		
11	EDE614	Computer Design Systems in Transportation		3.0		
12	MTM636	Design and Analysis of Engineering Experiments		2.0		
13	EDR600	Scientific Seminars		4.0		
14	EEP601	Patents		2.0		
<b>C</b>		<b>Free elective study courses</b>		<b>6.0</b>		
<b>E</b>		<b>Final examination</b>		<b>150.0</b>		
1	EDR009	Research Work		150.0		
<b>A</b>		<b>Compulsory study courses</b>			<b>15.0</b>	
1	TAK604	Computer mathematics for aviation transport problem solving			5.0	
2	TAK605	Mathematical rationale for aviation transport maintenance			5.0	
3	TAK606	Experimental design and statistical treatment of experimental data			5.0	
<b>B</b>		<b>Compulsory elective study courses</b>			<b>21.0</b>	
<b>B1</b>		<b>Field-specific study course</b>			<b>21.0</b>	
1	TAE604	Aviation Standards and Flight Regulations			5.0	
2	TAS602	Fatigue, Corrosion and Wear of Airframe Structures			10.0	
3	TAS603	Technical Diagnostics and Nondestructive Methods of Control			10.0	
4	TAS604	Computer Methods of Structural Calculation			5.0	
5	TAS605	Computer Experiments and Simulation in Aerodynamics			5.0	
6	TAS601	Dynamics, Strength and Fatigue Durability of Aviation Structures.			10.0	
7	TAS606	Modern CAD/CFD Technologies in Aerogasthermodynamics			5.0	
8	TAS702	Scientific Seminar			6.0	
9	TAD602	Simulation and Calculation of Characteristics of Heat Engines			10.0	
10	TAK607	Loads, Resources, Survivability			5.0	
11	TAL601	Computing methods for calculation of aerodynamic problems			15.0	
12	TAE608	Management of Maintenance Processes			5.0	
13	TAA604	Gyro Attitude Director Instruments Errors Analysis			5.0	

14	TAE606	Contact Mechanics			10.0	
15	TAE605	Active methods of the flights safety ensuring			10.0	
16	TAK608	Probability Failure Models			10.0	
17	TAK609	Structure Endurance of Composite Materials			10.0	
18	TAK610	Fracture Mechanics of Composite Materials			5.0	
19	TAD601	Performances of Heat Engines and their Account Methods			15.0	
<b>C</b>		<b>Free elective study courses</b>			<b>6.0</b>	
<b>E</b>		<b>Final examination</b>			<b>150.0</b>	
1	TAK009	Research Work			150.0	
2	TAA009	Research Work			150.0	
3	TAE009	Research Work			150.0	
4	TAS009	Doctoral thesis			150.0	
<b>A</b>		<b>Compulsory study courses</b>				<b>15.0</b>
1	TRR601	Vehicle Maintenance Reliability			4.0	
2	TST601	Logistics Systems in Transportation			5.0	
3	TLK601	Computer Analysis and Calculation of Operational Characteristics of Transport Machines			6.0	
<b>B</b>		<b>Compulsory elective study courses</b>				<b>21.0</b>
<b>B1</b>		<b>Field-specific study course</b>				<b>21.0</b>
1	TST604	Modern Technologies of Damage Diagnostics in Transport Machines			5.0	
2	TST603	Calculation and Design of Vehicle Precision Modular Systems			5.0	
3	TST602	Computer Simulation and Optimization of Transportation Systems Functioning			5.0	
4	TLK603	Computer Analysis of Damaged Construction Dynamics			5.0	
5	TLK602	Transport Machine Oscillation Damping			5.0	
6	TDM603	Automated Methods of Optimization of Designed Articles			5.0	
7	TDM602	Computer Simulation and Calculation of Engineering Problems of Hydro-gas-thermodynamics			5.0	
8	TRR602	Technological Methods of Increasing Vehicle Reliability			5.0	
9	TDT601	Scientific Seminar			6.0	
10	EEI603	Supervising of Scientific Project			2.0	
11	TST404	Fundamentals of Research			2.0	
12	EEP601	Patents			2.0	
<b>C</b>		<b>Free elective study courses</b>			<b>6.0</b>	
<b>E</b>		<b>Final examination</b>			<b>150.0</b>	
1	TST009	Research Work			150.0	
2	TRR009	Doctoral Thesis			150.0	
3	TMN009	Research Work			150.0	

*K.p.[\*] kredītpunkti studiju programmas variantā*