

Study programme "Railway Electrical Systems"

Main attributes

Title	Railway Electrical Systems
Identification code	EGZ0
Education classification code	47522
Level and type	Professional Master (Second Cycle) Studies
Higher education study field	Power and Electrical Engineering, Electrical Technologies
Head of the study field	Oskars Krievs
Deputy head of the study field	Pāvels Gavrilovs
Department responsible	Faculty of Mechanical Engineering, Transport and Aeronautics
Head of the study programme	Mihails Gorobecs
Professional classification code	
The type of study programme	Full time, Extramural
Language	Latvian, English
Accreditation	29.05.2013 - 30.06.2022; Accreditation certificate No 2020/40
Variant 1	
Volume (credit points)	60.0
Duration of studies (years)	Full time studies - 1,5; Extramural - 2,0
Degree or/and qualification to be obtained	Professional Master Degree in Railway Electrical Systems
Qualification level to be obtained	The 7th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Professional Bachelor Degree in Railway Electrical Systems and/or Qualification of Engineer in Railway Electrical Systems, or comparable education
Variant 2	
Volume (credit points)	120.0
Duration of studies (years)	Full time studies - 3,0; Extramural - 4,0
Degree or/and qualification to be obtained	Professional Master Degree in Railway Electrical Systems and Qualification of Engineer in Railway Electrical Systems
Qualification level to be obtained	The 7th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF); the 7th level of professional qualification
Programme prerequisites	Bachelor Degree of Engineering Science in Electrical Science

Description

Abstract	The submitted program is developed to provide opportunity to continue studies to the students with Bachelor professional degree and/or the 5th level of professional qualification in the field of railway electrical systems and with Bachelor academic degree in electrical systems. The program of professional Master studies contains 60 credit points with the duration of teaching of 1.5 years, or 120 credit points with the durations of teaching of 3 years at the full-time studies, and 2 or 3,5 years correspondingly for the part-time (extra-mural) studies.
Aim	The goal of the program is to educate and train specialists in the field of railway transport for the systems design and scientific work at an internationally recognized level. Master Paper is a research work in the study domain of the proper specialization of railway electrical systems. The purpose of the work is to teach to generalize accessible information, to independently conduct necessary research and analysis of a new device of railway transport, investigating the processes and algorithms. Master Paper with a design project part foresees a detailed elaboration of the project in the field of railway transport.
Tasks	The general tasks of the professional Master study programme "Railway Electrical Systems" are: - to ensure a competitive education corresponding to Master level and international standards in the field of railway electrical systems, in the area of quality assessment; - to ensure amendments to the content, learning process, research development in line with the changes in the field of railway electrical systems assessment in international practice, practical science and didactics; - to develop an interest in continuing education and development, further perfection of academic and professional knowledge, undertaking doctoral studies, to develop scientific research skills and encourage their practical use; - to stimulate students' interest in social processes, to stimulate students' development as positive, modern, reliable and capable personalities who can act independently, evaluate risks and make autonomous decisions; - to encourage interaction between the academic staff and students in the development of research work and practical use of the research results in accordance with international standards and trends in the field of quality management, to promote and develop academic staff and student exchange and participation in international projects.

Learning outcomes	<ul style="list-style-type: none"> •ability to produce and realize the systems that ensure the functioning of railway transport infrastructure , which ensure safety of railway operation and efficient transportation of cargo and passengers; •ability to analyse, repair and service electrical systems, and integrate them into exploitation of railway transport: •railway automatic and telematic systems; •railway electric power supply systems; •ability to evaluate, optimize and design railway electrical systems using modern Information Necessary knowledge and research qualification obtained as a result of the studies: •in design and elaboration of railway transport and electrical systems; •scientific research to be further implemented in practice in the industry of railway electrical systems; •experimental research in the field of railway electrical systems and electronics. <p>The education also is foreseen to provide knowledge that forms the necessary level of culture and intelligentsia, allowing taking part in public activity, to communicate with Latvian and foreign academic communities, to continue studies at the doctoral study programme.</p>
Final/state examination procedure, assessment	<p>Master Paper with design project part and Master Paper are defended in public. The paper is valued by a commission consisting of a chairman, secretary and not less than 3 members. The chairman of the qualification commission is invited from leading specialists of correspondent domain of the field of railway transport, but a half of the members of the commission are highly qualified specialists in the field of railway transport.</p> <p>Master Paper and defence of the paper demonstrate student's competence:</p> <ul style="list-style-type: none"> •in design and elaboration of electrical systems of the railway transport; •scientific research to be further implemented in practice in the industry of railway electrical systems; •experimental research in the field of railway electrical systems and electronics branch.
Description of the future employment	<p>Depending on the previous education of university entrants the length of the Master study program is 1.5 years and 3 years. Basic theoretical subjects of railway electrical systems are mastered in the first year of the 1.5 year studies, actively using computer software and their mathematical backing.</p> <p>Within the study program "Railway Electrical Systems" possibilities of additional teaching are given to the students, using the subjects of obligatory and free choice envisaged in the program, and the volume of which is determined with the resolution of RTU Senate. The subjects of obligatory choice in the program of professional studies enable to choose one of the foreign languages (English, German, French), and also humanitarian and social subjects. The volume of the subjects of free choice allows receiving additional education in humanitarian and social sciences.</p>
Special enrollment requirements	<p>Candidate's admission to the program financed by state budget resources occurs in open and equal competition basis, after Bachelor studies or professional Bachelor studies.</p>
Opportunity to continue studies	<p>It is possible to continue studies at EEF Doctoral studies program "Computerized control of electrical technologies" as well as at any other doctoral programs implemented at Latvian high schools.</p>

Courses

No	Code	Name	C.p. [1]	C.p. [2]
A		Compulsory Study Courses	18.0	33.0
1	EDE519	Optimal Control of Transport Systems	4.0	4.0
2	EDE511	Monitoring and Diagnostics Microprocessor Systems of Dynamic Objects	4.0	4.0
3	EDE453	Telemechanic Control Systems	4.0	4.0
4	EDE614	Computer Design Systems in Transportation	3.0	3.0
5	EDE613	Distribution Data Processing Systems	3.0	3.0
6	EDE514	Transportation Equipment Computer Design		3.0
7	EDE456	Railway Transportation Microprocessor Systems		3.0
8	EDE442	Safety of Railway Technical Systems		3.0
9	EDE475	Railway Transportation Microprocessor Systems (study project)		2.0
10	EDE477	Railway Technical Systems Safety (study project)		2.0
11	EDE524	Transportation Equipment Computer Design (study project)		2.0
B		Compulsory Elective Study Courses	12.0	23.0
B1		Field-Specific Study Courses	8.0	19.0
			8.0	19.0
1	EDE543	Railway Automatic and Telemechanic System Design	6.0	6.0
2	EDE513	Railway Haulage Operation Computer Aided Technologies	6.0	6.0
3	EDE444	Technical Diagnostics of Railway AT Equipment	3.0	3.0
4	EEP586	Innovation Strategy Management	3.0	3.0
5	EDE515	Dispatcher Operated Information Technologies in Railway Transportation	2.0	2.0
6	EDE474	Information Technologies Management	2.0	2.0
7	EDE485	Railway Communication Systems	2.0	2.0
8	EDE221	Railway Automatic & Telemechanic Lines		3.0
9	EDE401	Electronic Safety Systems for Railway Transport		3.0
10	EDE516	Train Traffic Interval Regulation Systems		5.0
11	EDE517	Information Operation & Control Systems in Stations		5.0
12	EDE508	Railway Computer Networks Administration		4.0
			8.0	19.0
0	EDR552	Calculation of Traction Performance	3.0	3.0
1	EDE559	Railway Transport Traction Equipment	3.0	3.0
2	EEP504	Microprocessors - based Automation Systems	3.0	3.0
3	EDE579	Technical Diagnostics of Railway Electrical Equipment	2.0	2.0
4	EDE577	Electric Trains Automation	2.0	2.0
5	EDE474	Information Technologies Management	2.0	2.0
6	EDE471	Traction Substations		4.0
7	EDE487	Contact Lines for Electrical Transport		4.0
8	EDE455	Railway Electric Power Supply		4.0
9	EDE384	Electric Train Control Systems		4.0
10	EDE518	Nondestructive Control in Railway Transportation		4.0
B5		Pedagogical and Psychological Sciences Study Courses	4.0	4.0
1	HSP484	Psychology	2.0	2.0
2	HSP446	Pedagogy	2.0	2.0
3	HSP485	Communication Psychology	2.0	2.0
4	HFL433	Presentation Skills	2.0	2.0
C		Free Elective Study Courses	4.0	4.0
D		Practical Placement	6.0	32.0
1	EDE703	Practical Placement	6.0	
2	EDE010	Practical Placement		32.0
E		Final Examination	20.0	28.0
1	EDE002	Master Thesis	20.0	
2	EDE011	Master Thesis Including a Design Project		28.0

K.p.[*] kredītpunkti studiju programmas variantā