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Study programme "Railway Engineering"

Main attributes

Title	Railway Engineering
Identification code	MGH0
Education classification code	47525
Level and type	Professional Master Study
Higher education study field	Mechanics and Metal Processing, Heat Power Engineering, Heat Technology, and Mechanical Engineering
Head of the study field	Aldis Balodis
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, Part time, Extramural
Language	Latvian, English
Accreditation	16.11.2022 - 17.11.2028; Accreditation certificate No 2022/30-A
Variant 1	
Volume (credit points)	40.0
Duration of studies (years)	Full time studies - 1,0; Part time studies - 1,5; Extramural - 1,5
Degree or/and qualification to be obtained	Professional master degree in railway transport / railway technology engineer
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 or professional bachelor degree in railway transport, or comparable education
Variant 2	
Volume (credit points)	80.0
Duration of studies (years)	Full time studies - 2,0; Part time studies - 3,0; Extramural - 3,0
Degree or/and qualification to be obtained	Professional master degree in railway transport / railway technology engineer
Qualification level to be obtained	The 7th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)
Programme prerequisites	Professional bachelor degree in engineering sciences or comparable education

Description

Abstract	By learning this study programme, you will have the opportunity to strengthen and deepen theoretical knowledge of rail transport processes, to apply skills in research, to develop advanced technological systems and technologies, and to develop research projects. The first year of the studies will include study courses for the theoretical basis of the railway sector, widely used computer software and its mathematical grounds, as well as compulsory study courses, pedagogy and psychology, as well as free-choice study courses. The second year of study is dedicated to internship and the development of a master's thesis.
Aim	The aim of the study programme is to provide students with the opportunity to acquire professional skills in railway technologies, in accordance with the professional standard, providing theoretical knowledge and competencies in the organization of work in transport companies, optimization of control processes and project management of technological system research and development.
Tasks	The tasks of the study programme: - to ensure competitive training in the field of the railway on the level of master studies and in accordance with international standards; - to ensure the development of the content of the study programme, study process, scientific research work and changes in conformity with changes in the field of rail transport, international practice, science and didactics practice; - to promote the interest of students in further vocational development, supplementing academic knowledge, to continue their education at the PhD studies, developing research skills and facilitating their use; - to promote students' interest in community processes, stimulate student development into a positive, modern, responsible, ethical and capacity-building personality that can act independently and make decisions; - to develop practical use of research work and its results in the field of rail transport by academic staff and students; - to promote international mobility and participation in projects.

Learning outcomes	<p>Graduate of the study programme:</p> <ul style="list-style-type: none"> - is able to effectively plan and manage the introduction of innovative management systems, promoting transport integration and EU railway integration processes and evaluate perspectives of railway transport system development; - is competent to manage the railway transport system and their strategic engineering development plans and programs, implementation of strategic and operative plans of railway traffic organization, projects for modernization of railway transport system equipment and technical means, plan and organize the work of a team; - is able to assess the general efficiency and safety of a railway transport system, as well as opportunities for its optimization; - is competent to optimize operations and management of maintenance, repair and service of the railway transport infrastructure, technical means and special equipment, freight and passenger transportation and infrastructure maintenance related areas using innovative automation and computerization methods, efficiently use information technologies; - is able to organize expertise testing of the technical railway means, equipment and services, risk management and certification and take part in the development and introduction of standards and norms and regulations in the field of railway transport; - is competent to review research and analyses, develop publications and professional advancement training programs, improve informative, research and learning materials in railway transport and present them at conferences/seminars in railway transport.
Final/state examination procedure, assessment	The defence of Master's thesis takes place orally. The master's thesis is being evaluated by a commission composed of the head of the department (group of professors), the thesis supervisor and a reviewer appointed by the head of the department (group of professors) and two leading specialists in the railway sector.
Description of the future employment	Graduates of the study programme may work in railway sector, as well as research and educational institutions, which carry out development and maintenance of efficient technological system and processes for rail transport.
Special enrollment requirements	English language proficiency equivalent to at least CEFR B2 level.
Opportunity to continue studies	Graduates can continue their studies in the doctoral study programme "Transport", as well as in other doctoral level study programmes of RTU or other universities, which are intended for studies after obtaining a master's degree.

Courses

No	Code	Name	C.p. [1]	C.p. [2]
A		Compulsory Study Courses	6.0	24.0
1	EDE519	Optimal Control of Transport Systems	4.0	4.0
2	EDR490	Railway Enterprise Organization and Management	2.0	2.0
3	MDI711	Transportation System Computer Design and Programming (study project)		8.0
4	MDI712	Rolling Stock Structure and Traction		5.0
5	MDI715	Railway Stations, Hubs and Train Traffic Organization		5.0
B		Compulsory Elective Study Courses	8.0	30.0
B1		Field-Specific Study Courses	4.0	24.0
1	MDI551	Digitalized Optimization Methods of Transport Logistics	4.0	4.0
2	EDE572	Theory of Optimal Solutions	4.0	4.0
3	MDI701	Transport Task Projects Planning and Management	4.0	4.0
4	EDR582	Operation Optimization	4.0	4.0
5	EDR585	Freight Work Optimization	4.0	4.0
6	MDI487	Railway Commercial Activity Organization	4.0	4.0
7	MDI710	Railway Microprocessor Systems (study project)		5.0
8	MDI714	Transport Communication Systems		5.0
9	EDR486	Operation Technology and Management		5.0
10	MDI716	Technology of Transport Logistic Systems (study project)		5.0
11	MDI717	Algorithmization and Optimization Methods in Transport Tasks		5.0
12	MDI720	Electrical Machines and Electrical Devices of Rolling Stock		5.0
B2		Humanities and Social Sciences Study Courses	2.0	4.0
1	HSP485	Communication Psychology	2.0	2.0
2	ETH702	Communication and Presentation Skills	2.0	2.0
0	HSP446	Pedagogy	2.0	2.0
1	HSP375	Sociology of Management		2.0
2	HSP376	Sociology of Personalities and Small Groups		2.0
3	HSP378	Politology		2.0
4	HPS120	Basics of Communication		2.0
5	IUV101	Fundamentals of Law		2.0
B6		Languages	2.0	2.0
1	VID705	Special English	2.0	2.0
2	HDG402	Special English	2.0	2.0
D		Practical Placement	6.0	6.0
1	EDR705	Practical Work	6.0	6.0
E		Final Examination	20.0	20.0
1	EDR002	Master's Thesis	20.0	20.0

K.p.[] kredītpunkti studiju programmas variantā*