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Study programme "Railway Engineering"

Main attributes				
Title	Railway Engineering			
Identification code	МСН0			
Education classification code	42525			
Level and type	Professional Bachelor (First Cycle) Studies			
Higher education study field	Mechanics and Metal Processing, Heat Power Engineering, Heat Technology, and Mechanical Engineer			
Head of the study field	Marina Čerpinska			
Department responsible	Faculty of Civil and Mechanical Engineering			
Head of the study programme	Mihails Gorobecs			
Professional classification code	2149 27			
The type of study programme	Full time, Part time			
Language	Latvian, English			
Accreditation	16.11.2022 - 17.11.2028; Accreditation certificate No 2022/30-A			
Volume (credit points)	240.0			
Duration of studies (years)	Full time studies - 4,0; Part time studies - 5,0			
Degree or/and qualification to be obtained Professional bachelor degree in railway transport / railway transport engineer				
Qualification level to be obtained	The 6th level of European Qualifications Framework (EQF) and Latvian Qualifications Framework (LQF)			
Programme prerequisites	Secondary education			
Description				
Abstract	The RTU is the only higher education institution in Latvia preparing highly qualified specialists in the railway sector. The study programme is unique and provides a theoretical and practical basis that will allow graduates to work in railway transport companies, organisations, as well as research or educational institutions. The study programme includes study courses of general education, theoretical sector training, professional specialisation of the sector, free choice and humanitarian/social subjects, foreign languages. Practice is one of the most important components of the vocational study programme.			
Aim	The aim of the study programme is to provide students with the opportunity to acquire professional skills in the field of railway engineering, in accordance with the professional standard, providing theoretical knowledge and competencies in transport information, communication and artificial intelligence (ICT), in driverless vehicle technologies and in programming, design and development of computerized and robotic transport control systems.			
Tasks	The tasks of the study programme: - to ensure competitive training in the railway sector at the level of Bachelor's studies and in accordance with international standards; - to ensure the development and changes of the study content, study process and research in line with developments in the field of rail transport, international practice, science and didactics practices; - to promote the interest of students in further vocational development, supplementing academic knowledge, and continuing studies at the Master's level, developing research skills and promoting their use; - to develop students' ICT and programming skills in line with the current and future trends in railway digitalization, computerization and self-driving train management; - 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 the 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 the projects.			

Learning outcomes	Graduate of the study programme is: - able to improve an integrated and balanced railway system, design and develop advanced railway transport engineering systems and technologies, which can be incorporated in the existing railway system, thus promoting transport integration processes; - competent to promote introduction of newest technologies at a railway transport enterprise and carry out research, implement development and improvement measures and innovations; - able to analyse the functioning of the engineering and technical processes in railway transport and evaluate efficiency of technological processes in the railway transport systems; - competent to promote efficient use of internal logistics and IT in the management of engineering railway transport systems and technologies, and model the functioning of the railway transport systems and analyze work processes with the help of relevant hardware; - able to develop and improve long-term and mid-term railway transport systems and their technical development strategies, plans and programs, as well as to develop strategic and operative plans of railway traffic organization; - competent to develop and improve functional railway transport infrastructure systems, which ensure efficient and safe freight and passenger transportation, to develop advanced traffic organization solutions, automation and computerization tools in railway transport systems; - able to design railway transport infrastructure and technical means, improve maintenance and repair technologies in accordance with the requirements of the regulatory enactments and technical documentation, develop technical and design documentation in accordance with the requirements of the regulatory enactments and car equipment, to take part in the maintenance and repair of railway transport infrastructure, technical equipment and means, to improve organizational and management structures of a supervise the work of railway transport infrastructure, technical means and specialized equipment i
Final/state examination procedure, assessment	The bachelor thesis foresees an analysis of a railway problem. The defence of the thesis takes place orally and is being evaluated by a commission composed of the Chairperson, the Registrar and not less than three members. The chairperson of the Qualification Commission is selected from the leading specialists of the railway transport sector in the relevant direction, while the commission shall comprise half of the members of high-skilled railway transport specialists. The aim of the thesis is to teach the practical gathering of available information in different publications and computer networks, to formulate tasks and to implement them in a design part developed.
Description of the future employment	Graduates of the study programme may work in railway enterprises and organisations, as well as in research and educational institutions developing and maintaining of efficient technological systems 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 professional master's degree programme "Railway Engineering," or in any other RTU MTAF master's degree programme, as well as any other university master's level study programmes and vocational study programmes intended for studies after obtaining a bachelor's degree.

Courses				
No	Code	Name	Credit points	
A		Compulsory Study Courses	141.0	
A1		General Education Study Courses	18.0	
1	SD0002	Innovative Product Development and Entrepreneurship	9.0	
2	BM0075	Introduction to Speciality and Research	1.0	
3	IV0001	Basics of Labour Protection	1.0	
4	IV0759	Civil Protection	2.0	
5	DA0211	Chemistry for Engineers	3.0	
6	DA0055	Environment and Climate Roadmap	2.0	
A.2		Field-Specific Theoretical Basic and IT Study Courses	54.0	
1	DE0246	Mathematics	14.0	
2	DA0101	Physics	9.0	
3	BM0635	Numerical Methods and Engineering Programs for Transport Tasks	6.0	
4	BM0092	Computer Technologies in Transport	4.0	
5	BM0628	Transportation System Computer Design and Programming (study project)	12.0	
6	DE0341	Electrical Engineering and Electronics	3.0	
7	BM0427	Technical Mechanics	6.0	
A.3		Field-Specific Professional Study Courses	69.0	
1	BM0181	Railway Microprocessor Systems (study project)	8.0	
2	BM0204	Rolling Stock Structure and Traction	8.0	
3	BM0631	Railway Infrastructure and Operations	9.0	
4	BM0089	Transport Communication Systems	7.0	
5	BM0188	Operation Technology and Management	8.0	
6	BM0096	Railway Stations, Hubs and Train Traffic Organization	7.0	
7	BM0205	Technology of Transport Logistic Systems (study project)	8.0	
8	BM0055	General Metrology	4.0	
9	BM0291	Material Science	3.0	
10	BM0085	Electrical Machines and Electrical Devices of Rolling Stock	7.0	
В		Compulsory Elective Study Courses	42.0	
B1		Field-Specific Study Courses	30.0	
1	BM0630	Railway Safety, Signalling and Interlocking	15.0	
2	BM0632	Rolling Stock Repair and Technical Maintenance Technology	15.0	
3	BM0629	Autonomous Vehicle Systems Design	15.0	
4	BM0627	Railway Telecommunication Systems	15.0	
5	BM0634	Cargo and Commercial Work Organization	15.0	
6	BM0626	Transport Information Technology Systems	15.0	
<u>B2</u>		Humanities and Social Sciences Study Courses	6.0	
	DE0309	General Sociology	3.0	
2	DE0258	Sociology of Management	3.0	
3	DE0259	Sociology of Personalities and Small Groups	3.0	
4	DE0288	Politology	3.0	
5	DE0260	Basics of Communication	3.0	
6 D(1V0228		3.0	
<u>B6</u>	DEGGOS		6.0	
	DE0385		6.0	
2	DE0502	The German Language	6.0	
3	DE0140	Latvian for Foreign Students	2.0	
4	DE0126	The English Language	4.0	
		Pree Elective Study Courses	9.0	
<u>D</u>	DIMOCOC		30.0	
	BM0636		30.0	
E	D1 (0 (00		18.0	
	BM0633	Bachelor Thesis Including Project	18.0	