Head of ShCh-33, "Almaty Signaling and Communications Distance" of the Almaty Main Line Department of NC "KTZ" JSC

Kuanshbaev M.N.

APPROVING

Director of the EDT Institute

Togozhinova A.J.

CATALOG OF DISCIPLINES OF THE COMPONENT OF CHOICE

EDUCATIONAL PROGRAM 7M07171– Automation and digital management

Education level: Master's degree **Duration of study: 1 years** **Year of admission: 2025**

Cycle	Component	Name of the discipline	Total labor intensity		Term	Educational outcomes	Brief description of the discipline	Prerequisites	Post-requirements
			in academic hours	in academic credits					
1	2	3	4	5	6	7	8	9	10
BD	EC	Lean manufacturing	120	4	1	LO6	The discipline is aimed at mastering methods to minimize losses and increase production efficiency. Managerial competencies are being formed in process optimization, the introduction of lean approaches and the rational use of resources. The principles of lean thinking focused on sustainable development and improvement of production and management systems are studied.	Production practice, Final certification	Production practice, Final certification
		SMART technologies in transport				LO6	The discipline examines intelligent technologies for digital monitoring, automation and management of transport infrastructure facilities using modern IT solutions. Competencies are being formed in the application of the Internet of Things, artificial intelligence, digital twins and predictive analytics to improve the safety, reliability and efficiency of transport systems. The methods of building SMART systems, digital modeling and forecasting for the sustainable development of the transport industry are being mastered.	Production practice, Final certification	Production practice, Final certification
BD	EC	Automation and telemechanics systems	150	5	1	LO5	The discipline is aimed at studying the principles of building automation and telemechanics systems used in transport. This course develops students' knowledge, skills and abilities in the field of technical operation and maintenance of various station and ferry systems, as well as dispatch control and control systems.	Production practice, Final certification	Production practice, Final certification
		SCADA systems				LO5 LO3	Formulate principles for the development of process control algorithms, architecture, signals and control logic, hardware components of SCADA systems with parameter control, design, operation and security of SCADA systems with the ability to take into account data formats, protocols and error handling, real-time data management	Production practice, Final certification	Production practice, Final certification

1	2	3	4	5	6	7	8	9	10
PD	EC	Reliability and diagnostic methods	150	5	1	LO4	The aim is to develop students' ability to analyze, evaluate and improve the reliability of technical systems through preventive maintenance and repair, as well as to teach methods that predict failures and develop effective troubleshooting methods based on statistical analysis and the use of reliability databases.	Production practice, Final certification	Production practice, Final certification
		Applied reliability and diagnostics				LO4	Mastering professional skills in the field of reliability improvement with the possibility of technical diagnostics of control and monitoring systems using modern tools and technologies with the development and implementation of practical measures for redundancy, redundancy, modernization of components, optimization of operating modes using applied methods for assessing reliability parameters and identifying fault modes	Bachelor's degree disciplines	Production practice, Final certification
Total:			**420**	14					

Head of the Department of "AC" Suleimenova G.A.