AGREED
Chairman of the Board of
Directors of Almaty Fan Plant
LLP _____ Bakkulov M.
S. "__" _____ 2023

I APPROVE
Director of the Institute
"Transport Engineering"
_____ Chigambayev T.O.
"15" 03 2023.

9. CATALOG OF DISCIPLINES OF THE COMPONENT BY CHOICE

EDUCATIONAL PROGRAM 7M11201 – LIFE SAFETY AND ENVIRONMENTAL PROTECTION

Education level: Master's degree profile **Duration of study: 1.5 years** **Year of admission: 2023**

Cycle	Component	ame of the discipline	Total labor		Semestr	Learning outcomes	Brief description of the discipline	Prerequisites	Post-requisites
			intensity in academic hours	in academic credits					
1	2	3	4	5	6	7	8	9	10
БД	КВ1	Lean manufacturing	270	9	2	РО7,	Studies the basics of organization management based on the principles of lean production: minimizing all types of losses in the course of activity, achieving the maximum possible result in the shortest possible period of time, rational use of all types of resources, improving aspects of the organization's activities, involving employees in technological processes; formation of lean thinking among future managers, correlated with the ideas of concepts relevant to the modern world sustainable development and conscious consumption.	Management, Environmentally friendly technologies Ecological biotechnologies Technogenic ecology	EIRM, Final certification
	КВ2	SMART technologies in transport				РО3, РО4	The intellectual technologies used in railway transport are considered and studied. The basic concepts of the current state and prospects for the development of railway transport infrastructure based on SMART technologies are described. Familiarization of students and the formation of skills for assessing the improvement of operational safety of railway infrastructure facilities, taking into account the development of computer technologies, software and artificial intelligence. Active teaching methods and brainstorming are used.	Environmentally friendly technologies Ecological biotechnologies Technogenic ecology	EIRM, Final certification

1	2	3	4	5	6	7	8	9	10
ПД	КВ1	Environmentally friendly technologies	270	9	1	PO5, PO7	The discipline allows you to gain knowledge about the basic principles of cleaner production as a modern approach to environmental regulation at the level of technological processes, industrial enterprises and organizations, studies modern environmentally friendly and waste-free technologies, methods and principles of cleaner production. It gives an idea of hydrogen energy, offshore wind power, hybrid materials for alternative energy, as well as technologies for capturing, storing and transporting CO2.	Bachelor's degree disciplines	Lean manufacturing
	КВ2	Environmental biotechnologies				PO5, PO7	The discipline allows you to gain knowledge on the specific application of biotechnology to solve environmental problems: biological wastewater treatment, gas-air emissions, processing of solid industrial, plant and household waste, as well as advanced technologies in the field of biotechnological processes to solve current socio—economic problems - energy, raw materials, environmental: production of biogas and hydrogen from organic waste, production of biodiesel, remediation of soils using microbiological destruction of xenobiotics	Bachelor's degree disciplines	Lean manufacturing
ПД	КВ1	Technical means of ensuring occupational safety and environmental protection	180	6	1	PO1, PO3, PO5 PO8	The discipline deals with issues in the field of occupational safety, environmental protection and industrial safety in transport. Investigates the following issues: improving working conditions and occupational safety, environmental protection and increasing the level of industrial safety by improving technological processes, technical equipment, improving the level of personnel qualification; ensuring environmental and industrial safety at the current level of science and technology development; improving the effectiveness of preventive measures to comply with the requirements of labor protection standards.	Bachelor's degree disciplines	SMART technologies in transport Reliability of technical systems

1	2	3	4	5	6	7	8	9	10
	КВ2	Technogenic ecology	180	6	1	PO1, PO3, PO5, PO7	The discipline considers the interrelation and interdependence of material, primarily industrial production, man and other living organisms, and their habitat. The discipline studies environmental problems of various industries; monitoring and methods of forecasting the manifestation of dangerous environmental factors; the main engineering and technical measures to prevent pollution of the urbanized environment and the normalization of its condition, as well as the elimination of the consequences of natural and man-made emergencies, and studies environmental safety, man-made factors, and geotechnical systems.	Bachelor's degree disciplines	Lean manufacturing, Reliability of technical systems
ПД	КВ1	Occupational safety psychology	180	6	2	PO1, PO5, PO6 PO8	Mastering by undergraduates a complex of psychological knowledge, skills and abilities necessary for the effective organization of work at enterprises, using basic theoretical knowledge in the field of psychological causes of accidents that occur during work, ways of using psychology to improve its safety. The discipline studies the basic categories of security psychology; conditions and criteria of psychological security; factors and causes of threats to the psychological security of the individual; interaction and communication with other people in crisis and emergency situations;	Management	EIRM, Final certification
	КВ2	Psychological safety in extreme situations				PO1, PO5, PO6	Mastering by undergraduates a complex of psychological knowledge, skills and abilities required in extreme situations, studies ways of developing psychological resistance to extreme situations, psychological patterns of human functioning in extreme situations, effective use of their own reserves and individual personal characteristics for the application of methods of psychological assistance in crisis and emergency situations.	Production risks and their minimization	EIRM, Final certification
1	2	3	4	5	6	7	8	9	10

ПД	КВ1	Assessment of the stability and safety of technical systems	180	6	2	PO1, PO4, PO5	The complex technosphere safety, environmental sustainability from transport and enterprise transport, road safety, a systematic approach to assessing industrial safety, protection of natural and man-made transport facilities, monitoring of all types of safety are studied. Studies the assessment of emergency risks in technogenic, natural, social spheres, risk management, the development of physico-chemical methods for preventing natural, man-made emergencies, reducing the level of accidents using other methods of engineering protection.	Production risks and their minimization	EIRM, Final certification
	КВ2	Reliability of technical systems				PO3, PO5 PO8	Examines the basic concepts used in the theory of reliability, methods for assessing the reliability and reliability of technical systems, assessing the reliability of the functioning of complex technical systems with minimizing risk, minimizing negative technogenic consequences, increasing the level of safety. Teaches methods of calculating the reliability of technical systems with the role of reliability indicators in solving problems of transport security, analysis, synthesis of technical systems, risk analysis in the technosphere from the point of view of reliability.	Technical means of ensuring occupational safety and environmental protection	EIRM, Final certification

Head of the Department of "MV and LS" Shingisov B.T.